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Intra-Industry Effects of Privatization Announcements: Evidence from Developed and Developing Countries

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Summary

We examine the stock price reaction of rival firms to privatization announcements to infer information about industry effects of privatization. We find that the rival firms reacted negatively to privatization announcements, thus suggesting that the announcement effects reflect competitive considerations rather than positive industry-wide effects. In comparison, we find that the adverse reaction of the rival firms to privatization announcements in developing countries is stronger than that in the developed countries. Interestingly also, we find that full privatization announcements generate larger negative abnormal returns for rival firms than partial privatization announcements where the firm gains only partial autonomy from the government. We present some, albeit weak evidence that the rival firms' reaction to privatization announcement is increasing in the degree of government ownership of the privatized firm. Thus as the proportion of government ownership reduces, subsequent partial privatization elicits stronger market reaction from rival firms. We further demonstrate that the negative abnormal returns earned by shareholders of the rival firms' are not due to price pressure effects.

Keywords: Privatization, rival firms' reaction, developed and emerging capital markets, price pressure

JEL: G21, G32, G14, L33

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I Introduction

It is well documented that state owned enterprises (SOEs) are inefficient as compared to their private counterparts (see for example, Boycko, M., A. Shleifer and R. W. Vishny, 1996). The poor performance has, inter alia, been attributed to the use of state enterprises to realize social and political goals that involve wealth redistribution rather than wealth creation (Krueger, 1999) and the lack of managerial incentives for better performance. Prior empirical studies show that privatization (especially share issue privatization) improves operating performance because the new competitive environment and the monitoring role of the stock market drive managers towards efficiency and profitability objectives.[1] As a result of these redeeming features, privatization has become a notable tool for restructuring former state-owned enterprises in the past two decades. Governments of all persuasions in both developed and developing countries have privatized state-owned enterprises through the issue of shares to the public.

Privatization occurs partly because governments want to improve the efficiency and competitiveness of the privatized firms by exposing them to market forces and competition.[2] The trading of the firms' shares on the stock market and the attendant monitoring of the firms' performance by various stakeholders, and the disciplinary nature of the market for corporate control make the managers of the privatized firms more accountable to shareholders. Faced

[1] For example, Boardman and Vining (1989), Galal, Jones, Tandon, and Vogelsang (1994), Megginson, Nash, van Randenborgh (1994), and Boubakri and Cosset (1998) show that privatized firms increase sales, capital investment, operating efficiency and profitability in the post privatization period.

[2] See Megginson and Netter (1998) and Verbrugge, Megginson, and Lee (1999) for a discussion of the popularity of share issue privatization.

with these pressures, the newly privatized firm may become more efficient and aggressive in its operations.

While there is a large amount of empirical research that shows that privatization improves the performance of privatized firms (see Megginson and Netter 1998 for a survey of this literature), less attention has been paid to questions concerning the impact of privatization on industry counterparts. In this paper, we build on prior studies by focusing on the valuation effects of privatization announcements on rival firms. This issue is important because if privatization creates a competitive environment and incentives for better performance for the privatized firms, as has been documented by Megginson, Nash, van Randenborgh (1994), Boubakri and Cosset (1998) and D'Souza, Megginson and Nash (2000), then a more efficient competitor will appear in the industry as the privatization process releases the former SOE from the control and interference of the government. The privatization of state enterprises could thus hurt rival firms through increased competition from the newly privatized firm that, by virtue of its hitherto monopoly position, may have immense competitive advantage and market power. Competitors could suffer due to the presence of a reinvigorated, more aggressive and a more efficient rival. The rival firms' stock price would react negatively to privatization announcements if the market believes that there is going to be a more efficient and aggressive competitor in the industry whose operations can possibly lead to fall in product prices and, hence, erode the profitability of competitors.

Alternatively, it is possible that following privatization, all firms may be operating on an equal playing field, with the hitherto non-competitive incentives that the former monopoly used to enjoy such as subsidies taken away or now being enjoyed by the other firms in the industry. In fact, the presence of a newly privatized firm could even spur the rival firms to

become more competitive. Moreover, the privatization could bode well for the whole industry if for example it results in the relaxation of restrictions and rules of operations. These changes may unlock growth opportunities for the whole industry. The privatization announcement could thus send positive information about the future prospects of the whole industry rather than negative competitive effects on the rival firms.

The purpose of this paper is to examine the intra-industry effects of privatization announcements by analyzing the short-run stock price reaction of rival firms to the privatization announcement. This study is the first to examine the effects of privatization on competitors' stock price in a large sample. The only other studies that examine rival firms' reaction to privatization announcements are Eckel, Eckel, and Singal (1997) and Otchere and Chan (2002) that examine the impact of the announcement of the privatization of British Airways and the Commonwealth Bank of Australia respectively on rivals firms. The extent to which the results of such single-industry single-announcement studies can be generalized is limited. We contribute to the literature by analyzing the reaction of a comprehensive sample of 314 rival firms to 121 share issue privatization announcements from 29 countries and 28 industries. We accomplish this objective by, inter alia, examining the differential reaction of rival firms to privatization announcement in developed and developing countries, in competitive and non-competitive industries and their reaction to full and partial privatization announcements. Such a comprehensive analysis of intra-industry effects of privatization announcements will contribute to our understanding of how investors use the information contained in privatization announcements to reassess the value of industry counterparts. The results will also be beneficial to policy makers, privatization consultants and governments

contemplating privatization of state enterprise, as well as individual and institutional investors.

We first examined the stock price reaction of the rival firms to the privatization announcements to infer information about the expected impact of privatization on industry counterparts. Consistent with the premise that privatization could hurt competitors, we find that the rival firms reacted negatively to the privatization announcements. On the announcement day, the rival firms lost 0.54% (p-value=0.004) of their value. For the 3-days (5-days) surrounding the privatization announcement day, the firms lost 0.43% (0.57%) of their value. We conclude that the rival firms' reaction following the privatization announcements reflect the market's concern about the potential competitive effects of privatization on the rival firms.

Having established that rival firms reacted negatively to the privatization announcements, we then examined the differential effects of privatization on rival firms in developed and developing capital markets. Prior studies suggest that the benefits of capital market monitoring to privatized firms depend on the level of sophistication of the capital market. In developing countries, privatized firms may face less market monitoring as shareholders are likely to have less access to information as well as lack the power to sanction managerial performance. In that case, privatization may offer little efficiency gains and performance improvements. The announcement effects of privatization on rival firms in developing countries may thus not be as strong as those in developed capital markets. Contrary to this assertion however, we find that the reaction of rival firms is stronger in developing countries than in developed countries. For the 3-days surrounding the announcement date, the rival firms in emerging markets lost 0.63% of their wealth while

those in the developed capital markets lost (albeit insignificant) 0.27% of their value. If investors' expectations about privatization can be inferred from the rival firms' stock price reaction, then this result implies that the privatized firms are likely to be more efficient and competitive in developing countries than in developed countries. This assertion finds support in recent studies by Boubakri and Cosset (1998) and D'Souza, Megginson and Nash (2000) who document stronger performance improvement for privatized firms in developing countries.

Interestingly also, we find that the magnitude of the rival firms' reaction to full privatization announcement is greater than that of partial privatization. On the announcement day, the rivals of fully privatized firms lost 1.25% of their wealth while rivals of firms that were partially privatized lost 0.43% of their wealth. Also, the rival firms' reaction to partial privatization is somewhat negatively related to the degree of privatization. As the proportion of government ownership reduces, subsequent partial privatization generates stronger negative reaction from the rival firms. We also examine the possibility that the negative abnormal returns earned by the rival firms are due to price pressure effects resulting from portfolio rebalancing and index changes, but the results show that price pressure hypothesis does not account for the negative abnormal returns experienced by the rival firms.

The remainder of the paper is organized as follows: Section II presents a discussion of the effects of privatization on competitors stock price and our other testable hypotheses. Section III deals with the data and methodology. The results are presented and analyzed in Section IV. In section V, we examine alternative explanations for our results. Section VI concludes the study.

II Background

A Effects of privatization on competitors' stock price

The theoretical literature on privatization identifies two main types of problems associated with government ownership, namely political and managerial incentive problems. The political problem proposed by Shleifer and Vishny (1994) suggests that political interference from governments distorts the objectives of state enterprises. Governments use state enterprises to pursue multiple and sometimes conflicting objectives, such as welfare maximization, at the expense of profit maximization. The managerial incentive problem discussed by Vickers and Yarrow (1989) also suggests that poor or the lack of monitoring leads to low powered incentives on the part of managers to improve performance.

Prior empirical studies however show that privatization brings about a change in the firm's objectives as well as a change in the owners and managers' incentives that often result in a more focused and efficient organization (Megginson et al (1994) and D'Souza, Megginson and Nash (2000)). The public trading of the firm's shares facilitates the adoption of market oriented compensation plans as management compensation can be tied to the firm's stock price. This creates incentives for management to perform better and to create value for shareholders. The pressures of product market competition may also compel the newly privatized firms to operate more efficiently, aggressively and competitively if they are to survive in the post privatization environment. This rejuvenation can affect the rival firms' performance. A feature of most privatized firms is that under state ownership, the firms had market power but had to endure pressures from the government in relation to their pricing and investment decisions. Following privatization however, most privatized firms usually retain a significant market power and continue to operate in a quasi monopoly position (on account of their market share and market power) while being relieved of the requirement to follow

government directives designed to promote social aims. The privatized firms may be able to exploit this market power to their advantage to increase profitability. They could become a stronger competitive force for the rival firms in the industry because of their dominant position in the product market and this advantage can translate into above average performance.

The fundamental basis of above average performance in the long run is (sustainable) competitive advantage that the privatized firms, by virtue of their previous monopoly status, may have over rivals. Their dominance in the market through control over access to infrastructure will give them a competitive advantage. Their competitive advantage over rivals may also lie in their cost leadership. The source of the cost advantage may include pursuit of economies of scale, proprietary technology and especially preferential access to infrastructure. This can help the newly privatized firms to achieve and sustain overall cost leadership that can translate into strong competitive advantage over rivals. The intensity of competition influences prices as well as the cost of competing in such areas as product development, advertising and sales force. The pricing behavior of such a large competitor could negatively affect the profitability of rival firms. The privatized firms, with their significant market power, could realize greater post privatization gains at the expense of their rivals. The privatization of a hitherto SOE could thus hurt rivals through increased competition as rival firms may be forced to discount prices well below those of the privatized firm to gain market share. From this perspective, the privatization announcement may send an unfavorable signal about the effects of increased level of competition on the rival firms. Thus if the market believes that as a result of the privatization there is now a rejuvenated, more efficient and aggressive competitor in the industry whose operations can lead to falls in

product prices, and hence erode the profitability of the rival, the rival firms' stock prices will react negatively to the announcement of the privatization. Eckel, Eckel, and Singal (1997) argue that the stock market's expectation of the efficiency of the privatized firm can be inferred from the rival firms' stock price effects following the privatization announcement.

On the other hand, as a result of the privatization all firms may enjoy the same benefits as the newly privatized firms and may face a more liberal regulatory regime, which may in turn enhance the growth prospects of the industry. The privatization announcement could thus send positive information about the future prospects of the industry rather than negative competitive effects on the rival firms. We analyze the share price effects of the privatization announcements on rival firms with a view to ascertaining the valuation effects of the information contained in the privatization announcements. If the announcement contains unfavorable information that indicates a stronger competitive position for the privatized firms, the share price of rival firms should fall. On the other hand, if the privatization is good news for the industry, we should expect positive valuation effects on industry rivals.

B Other Testable Hypotheses

1 Rival firms' reaction to privatization announcements in developed and developing capital markets

One of the causes of the poor performance of SOEs is the lack of scrutiny from different stakeholders. The trading of the firms' shares following privatization and the attendant monitoring of the firms' performance, together with the linking of managers' remuneration to stock market performance, could spur management to become more efficient, productive and accountable. Megginson, Nash, van Randenborgh (1994), Boubakri and Cosset (1998) and D'Souza, Megginson and Nash (2000) suggest that capital market monitoring that

accompanies privatization triggers improvements in performance, but Holstrom and Tirole (1995) argue that the benefits from capital market monitoring depends on the level of sophistication of the market and the intensity of the monitoring. A well-developed and active capital market allows the newly privatized firms greater access to capital needed to finance profitable projects. Such markets are also likely to be informationally efficient. Subrahmanyam and Titman (1999) argue that the presence of newly publicly traded firms in an industry can attract more information gathering about the industry, thus making the prices of all firms in the industry more efficiently priced. However, in developing countries where information gathering may be inefficient and costly, firms may not be efficiently priced.

The foregoing discussion suggests that privatization may not offer as much efficiency gains and performance improvements for privatized firms in developing countries as it would in developed capital markets because firms may face less market monitoring since the shareholders would have less access to information as well as lack the power to sanction managerial performance. Consequently, in developing countries, the privatized firm may not be as aggressive and competitive as they would in developed countries, and hence the magnitude of the rival firms' reaction to privatization announcements in developing countries may be less than that in developed countries. Alternatively, it is possible that the rival firms' reaction to privatization announcements in emerging market where information flow may not be efficient and where stocks may attract less attention from market participants could be greater than that determined by fundamentals. We contribute to the literature on the effects of privatization in developed and developing countries by examining the rival firms' differential reaction to privatization announcements in these economies.

2 Rival firms' reaction to privatization announcements in competitive and non-competitive industries

Prior studies including D'Souza, Megginson and Nash (2000), Megginson, Nash, van Randenborgh (1994) and LaPorta and Lopez-de-Silanes (1999) find that efficiency gains are greater for firms that operate in competitive markets than those in non-competitive markets. Boardman and Laurin (1996) also argue that privatized firms such as utilities that operate in non-competitive markets and are not subject to the discipline of competitive pressures would be less likely to benefit from privatization. Given their market dominance and near monopoly status, the privatized firms operating in non-competitive sectors may not have the incentives to restructure and aggressively pursue profitability goals. This argument suggests that the competitive effects of privatization and therefore the rival firms' reaction to privatization announcements will be less in non-competitive industries than in competitive sectors.

Alternatively, we submit that privatized firm in non-competitive industries such as telecommunication and utilities may control the product market through their ownership of the infrastructure and large market share. The rival firms operating in these industries that have to depend on the former monopoly for access to infrastructure could suffer greatly from increased competition, especially if in the case of public utilities the privatized firm owns the generating, transmission and retail components of the business. Similarly, for privatized telecoms, if the telecommunication network is not separated from the retail division (which is usually the case), the network pricing power of the privatized firm will impact negatively on rival firms. This anti-competitive configuration will make the position of the privatized firms in these industries similar to that of a trucking company that owns the majority of the nation's

highways and charges its competitors for access.[3] In competitive industries however, all firms may be operating on an equal playing field following privatization, with the hitherto non-competitive incentives that the former monopoly used to enjoy such as subsidies taken away or now being enjoyed by the rival firms, privatization may benefit all the industry counterparts. Also, the presence of a new and rejuvenated privatized firm in competitive industries could even spur the rival firms to become more competitive and aggressive, in which case the rival firms may not be negatively affected by the privatization. We test the conjecture that the reaction of rival firms to privatization announcement in competitive industries is significantly different from that of the rivals in a non-competitive environment.[4]

3 Rival firms' differential reaction to partial and full privatization announcements

Privatization often leads to a change in the goals of the firm, with the privatized firm usually focusing on profit maximization, efficiency and shareholder value creation. However, the degree to which these goals can be achieved depends on whether or not the government fully privatizes the enterprise. Continued government ownership in a privatized firm may hinder the managers' ability to restructure the firm since the government may continue to interfere with the firm's operations. This is likely to be the case if the partially privatized firm decides to pursue economically profitable but politically unpopular investment decisions such as reducing staff levels and closing down unprofitable divisions that may be located in politically sensitive constituencies. If efficiency and competitive considerations were the reasons for the

[3] Brian Toohey (2002) has described Telstra, a partially privatized telecommunication firm in Australia, as fitting this characterization.

[4] We define non-competitive industries as telecommunication, banks and utilities (water and electricity) and all others as competitive industries.

privatization, then partial and full privatization would have different valuation effects on rival firms given that the partially privatized firm will have little autonomy in pursing its goals.

Prior studies including Boardman and Vining (1989) and Boycko, Shleifer and Vishny (1996) suggest that in order to facilitate the restructuring of state enterprises, both cash flow and control rights should pass from governments to private hands, i.e. the firm should be fully privatized. Boubakri and Cosset (1998) find that increases in profitability and efficiency were significantly larger for control privatization (in which governments fully surrender voting control) than for revenue privatization (in which governments sell a minority ownership stake but do not surrender voting control). This suggests that partial privatization may not achieve the desired effects of improving the profitability and efficiency of the former SOEs, given that the firms may still be controlled by the state. Thus, if corporate governance is a factor in enhancing the efficiency and competitiveness of the privatized firm, then greater efficiency and competitive gains would be associated with full privatization than partial privatization as a partially privatized firm may not be as competitive and aggressive as a fully privatized one. We test whether government ownership of the privatized firm determines the valuation effects of privatization announcement on the rival firms. We hypothesize that the rival firms' reaction to full privatization announcement is greater than that associated with partial privatization announcement.

III Data and Research Design

The data used in this study come from a variety of sources. The initial sample of privatized firms consisting of privatizations that occurred between 1981 and 2000 comes from the appendix to Jones, Megginson, Nash and Netter (1999). This is supplemented by data from Megginson (2000). We identify the privatization announcement dates from Reuters news

service archives. The stock price data come from Datastream International database and Bloomberg database. To be included in the study, we require that the privatization announcement date and stock price data are available in the aforementioned sources. The privatized firm should also have rival firms in the same industry and the same country at the time of the announcement. Some of the privatized firms in the aforementioned sources were not included in the study because we could not identify the announcement dates from Reuters database or there were no stock price data or there were no rivals. For 121 share issue privatizations, we were able to obtain the necessary data.[5] The rival firms were selected on the basis of their industry (2-digit SIC) category and market capitalization. To keep the data collection task manageable, we selected at most six rivals per privatization. In cases where there were less than 6 rivals, we included all of them in the study without imposing any constraint. Where there were more than 6 industry rivals, we included rivals that had market capitalization in the range of 80%-120% that is closest to that of the privatized firm a month after the privatization. The final sample comprises 121 share issue privatizations and 314 rival firms from 29 countries in 28 industries.

[Fix Table 1 here]

Table 1 presents the distribution of the privatized firms and their rivals. Panel A shows the spread of the sample firms in developed countries, Panel B shows the same for developing countries while Panels C and D show the breakdown of the sample firms into non competitive and competitive categories respectively. Fifty seven percent of the privatized firms are from developed markets and the rest are from emerging markets. India has the largest number of

[5] We analyzed the effects of announcements that led to the privatizations of the SOE but not the announcements relating to privatization intentions that did not materialize.

privatized firms (12), followed by France (11) and the UK, Canada, Spain and China have 8 apiece. About 40% of the privatized firms are in non-competitive industries while 11% are resource companies. The remaining firms are in different manufacturing and transport service industries.

Stock price reaction is measured by calculating the abnormal returns around the privatization announcement date. For the rival firms, we calculate abnormal returns using the market model.[6] Designating the announcement date as day 0, we estimated the regression parameters using 200 observations prior to day –21. The regression parameters, together with the returns on the market indices of the respective countries were used to calculate expected returns. Abnormal returns were calculated as the difference between the observed returns and the expected returns. The abnormal returns were averaged across the sample for each day to obtain the daily average abnormal returns. These returns were then cumulated over different event windows from day –20 to day +20.

For the privatized firms, we calculated returns in two ways. For the initial privatization announcement, we calculated returns for the 20-day period following the initial public offering (since the firms did not have prior period data) as the change in stock price. For subsequent privatization announcements, we calculated abnormal returns employing the same procedure used to calculate the rival firms' abnormal returns.[7] In both cases, we also estimate industry-adjusted abnormal returns for the privatized firms as the difference between the returns of each privatized firm and the returns on an equally weighted portfolio of the rivals of the privatized firm. These industry-adjusted returns were then averaged across the privatized

[6] We use the Dimson's adjustment procedure to correct for non-synchronous trading.
[7] For the purpose of determining whether price pressure hypothesis explains our results, we also calculate cumulative abnormal returns for different windows from day 1 to day 60.

firms for each day of the event period and also cumulated over different event windows. The industry-adjusted returns are a better measure of performance because they control for industry events that are unrelated to the privatization. In all cases, we test the significance of the reaction by dividing the abnormal returns by their standard errors. We also employ the proportion test to examine whether the percentage of firms experiencing a change in a specified direction is greater than 50%.

IV Results

A Main Results

Our primary objective is to analyze the share price effects of the privatization announcements on rival firms with a view to ascertaining the valuation effects of the information contained in the privatization announcements. We conjecture that if the announcement contains unfavorable information that indicates a stronger competitive position for the privatized firms, the share price of rival firms should fall. On the other hand, if the privatization is good news for the industry, we should expect positive valuation effects on industry rivals. The abnormal returns realized by the rival firms around the time of the privatization announcements are presented in Table 2. The results shown in Panel A are the daily abnormal returns while those in Panel B are the cumulative abnormal returns for different event windows surrounding the announcement day. Consistent with the assertion that privatization could hurt rival firms, we find that our sample of 314 rival firms reacted negatively to the privatization announcements. The shareholders of the rival firms earned small but significant abnormal returns of –0.54% (t-statistic = -2.93) on the announcement day. However, the pre and post-announcement period returns are normal except day –10 where we observe significantly negative abnormal returns of -0.40%

Also, in general, over 50% of the rival firms earned negative abnormal returns on or before the announcement day, with 57% of them experiencing negative abnormal returns on day –2. From Panel B, we also document negative cumulative abnormal returns for all the event windows around the announcement date. For the 3-day period surrounding the privatization announcement date, the shareholders of the rival firms lost 0.43% of their wealth (p-value = 0.086). The negative abnormal returns indicate that the rival firms' reaction to the privatization announcements reflects competitive considerations rather than positive industry effects.

[Fix table 2 here]

B Rival firms' reaction to privatization announcements in developed and developing capital markets

Prior studies suggest that privatization in less developed capital markets may offer little efficiency gains and performance improvements because the privatized firms may face less market monitoring. This suggests that privatization announcements in developing countries may not elicit strongly negative reaction from rival firms as they would in developed markets. We test this conjecture by examining the rival firms' reaction to privatization announcements in developed and emerging markets and present the results in Table 3. We find that while shareholders of rival firms in both the developed and emerging capital markets earned statistically significant abnormal returns of –0.52% and –0.56% respectively on the announcement day, the difference is not statistically significant. However, we document significantly negative abnormal returns of –0.38% (–0.35%) two (five) days before the privatization announcement day for the emerging market rivals. No such pre announcement information effect is observed for rival firms in the developed markets. The pre

announcement abnormal returns documented for the emerging markets sample could be due to the leakage of information relating to the privatization announcement.

Also, we note that a higher percentage of rival firms in the developing countries reacted negatively to the privatization announcement than in the developed countries especially in the two days leading up to the privatization announcement. Similarly, we document negatively large cumulative abnormal returns for the rival firms in emerging markets during most of the event windows. For the 3-days (21-days) surrounding the announcement date, shareholders of the rival firms in emerging markets lost 0.63% (2.30%) of their wealth, while the rivals of privatized firms in the developed markets earned, albeit, insignificant returns of -0.27% (-0.22%). The small size of the rival firms' reaction to privatization announcements in developed countries could be due to the fact that information is readily available in these countries that enables investors to correctly evaluate the impact of the privatization on the rival firms. However, if the expected impact of privatization on the performance of the privatized firm can be inferred from the rival firms' stock price reaction, then our results support the hypothesis that investors expected the privatized firms in emerging markets to perform better than those in the developed markets. In fact, Boubakri and Cosset (1998) and D'Souza, Megginson and Nash (2000) find evidence of stronger performance improvements for privatized firms in developing countries than in developed countries. Thus our study provides additional evidence on the differential effect of privatization from a different perspective.

[Fix table 3 here]

C Rival firms' reaction to privatization announcements in competitive and non-competitive industries

We conjecture that privatized firms operating in non-competitive sectors may not have the incentive to restructure and aggressively pursue business. Hence, the competitive effects of privatization, and therefore the rival firms' adverse reaction to the privatization announcement will be less in non-competitive industries than in competitive sectors. Alternatively, we submit that privatized firms operating in non-competitive sectors may dominate the product market through their ownership of the infrastructure and this may give them an advantage over competitors who may have to depend on the infrastructure of the former monopolies for business. The competitive position of the rival firms in the non-competitive industries could thus be severely hampered. We present the abnormal returns earned by the rivals of privatized firms in competitive and non-competitive industries in Panel A of table 4. We find that while shareholders of both sub-samples earned significantly negative abnormal returns on the announcement day, the magnitude of the cumulative abnormal returns, together with the significance level, is generally larger for the rivals of privatized firms in competitive industries than that in non-competitive sectors. For example, the 5-day (21-day) cumulative abnormal returns of the rivals of firms privatized in competitive sectors are -0.67% (-1.28%), while those of the rivals in non-competitive sectors are –0.46% (-0.91%). But as the results in columns 8 to 10 show, the cumulative abnormal returns are statistically identical except for the day –20 to 20 period.

[Fix table 4 here]

The lack of significant difference between the rivals' reaction to privatization in competitive and non-competitive industries may reflect the fact that sometimes governments usually put these firms through a corporatization phase, a period in which the firm is allowed to operate

as a profit centre. Thus, the new management team of the privatized firm in a non-competitive industry may not have much scope to realize unexploited monopoly rent anymore than what those in competitive sectors can realize. In that case, the rivals' reaction to privatization announcement in competitive and non-competitive industries could be insignificantly different. This assertion finds some support in the predictions of a recent theoretical model developed by Errunza and Mazumdar (2000) and the empirical evidence documented by Megginson, Nash, van Randenborgh (1994) and Boubakri and Cosset (1998) who find no difference in efficiency gains for privatized firms in competitive and non-competitive markets.[8]

We recognize however, that the rival firms' reaction to privatization announcements in the non-competitive sectors may be different for the three sectors we analyze in this study. For some hitherto government monopolies that may continue to dominate the product market, privatization may bode ill for the rival firms. As a result of their market power and dominance, the privatized firms that operate in certain 'noncompetitive' markets may not have the incentives to restructure since they may not face any credible competition that can threaten their position. Their dominance of the product market in terms of their access/ownership of the infrastructure may however give them an advantage over competitors that may have to depend on the infrastructure of the former monopolies. As mentioned above, the pricing behavior of the privatized firm could be akin to a trucking company that owns a

[8] Errunza and Mazumdar (2000) show that SOEs that were better managed prior to privatization and have fully exploited any monopoly power in the product market and those that would be handicapped with bureaucratic tendencies would be less attractive to investors and this is likely to be acute in non-competitive industries. On the other hand, if the SOE operated competitively even in government hands, then the anticipated gains after privatization would be small. Thus, there could be an insignificant difference between the post privatization efficiency gains across competitive and non-competitive sectors. This implies that the rival firms' adverse reaction to privatization announcement in competitive and non-competitive sectors would not be significantly different.

nation's road network and charges other competitors for access. This is particularly the case for the telecommunication and utility sectors where the newly privatized firm may own the telephone network and may have to lease it to rivals in the industry.

We present results in support of this argument in Panel B of Table 4. We find that the negative abnormal returns of the rivals of privatized firms in non-competitive sectors are driven by the telecommunication and utilities sectors. For the rival banks, privatization appears to be good news since the shareholders of the rival banks earned positive, albeit insignificant, abnormal returns. However, for the telecommunication and utilities sectors, the rival firms' shareholders lost 2.65% and 1.53% of their wealth respectively on the announcement day, although that of the utilities is not statistically significant. Similarly, while only 48% of rival banks experienced negative abnormal returns on the announcement day, 67% of rival telecommunication firms and 78% of rival utilities experienced negative abnormal returns. The cumulative abnormal returns are not statistically significant, except the 5-day returns of –3.70% (t-statistic is 2.02) for the rivals of privatized utilities that are significant at 10%.[9] The sign, magnitude and significance of the rival firms' reaction to privatization announcements in the telecommunication and utilities sectors suggest that the loss in share price reflects competitive considerations. The evidence supports the conjecture that for non-competitive industries where the incumbent firms may continue to dominate the product market, the privatization may hurt the rival firms that may have to depend on the former monopoly for access to infrastructure.

[9] The results for the rival firms in the utilities sector should be interpreted with caution because of the small sample size.

D Degree of privatization and rival firms' reaction

1) Rival firms' reaction to full and partial privatization announcement

Partial privatization may not achieve the intended objective of improving efficiency of the enterprise because the continued state ownership may hinder the effective operations of the firm. A fully privatized firm, on the other hand, will be willing to restructure and become more aggressive and competitive in its operations than a partially privatized firm. D'Souza, Megginson and Nash (2000) suggest that privatization that generates the largest amount of private ownership will experience the greatest performance improvements. We conjecture that rival firms will react differently to the degree of privatization, with full privatization eliciting the strongest adverse reaction from rival firms. Panel A of Table 5 shows the rival firms' reaction to full and partial privatization announcements. We find that for both types of privatizations, the announcements elicited negative stock price reaction from the rivals on the announcement day. Interestingly however, privatizations where government ownership is completely eliminated generate larger negative abnormal returns for rivals than partial privatization. The announcement day abnormal returns accruing to rivals of firms that were fully privatized is –1.25% while the returns of rivals of firms that were partially privatized are –0.43%.

[Fix table 5 here]

For partial privatization, the rival firms reacted positively on days 1 and 2, thus generating significantly positive cumulative abnormal returns around the announcement day. For the 5-day ($CAR_{(-2,2)}$) event window, the rivals of fully privatized firms earned a return of -0.84% but rivals of firms that were partially privatized earned a positive return of 0.73%, thus generating a significantly different cumulative abnormal return of 1.56%. The results suggest

that the shareholders of the rival firms would benefit from the continued government ownership of the partially privatized firm. If the market's expectation of the efficiency and competitiveness of the privatized firms can be inferred from the competitors' stock price effects, then the rival firms' results are consistent with the argument that the partially privatized firm would be less efficient and competitive than fully privatized firms. Since the government still controls the partially privatized firms, and may use them to pursue social objectives, we find that the rival firms' reaction to partial privatization announcement is not as strong as that of full privatization where governments have completely surrendered control and cash flow rights. The pattern of returns we have documented for the rival firms suggests that partial privatization will impact less on rival firms than full privatization.

2) Did the first privatization announcement generate significantly greater reaction than subsequent privatization announcements?

The rival firms' reaction to privatization announcements could depend on whether the privatization is part of a continuing program of sell off or it is a one-off transaction. If the market perceives that the government is embarking on a privatization program that entails the gradual sale of the SOE, then the valuation effects of the initial and subsequent privatization announcement on the rival firms' stock price could be different. For privatizations that occur in tranches, the market may learn from the first announcement and since investors would expect further announcements to follow, the initial privatization announcement is likely to contain more surprise and therefore elicit stronger reaction from rival firms than subsequent partial privatization announcements.

Alternatively, as the proportion of government ownership reduces in subsequent partial privatization announcements, the privatized firm may become more efficient. Thus the

rival firms could react more strongly to the privatization announcement. To test these arguments, we examine the rival firms' reaction to the first and subsequent privatization announcements. The results presented in Panel B of Table 5 generally support the learning effect argument. We find that although the magnitude of the rival firms' announcement day abnormal returns for the first privatization is smaller than that associated with subsequent privatization. However, the rival firms continued to react negatively to the initial privatization but positively to partial privatization announcements in the days immediately following the announcement. The difference in reaction on day +1 of about 1% is strongly significant (t-statistic=3.41, p-value=0.0001). In terms of the cumulative abnormal returns, the magnitude of the rival firms' (adverse) reaction following the first privatization announcements is greater than that associated with subsequent partial privatization for all the event windows except that of the 21-day ($CAR_{(-10,10)}$) period. For example, in the 5-days surrounding the privatization announcement date, the rival firms' reaction to the first privatization was -1.04% while their reaction to partial privatization announcements was 0.26%, the difference of -1.31% is significant at 6%. The rival firms' cumulative abnormal returns therefore support the conjecture that the first privatization announcement contained more surprise than subsequent privatization announcements.

3) Is the rival firms' adverse reaction to partial privatization announcement increasing in the degree of government ownership of the privatized firm?

We examine whether the rival firms' reaction to partial privatization announcement is negatively related to the degree of privatization. As the percentage of government ownership reduces with each subsequent partial privatization, the privatized firms could have increasing discretion to pursue investment opportunities with less interference from the government. The rival firms' reaction to partial privatization announcements could reflect this new and

increasing degree of autonomy that the privatized firm may have with every subsequent partial privatization. We present the rival firms' reaction to the first, second, third, fourth and final privatization announcements in Panel C of Table 5.[10] Consistent with the evidence presented in Panel A, we find that the initial partial privatization announcement generated a larger fall in wealth of the shareholders of the rival firms (of –0.40%) on the announcement day than the second partial privatization announcement (-0.13%).

Also, we document negatively large cumulative abnormal returns from the rivals following the initial privatization announcement than the second privatization announcement. Thus, the first partial privatization was more informative than the second partial privatization announcement. However, we note from the table that as the proportion of government ownership further reduces, subsequent partial privatization announcements generate stronger market reaction from rival firms. The third, fourth and final privatization announcements generated announcement day abnormal returns of –0.18%, -2.37% and –1.60% respectively. Similarly, the percentage of rival firms that reacted negatively to the privatization announcements were 50%, 89% and 57% for the third, fourth and final privatization respectively. Furthermore, for the 3 days surrounding the announcement day, the rival firms' cumulative abnormal returns were –0.53%, 0.32%, 0.46%, -0.62% and –1.63% for the first, second, third, fourth and final privatization announcement respectively. Thus, there is some, albeit weak evidence to support the conjecture that the rival firms' reaction to the privatization announcement is negatively related to the degree of government ownership of the privatized firms.

[10] A few firms were privatized 5 or 6 times. However, because of the small sample size, we do not perform any analysis on these sub-samples.

V Test of alternative explanations for the rival firms' abnormal returns

A Examination of alternative hypotheses.

We recognize that there could be other reasons why the rival firms reacted negatively to the privatization announcement apart from competitive considerations, therefore in this section, we undertake several tests of alternative explanations for our results. First, share issue privatization expands the investment opportunity set of investors. The newly privatized firms could attract investors who would otherwise have invested in the existing rival firms, thus generating the negative abnormal returns for the rival firms. Second, fund managers who track sector indices could move some of their funds to the newly privatized firms in anticipation of the inclusion of the privatized firm in the index in order to minimize tracking error. Thus, portfolio rebalancing and the attendant price pressure effects could cause a decrease in the share price of the existing firms. Third, as Subrahmanyan and Titman (1999) argue, the presence of newly publicly traded firms in an industry can attract more information gathering about the industry and this can make the prices of all firms in the industry more efficiently priced. While test of the last conjecture is beyond the scope of this paper, we examine the possibility that capital flows account for the rival firms' stock price reaction.

First, we note that investors may move their capital to the newly privatized firms if they believe that the newly privatized firms' prospects are better than the existing firms' prospects. In that case, the attendant decrease in price of the rival firms would be consistent with our hypothesis that investors' expectation about the efficiency and competitiveness of the privatized firms can be inferred from the rival firms' price effects following the privatization announcement. Second, if the fall in the share price of the existing firms is caused by the activities of fund managers moving funds from existing firms to the newly privatized firms with a view to maintaining their exposure to that sector, then portfolio

rebalancing, and the attendant price pressure effects, would cause a decrease in the share price of the existing firms and a corresponding increase in the share price of the newly privatized firms. To test this conjecture, we first calculate the returns for the privatized firms following the initial privatization and subsequent partial privatizations and present the results in Table 6.

We note that while most of the daily abnormal returns are not significant, the cumulative abnormal returns for the post initial public offering periods (i.e. $CAR_{(1,30)}$, $CAR_{(1,40)}$, $CAR_{(1,50)}$ and $CAR_{(1,60)}$) are positive and significant. The industry adjusted abnormal returns (which account for industry factors that are unrelated to the privatization) also show that the privatized firms performed better than their industry counterparts in the post privatization period. However, this outperformance could be due to two factors, namely price pressure effects and the well-documented underpricing of initial public offerings. For government IPOs, the underpricing following the initial privatization could be widespread since that would ensure that shares in subsequent government privatizations are well subscribed.

The privatized firms' abnormal returns following subsequent privatizations provide a partial benchmark for evaluating the price pressure hypothesis. If it is portfolio rebalancing per se that explains the privatized firms' initial positive abnormal returns and, hence, the rival firms negative abnormal returns, then subsequent privatization that leads to an increase in the weight of the privatized firms in the index should also elicit significantly positive increase in share price of the privatized firms. However, this does not appear to be the case as the privatized firms' shares underperformed the market and their industry counterparts' in the period leading up to and following the subsequent privatization announcements. For

subsequent privatization announcements, the privatized firms experienced negative cumulative abnormal returns for the different event windows.

[Fix Table 6 here]

B Further test of the price pressure hypothesis

In this section, we perform a stronger test of the portfolio-rebalancing hypothesis by running the following regressions of the privatized firms' returns on the rival firms' abnormal returns.

$$CAR_{(t1,t2)\ privatized} = a_i + b_i\, AR_{(0)\ rival} + e_i \qquad (1)$$

$$CAR_{(t1,t2)\ privatized} = a_i + b_i\, CAR_{(t1,t2)\ rivals} + e_i \qquad (2)$$

We run equation 1 for the initial privatization announcement and equation 2 for subsequent privatization announcements. For equation 1, the dependent variable is the privatized firms' post-listing returns for different time periods and the independent variable is the rival firms' abnormal returns on the announcement day. For equation 2, the dependent variable is the cumulative abnormal returns of the privatized firms for different symmetric event windows surrounding the announcement day and the independent variable is the cumulative abnormal returns of the rival firms for the same period as the dependent variable. If the rival firms' negative abnormal returns are due to fund managers reducing their investment in the rival firms to set aside money to buy shares of the newly privatized firms, then the coefficient of the rival firms' abnormal returns in equations 1 and 2 will be significantly negative and the intercept will also be zero. That is, if price pressure hypothesis explains the rival firms' reaction, then $\alpha=0$ and $\beta<0$. Also, following Kaul, Mehrotra, and Morck, (2000), we would expect $\beta=-1$ for complete portfolio rebalancing. We also run regressions 1 and 2 separately for our emerging market and developed market samples because index fund activities and portfolio rebalancing may be executed in informationally efficient capital markets. Hence, if

portfolio rebalancing explains the results, we would expect to observe this phenomenon particularly in developed capital markets.

[Fix Table 7 here]

The results of the test are presented in Table 7. Panel A indicates the results of the initial privatization for the full sample, developed and emerging market samples and Panel B shows the results for subsequent privatizations. The full sample results indicate that alpha is zero for all the post announcement period regressions except for the regression that uses $CAR_{(1,30)}$ as the dependent variable. Beta has the correct sign for the regressions with $CAR_{(1,10)}$, $CAR_{(1,40)}$, $CAR_{(1,50)}$ and $CAR_{(1,60)}$ as the dependent variable. However, contrary to expectations regarding portfolio rebalancing and price pressure hypothesis, none of the coefficients is significantly different from zero.[11] For the subsequent privatization announcements, there is also no evidence that the negative abnormal returns earned by shareholders of the rival firms are due to price pressure effects resulting from portfolio rebalancing. The coefficients of interest are not significant except $\beta_{(-10,10)}$ that is marginally significant at 10%. However, the hypothesis that $\beta = -1$ is rejected and the R^2 for the regression is only 0.08.

Turning to the developed capital markets, we find that contrary to expectation, none of the coefficients of interest is significant, except $\beta_{(1,10)}$ for the subsequent privatization that is marginally significant at 10% with an R^2 of 0.12. However, the hypothesis that $\beta_{(1,10)} = -1$ is rejected. For the emerging market sample however, $\beta_{(1,60)}$ for the initial privatization and $\beta_{(-1,1)}$ and $\beta_{(1,30)}$ for subsequent privatizations are significantly different from zero. The R^2 of 0.38,

[11] Assuming that investors started selling out of the rival firms earlier than the announcement date, then using AR_0 as the independent variable in regression 1 will not capture the intended effects so we also use the rival firms' $CAR_{(-10,0)}$ as the dependent variable in equation 1 but the results are similar and are not reported here.

0.72 and 0.35 are relatively large, but once again, contrary to expectations, $\beta_{(1,30)}$ for subsequent privatization has the wrong sign and $\beta_{(-1,1)} = -1$ is also rejected. Thus only the emerging market regression coefficient $\beta_{(1,60)}$ for the initial privatization has the correct sign and the expected test results but the coefficient is marginally significant at 10%. At any rate, only four of the 60 regression coefficients are significantly different from zero and have the correct sign, but all of them are marginally significant at 10%. This evidence, together with the finding that subsequent partial privatizations that supposedly lead to an increase in the weights of the privatized firms in the index generated negative abnormal returns for the privatized firms, shows that the rival firms' negative abnormal returns are not caused by price pressure effects. Thus we conclude that the negative effects observed for the rivals of privatized firms reflect investors' concern about the expected gains in efficiency and competitiveness of the privatized firms.

VI Summary and conclusion

There is a large amount of research that shows that privatization improves the performance of privatized firms. However, studies that analyze intra-industry effects of privatization announcements are scarce. We contribute to the literature by analyzing rival firms' reaction to privatization announcements using a large sample of share issue privatizations and rival firms from 29 developed and developing countries across 28 industries with a view to ascertaining whether the information contained in the privatization announcement reflects competitive considerations or positive industry wide effects. We find that our sample of rival firms reacted negatively to the privatization announcements thus suggesting that the rival firms' reaction to privatization announcements reflects competitive considerations rather than positive industry

effects. The reaction of the rival firms in developing countries is stronger than that in developed countries.

Interestingly, we find that the magnitude of the rival firms' reaction to full privatization announcements is greater than their reaction to partial privatization announcements. The initial privatization announcements also contain more surprise than the second (partial) privatization announcements. However, for subsequent partial privatization announcements, we find a somewhat negative relationship between the rivals' reaction and the degree of privatization. As the proportion of government ownership reduces, subsequent partial privatization generates stronger (negative) rivals' reaction. The results of further analysis do not support the conjecture that price pressure effects account for the rival firms' negative abnormal returns. Our results thus provide additional evidence on the impact of privatization from a different perspective.

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Table 1

This table shows the distribution of the sample of share issue privatizations and the rival firms by country and industry. The privatizations occurred between 1981 and 2000. The sample spans across 28 countries of which 57% are from developed capital markets and the remaining are from developing countries. The rival firms are from the same country and industry (2-SIC) as the privatized firms.

Country	No. of privatizations	No. of rivals
Panel A: Developed capital markets		
Australia	7	33
Austria	2	2
Canada	8	23
Finland	3	3
France	11	21
Germany	5	19
Israel	4	13
Italy	6	16
Japan	5	17
New Zealand	1	1
Spain	8	14
Sweden	1	3
UK	8	14
Sub-total	69	179
Panel B: Emerging capital markets		
China	8	20
Czech Republic	3	4
Egypt	1	1
Greece	3	18
Hungary	1	1
India	12	35
Indonesia	1	6
Malaysia	3	5
Peru	1	2
Poland	3	6
Portugal	5	7
Singapore	3	5
South Africa	1	1
South Korea	4	17
Taiwan	2	4
Turkey	1	3
Sub-total	52	135
TOTAL	*121*	*314*
Panel C: Non competitive		
Telecom	15	39
Banks	31	97
Utilities	3	9
Sub-total	49	145
Panel D: Competitive		
Energy/Resources	13	31
Manufacturing	48	117
Transport	9	19
Others	2	2
Sub-total	72	169
TOTAL	*121*	*314*

Table 2: Rival firms' reaction to privatization announcements

This table presents the daily and cumulative abnormal returns over different return intervals for a sample of 314 rivals of 121 firms that were privatized from 1981 to 2000. Abnormal returns are calculated using the market model parameter estimation of 200 days prior to day –21 relative to the announcement date. Each country's market index is used in the market model to calculate the regression parameters. The abnormal returns are cumulated over –20 to +20 interval. The percentage negative is the ratio of firms with negative abnormal returns to the total sample.

Day(s)	% Return	t-statistics	p-value	% negative
Panel A: Abnormal returns around the time of the privatization announcement (N=314)				
-10	-0.401	-1.84	0.067	58
-9	0.079	0.31	0.758	56
-8	-0.016	-0.05	0.956	52
-7	0.094	0.37	0.710	54
-6	0.009	0.04	0.971	53
-5	-0.031	-0.19	0.850	53
-4	0.024	0.13	0.895	52
-3	0.040	0.14	0.892	53
-2	-0.045	-0.19	0.846	57
-1	0.032	0.18	0.857	50
0	-0.540	-2.93	0.004	54
1	0.083	0.64	0.522	50
2	-0.100	-0.49	0.627	50
3	-0.056	-0.33	0.743	50
4	0.041	0.18	0.860	51
5	0.220	0.77	0.443	50
6	-0.221	-1.01	0.312	54
7	-0.091	-0.32	0.749	54
8	-0.365	-1.62	0.106	53
9	0.134	0.68	0.499	51
10	0.002	0.01	0.995	55
Panel B: Cumulative abnormal returns around the time of the announcement				
$CAR_{(-20,20)}$	-0.684	-0.52	0.602	52
$CAR_{(-10,10)}$	-1.108	-1.27	0.204	53
$CAR_{(-5,5)}$	-0.331	-0.58	0.563	53
$CAR_{(-2,2)}$	-0.570	-1.64	0.102	53
$CAR_{(-1,1)}$	-0.425	-1.72	0.086	53

Table 3: Rivals firms' differential reaction to privatization announcement in developed and developing capital markets

This table presents the daily and cumulative abnormal returns over different return interval for a sample of 314 rivals of 121 firms that were privatized from 1981 to 2000. About 57% of the rival firms are from developed capital markets while the remaining come from emerging markets. The classification of the sample into developed and developing sub-sample is based on the 'information rich' criteria used in Megginson, Nash, van Randenborgh (1994) and Boubakri and Cosset (1998). Abnormal returns are calculated using the market model. The regression parameters were estimated using 200 observations ending on day –21 relative to the announcement date. Each country's market index is used in the market model to calculate the regression parameters. The abnormal returns are cumulated over –20 to +20 interval. The percentage negative is the ratio of firms with negative abnormal returns to the total sample.

	Developed (N=179)			Developing (N=135)			Difference in means		
Day(s)	% Return	t-statistic	% negative	% Return	t-statistic	% negative	% Return	t-statistic	% negative
-5	0.210	0.86	49	-0.350	-1.75*	58	0.056	1.78	0.038
-4	0.050	0.19	51	-0.010	-0.04	53	0.061	0.17	0.434
-3	0.059	0.12	54	0.016	0.05	51	0.043	0.08	0.469
-2	0.209	0.56	54	-0.382	-1.87**	61	0.592	1.38	0.084
-1	0.206	0.76	49	-0.198	-0.96	51	0.405	1.18	0.119
0	-0.523	-1.93*	50	-0.563	-2.41**	59	0.040	0.11	0.455
1	0.046	0.27	52	0.132	0.65	47	-0.086	-0.33	0.372
2	-0.372	-1.35	54	0.261	0.86	46	-0.633	-1.54	0.062
3	0.186	0.88	47	-0.378	-1.35	53	0.564	1.60	0.055
4	-0.367	-1.38	55	0.581	1.44	46	-0.948	-1.96	0.026
5	0.331	0.76	49	0.073	0.22	50	0.258	0.47	0.319
$CAR_{(-20,20)}$	0.557	0.31	51	-2.329	-1.22	53	2.886	1.10	0.136
$CAR_{(-10,10)}$	-0.220	-0.17	50	-2.286	-2.16**	56	2.066	1.23	0.109
$CAR_{(-5,5)}$	0.037	0.05	54	-0.819	-1.00	52	0.856	0.75	0.227
$CAR_{(-2,2)}$	-0.433	-0.86	54	-0.751	-1.65*	52	0.318	0.47	0.320
$CAR_{(-1,1)}$	-0.271	-0.78	51	-0.630	-1.85*	56	0.359	0.74	0.231

***,**,* significant at 1%, 5% and 10% respectively

Table 4:Rival firm's differential reaction to privatization of firm in non competitive and competitive industries

This table presents the daily and cumulative abnormal returns over different return intervals for a sample of 314 rivals of 121 firms that were privatized from 1981 to 2000. Panel A shows the abnormal returns earned by rival firms in the competitive and non competitive sectors while Panel B indicates the differential reaction of rivals in the non-competitive sector. Firms classified as non-competitive are those that operate in the telecommunication, banking and utilities sectors while all others are classified as being in competitive industries. About 46% of the rivals are classified as operating in non-competitive sectors while the remaining come from competitive sectors. Abnormal returns are calculated using the market model. The regression parameters were estimated using 200 observations ending on day –21 relative to the announcement date. Each country's market index is used in the market model to calculate the regression parameters. The abnormal returns are cumulated over –20 to +20 interval. The percentage negative is the ratio of firms with negative abnormal returns to the total sample.

	Non-Competitive (N=145)			Competitive (N=169)			Difference In Means		
Day(s)	% Return	t-statistic	% negative	% Return	t-statistic	% negative	% Return	t-statistic	% negative
Panel A: Abnormal returns and cumulative abnormal returns around the time of the privatization announcement									
-5	0.079	0.26	55	-0.125	-0.76	51	0.204	0.60	0.275
-4	-0.172	-0.52	51	0.193	1.03	52	-0.365	-0.96	0.170
-3	0.436	0.74	52	-0.299	-1.36	54	0.734	1.17	0.123
-2	0.198	0.43	53	-0.253	-1.42	60	0.451	0.92	0.180
-1	0.070	0.23	50	0.003	0.001	50	0.071	0.19	0.424
0	-0.768	-2.39**	55	-0.344	-1.70*	52	-0.424	-1.12	0.132
1	0.169	0.81	45	0.009	0.05	54	0.161	0.61	0.271
2	-0.127	-0.38	51	-0.076	-0.30	50	-0.051	-0.12	0.452
3	-0.117	-0.41	49	-0.003	-0.02	50	-0.114	-0.32	0.373
4	0.002	0.00	52	0.074	0.35	51	-0.072	-0.15	0.441
5	0.018	0.03	52	0.394	1.39	48	-0.376	-0.63	0.265
$CAR_{(-20,20)}$	1.837	0.88	44	-2.847	-1.73*	59	4.683	1.77	0.039
$CAR_{(-10,10)}$	-0.912	-0.61	50	-1.276	-1.30	56	0.365	0.20	0.419
$CAR_{(-5,5)}$	-0.214	-0.22	54	-0.432	-0.66	52	0.218	0.19	0.427
$CAR_{(-2,2)}$	-0.458	-0.77	52	-0.665	-1.67*	54	0.207	0.29	0.386
$CAR_{(-1,1)}$	-0.529	-1.34	54	-0.336	-1.09	53	-0.193	-0.39	0.350

Panel B: Abnormal returns and cumulative abnormal returns around the time of the privatization in different non competitive industries

	BANKS (N=97)			TELECOM (N=39)			UTILITIES (N=9)		
Day(s)	% Return	t-statistic	% negative	% Return	t-statistic	% negative	% Return	t-statistic	% negative
-5	-0.268	-1.30	62	0.986	1.03	41	-0.118	-0.17	44
-4	-0.151	-0.58	57	-0.626	-0.64	41	1.567	0.92	33
-3	0.162	0.82	53	0.979	0.46	51	1.031	0.80	44
-2	-0.252	-1.34	59	1.769	1.11	36	-1.768	-1.35	67
-1	-0.051	-0.30	51	0.471	0.43	44	-0.360	-1.31	67
0	0.058	0.29	48	-2.650	-2.62**	67	-1.526	-1.57	78
1	0.014	0.06	48	0.498	0.97	41	0.414	0.97	22
2	0.106	0.42	49	-0.634	-0.59	51	-0.439	-1.03	67
3	-0.134	-0.50	51	-0.298	-0.38	44	0.845	0.68	56
4	0.464	0.96	47	-0.437	-0.52	56	-3.067	-1.03	78
5	-0.080	-0.20	49	0.024	0.01	62	1.046	1.40	33
$CAR_{(-20,20)}$	1.323	0.91	46	2.045	0.30	44	6.466	1.45	22
$CAR_{(-10,10)}$	-0.423	-0.45	52	-2.717	-0.54	46	1.645	0.58	44
$CAR_{(-5,5)}$	-0.133	-0.18	53	0.083	0.03	54	-2.375	-1.27	67
$CAR_{(-2,2)}$	-0.124	-0.28	52	-0.545	-0.29	46	-3.679	-2.02*	78
$CAR_{(-1,1)}$	0.022	0.07	53	-1.681	-1.37	51	-1.472	-1.20	78

***,**,* denotes significance at 1%, 5% and 10% respectively

Table 5: Degree of privatization and rivals firms' reaction

This table presents the daily and cumulative abnormal returns over different return interval for the rivals of firms that were privatized from 1981 to 2000. Panel A shows the reaction of rival firms to full and partial privatization while Panel B indicates the reaction of rivals to the first privatization and subsequent partial privatization announcements. Panel C also shows the reaction of the rival firms to different partial privatization announcements. Full privatization sample comprises the privatizations in which government ownership is completely eliminated and the privatized firm has complete autonomy. For partial privatizations, the government still has controlling shares in the firms. Abnormal returns are calculated using the market model. The regression parameters were estimated using 200 observations ending on day –21 relative to the announcement date. Each country's market index is used in the market model to calculate the regression parameters. The abnormal returns are cumulated over –20 to +20 interval. Percentage negative is the ratio of firms with negative abnormal returns to the total sample.

Panel A: Rival firms' reaction to full and partial privatization announcements

	FULL PRIVATIZATION (N=58)			PARTIAL PRIVATIZATION (N=99)			Difference in means		
Day(s)	% Return	t-statistics	% negative	% Return	t-statistics	% negative	% Return	t-statistics	p-value♦
-5	0.541	0.96	60	-0.575	-2.23**	56	1.116	1.80	0.038
-4	-0.535	-1.09	47	0.106	0.36	52	-0.641	-1.12	0.133
-3	-0.027	-0.02	59	0.165	0.57	55	-0.193	-0.14	0.445
-2	0.782	0.83	55	0.129	0.50	54	0.653	0.67	0.253
-1	-0.235	-0.63	53	-0.347	-1.43	57	0.112	0.25	0.401
0	-1.247	-1.86*	55	-0.431	-1.96**	58	-0.817	-1.16	0.125
1	0.128	0.38	47	0.885	3.46***	37	-0.757	-1.78	0.039
2	-0.266	-0.85	55	0.490	1.72*	52	-0.756	-1.78	0.039
3	0.171	0.45	45	-0.170	-0.63	57	0.341	0.73	0.234
4	-0.631	-1.33	60	-0.039	-0.14	57	-0.592	-1.07	0.144
5	1.167	1.06	48	0.360	1.45	44	0.807	0.72	0.238
$CAR_{(-20,20)}$	2.051	0.82	48	3.081	1.49	45	-1.030	-0.32	0.376
$CAR_{(-10,10)}$	-0.293	-0.11	50	-1.037	-0.79	54	0.744	0.25	0.403
$CAR_{(-5,5)}$	-0.153	-0.08	55	0.573	0.63	51	-0.726	-0.35	0.364
$CAR_{(-2,2)}$	-0.838	-0.99	53	0.727	1.51	40	-1.564	-1.61	0.055
$CAR_{(-1,1)}$	-1.354	-1.60	57	0.107	0.31	47	-1.462	-0.72	0.236

Panel B: Rival firms' reaction to first (full and initial) privatization and subsequent partial privatization announcements

	First (full and initial) Privatization			Subsequent Privatization			Difference in means		
Day(s)	% Return	t-statistic	% negative	% Return	t-statistic	% negative	Difference	t-statistic	p-value
-5	0.171	0.74	51	-0.11	-0.40	54	0.280	0.79	0.216
-4	-0.090	-0.30	50	-0.19	-0.75	52	0.102	0.26	0.399
-3	-0.156	-0.53	52	0.30	0.56	54	-0.456	-0.75	0.228
-2	-0.494	-1.41	61	0.41	1.06	55	-0.903	-1.73	0.042
-1	0.285	0.75	51	-0.19	-0.91	52	0.477	1.10	0.137
0	-0.361	-1.20	52	-0.70	-2.49**	56	0.344	0.83	0.203
1	-0.456	-2.22**	64	0.52	2.61**	43	-0.980	-3.41	0.000
2	-0.016	-0.04	46	0.23	1.06	54	-0.244	-0.51	0.307
3	-0.064	-0.24	47	-0.03	-0.12	54	-0.037	-0.10	0.458
4	0.374	0.81	49	-0.17	-0.68	57	0.543	1.04	0.150
5	0.143	0.23	52	0.36	0.95	47	-0.218	-0.30	0.383
$CAR_{(-20,20)}$	-0.672	-0.27	52	1.88	1.13	48	-2.552	-0.86	0.195
$CAR_{(-10,10)}$	-0.156	-0.10	53	-0.87	-0.68	51	0.717	0.36	0.361
$CAR_{(-5,5)}$	-0.665	-0.80	54	0.43	0.47	52	-1.091	-0.89	0.187
$CAR_{(-2,2)}$	-1.043	-1.50	60	0.26	0.61	47	-1.305	-1.59	0.056
$CAR_{(-1,1)}$	-0.533	-1.36	60	-0.37	-0.99	51	-0.159	-0.29	0.386

♦ These are one-tail test. ***,**,* denotes significance at 1%, 5% and 10% respectively

Panel C: Rival firms' differential reaction to partial privatizations involving different degrees of government ownership ¨

	Initial Privatization (N=91)			Second Privatization (N=66)			Third Privatization (N=18)			Fourth Privatization (N=9)			Final Privatization (N=44)		
Day(s)	% Return	t-statistic	% -	% Return	t-statistic	% -	% Return	t-statistic	% -	% Return	t-statistic	% -	% Return	t-statistic	% -
-5	0.133	0.56	49	-0.386	-1.32	53	-0.646	-1.00	61	-2.461	-2.06*	67	0.588	0.83	59
-4	-0.189	-0.57	54	0.498	1.42	48	-1.329	-2.03**	61	-0.275	-0.19	44	-0.883	-1.47	52
-3	0.150	0.49	49	0.097	0.27	56	0.263	0.37	56	0.622	0.62	33	0.648	0.37	55
-2	-0.583	-1.52	59	-0.087	-0.31	58	-0.442	-0.64	56	2.687	2.57**	22	0.981	0.80	52
-1	0.368	0.85	49	-0.483	-1.70*	56	-0.809	-1.54	67	1.584	1.34	11	-0.200	-0.42	50
0	-0.399	-1.22	53	-0.129	-0.44	52	-0.177	-0.38	50	-2.368	-4.24***	89	-1.591	-1.87*	57
1	-0.500	-2.54**	66	0.935	2.86***	35	1.448	1.87*	39	0.165	0.27	56	0.159	0.44	45
2	0.004	0.01	44	0.184	0.63	52	1.511	1.34	50	0.547	1.00	56	-0.161	-0.44	52
3	-0.023	-0.08	48	0.084	0.31	53	-0.268	-0.34	61	-0.835	-0.43	78	0.265	0.56	48
4	0.656	1.29	45	0.013	0.04	50	-0.339	-0.82	61	0.777	0.46	78	-0.404	-0.70	57
5	-0.234	-0.39	55	0.154	0.61	44	0.628	1.17	33	1.702	0.98	56	0.722	0.60	52
$CAR_{(-20,20)}$	-0.592	-0.22	51	3.654	1.38	42	5.238	1.17	44	-0.426	-0.05	56	2.828	0.96	45
$CAR_{(-10,10)}$	0.199	0.12	48	-0.069	-0.04	52	-0.510	-0.14	50	-3.993	-0.60	56	0.346	0.10	41
$CAR_{(-5,5)}$	-0.617	-0.67	53	0.882	0.90	50	-0.160	-0.07	56	2.146	0.34	56	0.124	0.05	52
$CAR_{(-2,2)}$	-1.110	-1.44	62	0.421	0.65	44	1.531	1.23	39	2.615	1.61	22	-0.812	-0.80	55
$CAR_{(-1,1)}$	-0.531	-1.29	59	0.324	0.69	45	0.462	0.53	39	-0.618	-0.43	56	-1.632	-1.55	57

***,**,* denotes significance at 1%, 5% and 10% respectively

Table 6

Privatized firms' returns following the initial privatization and subsequent partial privatizations

This table presents the daily and cumulative abnormal returns over different return interval for the privatized firms following the initial privatization and all subsequent privatization announcements. The raw returns are calculated as the change in the stock price of the privatized firms after the initial public offering. For subsequent privatization, we use the market model to calculate the abnormal returns. Abnormal returns are calculated using the market model. The regression parameters were estimated using 200 observations ending on day –21 relative to the announcement date. Each country's market index is used in the market model to calculate the regression parameters. The abnormal returns are cumulated over –20 to +20 interval. For both the initial and subsequent privatizations, we calculate the industry-adjusted returns for the privatized firms as the difference between the returns of each privatized firm and the returns on an equally weighted portfolio of rivals of the privatized firm. The percentage positive is the ratio of firms with positive abnormal returns to the total sample.

	Initial Privatization (N=27)					Subsequent Privatization (N=36)			
	Raw returns		Industry adjusted returns			Market Model returns		Industry adjusted returns	
Day(s)	% Return	% positive	% Return	% positive	Day(s)	% Return	% positive	% Return	% positive
					-5	-0.13	42	-0.16	53
					-4	-0.17	58	0.02	50
					-3	-0.09	50	0.01	53
					-2	-0.86***	28	0.14	42
					-1	-0.11	33	-0.19	39
					0	-0.36	39	-0.71	39
1	0.99	56	1.97	59	1	0.21	53	0.98***	61
2	0.99	48	0.96	48	2	0.27	47	0.62	47
3	-0.77	30	-1.01*	37	3	0.05	44	0.25	47
4	0.14	44	-0.05	56	4	0.23	47	-0.02	50
5	0.39	63	-0.13	59	5	0.40	47	0.25	47
$CAR_{(1,10)}$	2.15	70	2.91	63					
$CAR_{(1,20)}$	3.35	70	1.14	5 6	$CAR_{(-20,20)}$	-4.29	44	3.16	58
$CAR_{(1,30)}$	6.86*	67	3.00	52	$CAR_{(-10,10)}$	-1.41	42	0.43	42
$CAR_{(1,40)}$	8.08**	67	0.06	63	$CAR_{(-5,5)}$	-0.57	39	1.19	53
$CAR_{(1,50)}$	9.11**	67	-1.69	59	$CAR_{(-2,2)}$	-0.85	42	0.83	56
$CAR_{(1,60)}$	8.43*	74	-3.53	63	$CAR_{(-1,1)}$	-0.26	42	0.07	56

***,**,* denotes significance at 1%, 5% and 10% respectively

Table: 7: Regression Results

This table presents the result of the regression that shows whether the rival firms' reaction to the privatization announcements is due to fund managers portfolio rebalancing activity. For the initial privatization announcement we run the following regression:

$$CAR_{(t1,t2)\ privatized} = a_i + b_i\ AR_{(0)\ rival} + e_i$$

where the dependant variable is the post listing abnormal returns of the privatized firm and the independent variable is the rival firms' abnormal returns on the announcement date. For subsequent privatization announcement, we run the following regression:

$$CAR_{(t1,t2)\ privatized} = a_i + b_i\ CAR_{(t1,t2)\ rivals} + e_i$$

where the dependent variable is a symmetric event window abnormal return of the privatized firm and the independent variable is the rival firms' symmetric event window returns.

Dependent	Full Sample					Developed capital markets					Emerging Capital Markets				
			p-value					p-value					p-value		
Variable	*a*	*b*	*b = -1*	*b = 0*	R^2	*a*	*b*	*b = -1*	*b= 0*	R^2	*a*	*b*	*b = -1*	*b= 0*	R^2
Panel A: Initial Privatization															
$CAR_{(1,5)}$	0.02	0.11	0.17	0.86	0.00	0.03	0.19	0.27	0.80	0.00	-0.01	-0.07	0.33	0.95	0.00
$CAR_{(1,10)}$	0.02	-0.49	0.07*	0.54	0.02	0.02	-0.19	0.15	0.82	0.00	-0.003	-1.85	0.11	0.29	0.16
$CAR_{(1,20)}$	0.03	0.003	0.35	0.98	0.00	0.05	0.36	0.57	0.75	0.01	0.00	-0.73	0.42	0.73	0.02
$CAR_{(1,30)}$	0.07*	0.62	0.80	0.69	0.01	0.08	1.52	0.83	0.32	0.06	0.07	-0.96	0.56	0.77	0.01
$CAR_{(1,40)}$	0.07	-1.23	0.17	0.44	0.02	0.07	0.08	0.58	0.96	0.00	0.05	-4.52	0.08	0.15	0.28
$CAR_{(1,50)}$	0.07	-1.92	0.09*	0.26	0.05	0.07	-0.53	0.37	0.75	0.01	0.07	-5.21	0.09	0.15	0.27
$CAR_{(1,60)}$	0.06	-1.84	0.12	0.31	0.04	0.07	-0.50	0.44	0.79	0.00	0.05	-6.22	0.04	0.08*	0.38
Panel B: Subsequent Privatization															
$CAR_{(-20,20)}$	-0.03	-0.36	0.00***	0.18	0.06	-0.06	-0.46	0.00***	.103	0.12	0.02	0.23	0.30	0.75	0.02
$CAR_{(-10,10)}$	0.01	-0.34	0.00***	0.10*	0.08	-0.03	-0.22	0.00***	0.24	0.06	0.03	-1.22	0.05**	0.26	0.18
$CAR_{(-5,5)}$	-0.01	0.18	0.00***	0.48	0.02	-0.03*	0.14	0.00***	0.41	0.03	0.05	0.44	0.71	0.77	0.01
$CAR_{(-2,2)}$	-0.01	0.22	0.01***	0.42	0.02	-0.02	0.26	0.00***	0.24	0.06	0.06	-2.33	0.16	0.31	0.15
$CAR_{(-1,1)}$	-0.002	0.14	0.00***	0.56	0.01	-0.01	0.39	0.03**	0.14	0.10	0.01	-1.80	0.00*	0.00***	0.72
$AR_{(0)}$	-0.004	-0.05	0.00***	0.79	0.00	-0.01	-0.01	0.00***	0.95	0.00	-0.00	-0.88	0.08*	0.39	0.11
$CAR_{(1,5)}$	0.01	-0.08	0.00***	0.70	0.01	-0.00	-0.07	0.00***	0.54	0.02	0.08	-0.73	0.25	0.62	0.04
$CAR_{(1,10)}$	0.01	-0.39	0.00***	0.11	0.08	-0.00	-0.31	0.00***	0.10*	0.12	0.05	-0.40	0.33	0.78	0.01
$CAR_{(1,20)}$	0.01	-0.21	0.00***	0.44	0.02	-0.02	-0.28	0.00***	0.31	0.05	0.07	0.28	0.40	0.74	0.02
$CAR_{(1,30)}$	-0.03	-0.01	0.00***	0.99	0.00	-0.07	-0.16	0.01***	0.62	0.01	0.01	1.56	0.50	0.09*	0.35
$CAR_{(1,40)}$	-0.03	-0.10	0.00***	0.74	0.00	-0.06	-0.31	0.00***	0.37	0.04	0.03	1.23	0.77	0.14	0.28
$CAR_{(1,50)}$	-0.02	0.03	0.01***	0.92	0.00	-0.08	-0.08	0.01***	0.83	0.00	0.11	1.24	0.82	0.27	0.17
$CAR_{(1,60)}$	-0.05	-0.16	0.00***	0.59	0.01	-0.10	-0.13	0.00***	0.68	0.01	0.09	-0.10	0.29	0.92	0.00

***, **, * denotes significance at 1%, 5% and 10% respectively

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MGMT *Corporate Sustainable Management* (Editor: Andrea Marsanich)

PRIV *Privatisation, Regulation, Antitrust* (Editor: Bernardo Bortolotti)

ETA *Economic Theory and Applications* (Editor: Carlo Carraro)