Block Trades and the Benefits of Control in Slovenia

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Abstract

While large blockholders characterize the governance systems in most Central and Eastern European countries, Slovenian corporate governance is still somehow shaped by the insider-outsider conflict with none of the outside shareholders being strong enough to exercise active control. However, there has been evidence of change since the voting rights have been concentrating in the hands of domestic and foreign non-financial companies and financial holdings. Our study reports no convincing evidence on the positive influence of the new blockholders on the firms' value (shared benefits of control), except for the acquisitions of blocks by the non-financial firms of the same industry (potential bidders). Nevertheless, the relatively high premiums paid for share blocks (private benefits of control), the large public skepticism on the role of the blockholders and, most importantly, the low liquidity and the lack of transparency of corporate transactions call for an improvement in the minority investors' protection in Slovenia. It seems that, despite the starting insider-outsider conflict characterising the governance of Slovenian firms, the main challenge in the governance of these corporations is becoming the protection of minority investors against the expropriation by 'those in control'.

Keywords: corporate governance, block trades, ownership, control, benefits of control

JEL Classifications: G32, G34

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1. Introduction

Empirical studies show that ownership and control in Central and Eastern European (CEE) countries are becoming increasingly concentrated through the emergence of corporate groupings and significant foreign owners in most countries, namely the insider corporate governance system (Berglof and Pajuste, 2003). These newly evolving ownership structures and distribution of control are set to determine the importance of each corporate governance mechanism and, in turn, to influence the agency problem (Berglof and Pajuste, 2003). Unlike firms with dispersed ownership where the main corporate governance problem still involves 'strong managers and weak owners', firms that have concentrated voting rights are characterised by the conflict between the controlling owners and the minority investors.[2]

The ownership and control structure of Slovenian public limited companies (PLC) currently distinguishes Slovenian corporate governance from the other CEE countries. While the largest shareholders in these countries hold on average at least the majority of voting rights, the size of the largest voting block in Slovenia is still below 35 percent, while half of the companies in the capital market do not have an owner holding more than 25 percent of the voting rights. On the other hand, about 20-25 percent of the shares are dispersed among the internal owners (employees, former employees, relatives) that often represent hidden support of Slovenian managers.[3] At the same time, large blocks are dispersed among many (from 3 to 7) large blockholders, namely non-financial companies, and the funds arising out of Slovenia's ownership transformation (state-controlled funds and privatisation investment funds). Corporate governance in Slovenia is therefore characterised by the conflict between the inside and outside owners (see Prasnikar and Gregoric, 2002).

However, there is evidence that Slovenian blockholders have started concentrating their ownership and consolidating their power, especially in the last two to three years. For a sample of 112 non-financial companies listed on the Ljubljana Stock Exchange (official and free markets), Gregoric (2003) reports an average increase of the largest voting block by 10.32 percentage points in the 1999-2002 period. While the state-controlled funds have been slowly withdrawing from firms, there is clear evidence of the concentration of power in the hands of privatisation investment funds[4] (or the financial holdings resulting from the transformation of PIFs into normal joint-stock companies), domestic and foreign non-financial companies.[5] With a slight increase in managerial ownership there seems to be a corresponding drop in the employees' ownership. For firms listed on the Slovenian capital market,

[2] For more on the differences in the ownership and control structures in Europe and on the emerging biases, see Becht and Mayer, 2001.
[3] Empirical analysis of the shareholders' general meeting of 35 large Slovenian companies confirms that managers obtain votes from inside owners through the organised gathering of proxies (Gregoric, 2003).
[4] Hereinafter: PIFs.

Simoneti et al. (2001) reported a decline in inside ownership by 6.5 percentage points, while the ownership by firms' managers increased by 1.45 percentage points.[6] All these changes might substantially alter the allocation of control over Slovenian companies, change the incentives and re-define the agency problem.

On one hand, the consolidation of control provides companies with active owners willing to monitor firms' managers; given their large stakes, the benefits of a firm's improved performance likely offset the costs of its monitoring. Minority investors consequently free ride on the blockholders' efforts and share the benefits; in the corporate governance theory, these benefits are referred to as the 'shared benefits of control'. However, by holding on to control large shareholders gain the chance to expropriate corporate funds themselves. In the absence of efficient protection of minority investors and transparency of corporate actions, controlling shareholders can make decisions for their own benefit and at the expense of the minority shareholders; they might even end up expropriating corporate funds. The possibility to extract these so-called 'private benefits of control' is in fact believed to be one of the main reasons for the existence of share blocks in the world.

The empirical studies on the shared and private benefits of control mostly deal with transfers of control in developed capital markets. Except for a few studies (Trojanowski, 2002; Atanasov, 2000), little research has been done on this issue in emerging stock markets. The aim of our paper is to evaluate the shared and private benefits of control against the background of an analysis of trading in share blocks in the Slovenian capital market in 2000 and 2001. Thus, our research provides further evidence of the current consolidation and changes in the control of Slovenian corporations. Although a block trade does not necessarily result in the concentration of ownership, it certainly causes a change in the identity of a large owner and, hence, a change in a firm's control. Moreover, in countries where takeovers are less frequent block trades act as a substitute for the market of corporate control. Then, stock price reactions to block trades should reflect the 'shared benefits of control', while the premium paid for the blocks measures the value block buyers attribute to control, namely the 'private benefits of control' (Barclay and Holderness, 1989).

Our findings show that block trades in Slovenia have a significantly positive effect on stock prices, starting from about 10 days before the event. However, this effect is only temporary and, in most cases, is reabsorbed within 20 days of the trade. Moreover, the fact that large blocks trade at relatively high premiums and that the premiums increase with the percentage of shares transferred in the block

[5] In 2001, foreign investments in Slovenian securities were eight times larger than in 2000. However, foreigners mostly acquired shares off the official market, while the takeover of one of the Slovenian blue chips (the pharmaceutical company Lek d.d.) largely influenced the activity of the official market in 2002.

[6] Actually, inside ownership in other transition countries has been following a similar trend; employees have been mostly selling their shares because they need to realise capital gains to purchase consumer goods or simply because they do not feel that their ownership confers them significant control (Wright et al., 2002).

and with the power index of the block buyer show that Slovenian blockholders do expect to gain some private benefits from holding control in Slovenian corporations.

The paper is structured as follows. Section 2 overviews some of the main characteristics of the Slovenian capital market. The analysis of market reactions to changes in control and consequently of the shared benefits of control, as assessed through a standard event study methodology, is presented in Section 3. The fourth section involves an empirical analysis of the private benefits of control in Slovenia. Section 5 concludes and points to some issues for further research.

2. Characteristics of Slovenia's capital market

Trading in Slovenian securities takes place in the organised and free markets of the Ljubljana Stock Exchange with 270 securities (176 shares and 76 bonds) of 220 issuers (as at 31 December, 2001) listed on the two markets. Most shares (128) arose out of ownership transformation, 28 are non-privatisation shares and 38 are shares issued by PIFs. Market capitalisation has been increasing since 1991 mainly due to new share issuers entering the market.[7] Still, it hardly exceeds 20 percent of Slovenia's GDP (excluding PIFs' shares).[8]

Table 1: Number of share issuers and shares listed in the official and free markets of the Ljubljana Stock Exchange in 1998-2001.

	1998	1999	2000	2001
Share issuers	120	176	193	189
Shares total	122	180	198	194
Privatisation shares	73	115	132	128
PIFs' shares	30	46	44	38
Non-privatisation shares	19	19	22	28

Source: Financial markets, Bank of Slovenia, April 2002, page 13.

Table 2: Market capitalisation: shares in the official and free markets (excluding PIFs' shares).

Years	Market Capitalis. SIT Million	Market Capitalis. %GDP
1991	5,943	-
1992	2,537	-
1993	18,593	-
1994	31,384	1.7
1995	40,477	1.8
1996	124,990	4.9
1997	315,945	10.9
1998	483,037	15.3
1999	566,462	
2000	705,090	19.39
2001	973,200	21.3

Sources: Kleindienst, R., in Mramor, D. (ed.), *Trg kapitala v Sloveniji*, 2000; Bank of Slovenia, Financial Markets, 2000, 2001, Ljubljana Stock Exchange Annual Report, 2000, 2001.

[7] For more, see Deželan et al., 2001.
[8] With the shares of privatisation investment funds and bonds, the share capitalisation in 2001 rose to up to 30% of Slovenian GDP, that is 21.2% more than in 2000 (Financial Markets, 2001).

The Slovenian capital market is not only small but it also lacks liquidity. Together with Estonia, Slovenia has the lowest turnover ratio with respect not only to other EU countries but also to CEE countries (Deželan et al., 2000:40).[9] In 2001, it turned over about 25 percent of its capitalisation with 40 percent of the turnover being generated by the five most liquid companies (*'Pivovarna Union d.d.'*, *'Krka d.d.'*, *'Lek d.d.'*, *'BTC d.d.'*, *'Pivovarna Laško d.d.'*); these companies represented 31 percent of total market capitalisation. The official market contributed about 67 percent of market turnover, 23 percent more than in 2000. Trading of shares also takes place off the market, in the so-called black market (in 2001, the latter represented about 40.5% of the total turnover of the Ljubljana Stock Exchange). Despite the size of trades made off the market, the Central Securities Clearing Corporation only officially introduced trading over the counter (OTC) in December 2001.

Table 3: Turnover velocity of shares listed in the official market of the Ljubljana Stock Exchange.

Year	1995	1996	1997	1998	1999	2000	2001
Turnover ratio*	0.69	0.46	0.25	0.23	0.28	0.23	0.251

*Turnover in year t /market capitalisation at the end of year t

Source: Financial Markets, 2002.

Most changes in ownership and control take place via trading in blocks, namely through trades of share stakes of a value exceeding SIT 30 million (approximately EUR 130,000).[10] As such, block trades generate half of the market turnover; the 30 percent increase over 2000 in turnover seen in 2001 was, in fact, primarily due to ongoing changes of control effected through trades of blocks.[11] However, in evaluating the private and shared benefits of control we only consider blocks that transfer between 5 and 25 percent of a firm's voting rights. First, as in Dyck and Zingales (2001) and Barclay and Holderness (1989) we only refer to block trades that were not part of any takeover bid since a takeover bid legally requires the equal treatment of all shareholders of the target company; the general obligation of a public bid in Slovenia applies at the 25 percent threshold. Further, like in Barclay and Holderness (1989) we only analyse blocks involving at least 5 percent of a firm's stock. In any case, these blocks should already transfer some control since a 5-percent voting block normally provides its owner with a seat on Slovenian supervisory boards (Prasnikar et al., 2000).

[9] Deželan et al. (2000) find that one of the main reasons for the low liquidity is the absence of so-called 'market makers', namely the underdeveloped investment banking and lack of information about the shares and their issuers which could enable the efficient functioning of the 'market making' system. Moreover, the relatively low liquidity of firms' stock is also due to the large percentage of shares tied up in blocks. Slovenian listed companies in fact have normally many large owners (state-controlled funds, PIFs) that, as argued by Bolton and Von Thadden (1998), destroy liquidity but contribute nothing to control.

[10] Official definition of the Ljubljana Stock Exchange.

[11] In the 247 trading days, the Stock Exchange Members concluded on average 1,296 transactions, among which more than 50 percent can be attributed to block trades.

3. Block trades and the shared benefits of control

3.1 Existing empirical evidence and hypotheses

Empirical evidence on price movements relative to transfers of majority or partial control shows that when these movements are positive and prices stay above the market for a long period after a trade they reflect an improvement in the firm's governance as anticipated by the minority shareholders. If this is the case, minority shareholders benefit from the change in the identity of their blockholder, and block trades are actually positive corporate events. New blockholders can in fact bring in more efficient managerial or monitoring skills; they might provide synergies in research, development and production as well as new incentives to increase the firm's value.[12] Hence, we also expect that in Slovenia:

Hypothesis 1 (H1): ***Block trades are followed by positive abnormal stock returns reflecting the shared benefits of control.***

These so-called 'shared benefits of a change in control' are not homogeneous but instead depend on the identity of the buyer, the size of the block transferred, and the firm and country-specific characteristics (Barclay and Holderness, 1991,1992; Banerjee et al., 1998; Trojanowski, 2002). On the other hand, price increases may result from a change in expectations which are simply never fulfilled (Banerjee et al., 1998). Alternatively, these increases might be due to investors' expectations of a subsequent takeover, namely a change in the price of their votes when the change in the ownership structure resulting from a block trade is such that it facilitates the takeover and alters the expectations of a contested acquisition. In this case, minority investors get a fraction of the private benefits of control that is incorporated in the abnormal stock returns and reflects the increase in the value of vote (Zingales, 1995:1049). Thus:

Hypothesis 2 (H2): ***Stock price reactions are stronger when blocks are acquired by strategic investors or when their purchase precedes a subsequent take-over.***

Existing empirical studies actually show that block trades are associated with significant abnormal price movements. Consistently with H1, for 31 transfers of majority control blocks[13] Holderness and Sheehan (1988) reported abnormal stock price increases of 7.3 percent over the day of the announcement of a block trade and cumulative abnormal stock price increases of 12.8 percent over a

[12] For instance, trades of blocks as small as 10-15 percent in the USA are followed by extensive managerial turnover (Barclay and Holderness, 1991).

30-day period (-20,+10). In a later analysis (1991,1992) involving 106 blocks of at least 5 percent of US stocks, Barclay and Holderness observed an average 18-month (-6 months, +1 year) cumulative abnormal return of 37.6 percent for those companies acquired within one year after the block trade (Hypothesis 2) and an average cumulative abnormal return of 15.7 percent for those companies that remained independent. Similarly, Banerjee et al. (1997) reported a 6.18[14] percent mean cumulative abnormal return in the (-30, +1) days around the acquisitions of partial control blocks by non-holding companies in France[15]. Over a 60-day period around the trades (–30, + 30), abnormal returns remained at the 2.97 percent level, while negative (-1.02%) and statistically insignificant returns over the (-30, +1) period were reported for blocks purchased by French holding companies (Banerjee et al., 1997:35). Block trades seem to accrue no abnormal returns to minority shareholders in Germany. Franks and Mayer (2000) reported a median abnormal return of –0.69 percent (1.45%) to the non-selling shareholders over the one week (month) prior to and including the announcement date. Franks and Mayer (2000) found the reasoning for the zero abnormal returns lying in the significant discrimination of German minority shareholders and the limited disciplining role of these trades.[16]

With reference to CEE countries, Trojanowski (2002) provides some insights into market reactions to acquisitions of 53 blocks of an average size of 12.35 percent in Poland. All companies whose stock was traded remained independent within 90 days of the deal. The market seems to anticipate block trades as there is evidence of positive abnormal returns 3-4 weeks before a block trade. A further upward jump on the announcement of a block transaction is followed by a decline in abnormal returns within two months of the deal. The increase in stock value is more favourable when a block is acquired by a strategic investor and/or when the latter gains a controlling position that cannot be challenged by minority investors.

We ascertain the influence of block trades on non-selling shareholders' returns in Slovenia by applying the standard-event-study analysis. In principle, this methodology measures the impact on a firm's value of a certain event when it becomes public knowledge[17], and is widely used to study price reactions to major corporate events (as in Barclay and Holderness, 1989, 1991, 1992; Banerjee et al., 1997; Franks and Mayer, 2000; Trojanowski, 2002). Assuming that markets are semi-efficient and reflect all publicly available information, price changes should provide an unbiased assessment of the economic effect of the event on the target company (Banerjee et al., 1997:3).

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[13] These trades refer to a sample of 114 companies with a majority owner, listed on the NYSE or AMEX in the period 1978-1982. The companies constitute about 5% of the companies listed on the NYSE and AMEX. Abnormal returns are estimated by using the event study methodology.

[14] In particular, abnormal returns exceed 8.8% for companies that were subsequently taken over.

[15] The sample includes 122 block trades of a medium size of 11.3%.

[16] There is no correlation between the supervisory/management board turnover after the trades and the performance of the firms that are subject to these trades (Franks and Mayer, 2000).

[17] Indirectly, the event study might be used as a test of semi-efficiency of capital markets (for more, see Bowman, 1983; Shleifer, 2000).

3.2 Data collection and methodology

Our empirical analysis involves blocks traded on the Ljubljana Stock Exchange in 2000 and 2001 and is limited to partial control transfers, namely to blocks carrying between 5 and 25 percent of voting rights. Three are the main reasons for this. First, most empirical studies focus on trades of blocks of at least 5 percent as they are believed to provide their owners with enough power to actively influence the conduct of the firm's affairs (Barclay and Holderness, 1991). This also seems to be the case in Slovenia since 5 percent ownership (voting) stakes normally ensure a seat on a firm's supervisory board (Prasnikar, Ferligoj and Pahor, 2000). Second, the Slovenian Takeovers Act (1997) requires any individual or legal person to report on the acquisition or disposal of any 5 percent voting stake of a listed company (or the acquisition/disposal of a further 5%) and refers to these stakes as beneficial holdings. Third, any acquisition of shares that, together with other shares, provides the buyer with 25 percent of the voting rights of a listed company is subject to a takeover bid. This determines the upper size of the blocks in our analysis. Any block trade within an outstanding tender offer has to be excluded from the analysis since the tender offer legally requires the equal treatment of shareholders (Barclay and Holderness, 1991, 1992).

Information on the size and date of block trades was downloaded from the trading archive of the Business Review '*Gospodarski vestnik*' (http://www.gvin.com). We checked the accuracy of these figures by comparing them with those reported by the Ljubljana Stock Exchange (http://www.ljse.si). Stock prices and stock index values are those reported by the newspaper *Finance* (http://www.finance-on.net)[18]. The parties involved in block trades were identified on the basis of articles from *Finance* and the Shareholders' Register (when available[19]) of the Central Clearing Deposit House. We obtained data on takeover bids in 1999-2002 from the Securities Market Agency[20]. Information regarding the listing of companies, the number of shares outstanding and the constitution of stock indexes was downloaded from the web pages of the Ljubljana Stock Exchange.

As stated above, we studied the effects of block trades on stock returns by performing an event-study analysis. Hence, we specified the following elements: the event and timing of the event, the benchmark model for normal stock return behaviour (including a selection of the market index), the estimation procedure (estimation period and event window) and the testing procedure.[21]

[18] The Ljubljana Stock Exchange provides only the historical average daily stock prices for the stock listed on the official and free market, but no closing price. The latter can be downloaded from the archive of the newspaper *Finance* that reports the average, closing, min, max price as well as the trading volume for the days a stock was actually traded (trading days).

19 We only had access to the ownership data on 31 January 1998, 31 July 1999, 31 January 2000, 31 May 2001 and 13 April 2002.

[20] We would like to thank Mr. Gregor Sluga from the Slovenian Securities Market Agency for providing us with the data.

In most US event-studies, the day on which the block trade is announced in the Wall Street Journal is taken as the event day (see, for example, Barclay and Holderness, 1992). In Slovenia, every block trade has to be reported to the Stock Exchange on the day itself, if settled at least half an hour before the closure of the Stock Exchange, otherwise on the first day after the trade. The Stock Exchange publishes information on block trades at its web site within 30 minutes of the receipt of the notification. Further, information on block trades is provided by the newspaper *Finance* and the daily newspaper *Delo* on the first day following the trade. Thus, we refer to the first trading day following the trade as the event day.

The equilibrium models chosen for calculating normal stock returns are the market model and the market-adjusted model. The latter is a restricted model, particularly appropriate in the analysis of events for which the limited availability of data prevents an accurate estimate of the coefficients; given the presence of missing returns, this might also be the case in our study.

The choice of the market index depends in practice on data availability and involves selecting either a published value-weighted index or an equally weighted arithmetic average index of equity securities (Strong, 1992: 539). In our study, the market index for stocks traded on the official market is the 'SBI20' index, while we use the 'IPT' index for shares traded on the free market. Both are value-weighted indexes and include the main and most liquid listed firms[22]. Returns are daily returns calculated on the basis of the closing price of the stock[23]. On one hand, the use of daily returns complicated our analysis mostly because some shares do not trade every day (missing returns) and the fact that daily returns depart more from normality than monthly returns. On the other hand, in order to capture fully the effect of the event on stock prices within the month around the block trade it seemed more appropriate. Other studies on block trades rely on daily data. Further, Brown and Warner (1984) confirmed that the non-normality of daily returns has no obvious impact on event-study methodologies, while the power of the latter is much greater with daily than with monthly data (Brown and Warner, 1984:25).

The market model coefficients α and β are estimated over a 200-day period starting 280 days and ending 80 days prior to the event. This 'estimation period' is chosen on the basis of other studies on block trades and on the length of our historical stock price series. The abnormal returns are measured as prediction errors over the 'event window', that is to say the period around the event over which stock returns are examined. To take into account the low level of efficiency of Slovenia's capital

[21] For more on event studies, see Campbell J. Y., Lo A. W. and MacKinlay A. C. (1997), 'The Econometrics of Financial Markets'.
[22] We chose the SBI20 although the Ljubljana Stock Exchange publishes also the non-weighted official market index, in order to provide consistency with the IPT index, which is calculated on the basis of the SBI20 methodology.

market (for more, see Dezelan, 1999) and the slow incorporation of the announcement in stock prices (Banerjee et al., 1997:30), we extend the event window from 20 days prior to 20 days after the event. Our main problem in the computation of the abnormal returns was the low liquidity of Slovenian stocks since most shares do not trade every day. Hence, in the estimation period if a stock is not traded on a certain day that day is passed over for the stock and the market return. A stock is included in the analysis if it has at least 40 non-missing returns in the 200-day estimation period. This choice follows Brown and Warner (1984) and the 'Eventus'[24]. In the event window, any non-trading day of a singular stock is converted to its next trading day. The abnormal returns are then adjusted to take into account the multi-day character of the returns by using the 'Eventus' procedure. In order to correct for the differences in stock return variance and to release the strong assumption of cross-sectional homoscedasticity (De Jong, 1996:7), we use standardised abnormal returns. The statistical significance of the abnormal returns is assessed by applying three different tests: the standardised abnormal return test, the t-test using cross-sectional variance estimator and the rank test (the formulas relative to the abnormal returns and statistical tests used are given in the Appendix).

3.3 Empirical results

The empirical results refer to 15 block trades of shares taking place in 2000 and 2001 on the official and free markets of the Ljubljana Stock Exchange. These trades on average transferred 9.7 percent of the related voting rights (median value 7.5%)[25] and refer to 15 non-financial listed companies. The small size of the sample is mostly due to the fact that many of the stocks involved in block trades over the two years considered do not have the required minimum number of 40 non-missing daily returns in the estimation period. We further excluded block transactions that were part of a tender bid or a management buy-out (as in Barclay and Holderness, 1991), trades of shares of the same company that occurred too close to be successfully distinguished one from the other, block exchanges between privatisation investment funds and their management companies and trades between other somehow connected companies that do not involve any real transfer of control.

We tried to provide evidence of the robustness of our results by replicating the event study on different sub-samples of securities: a) the complete sample (15 events); b) the sample comprising the stocks included in the market indexes SBI20 and IPT (6 events); c) the sample comprising the firms that were

[23] There is one exception. If the block trade was also the last deal of the day, the average daily price instead of the closing price (which in this case is the price of the block) was used in the calculation of the daily returns.

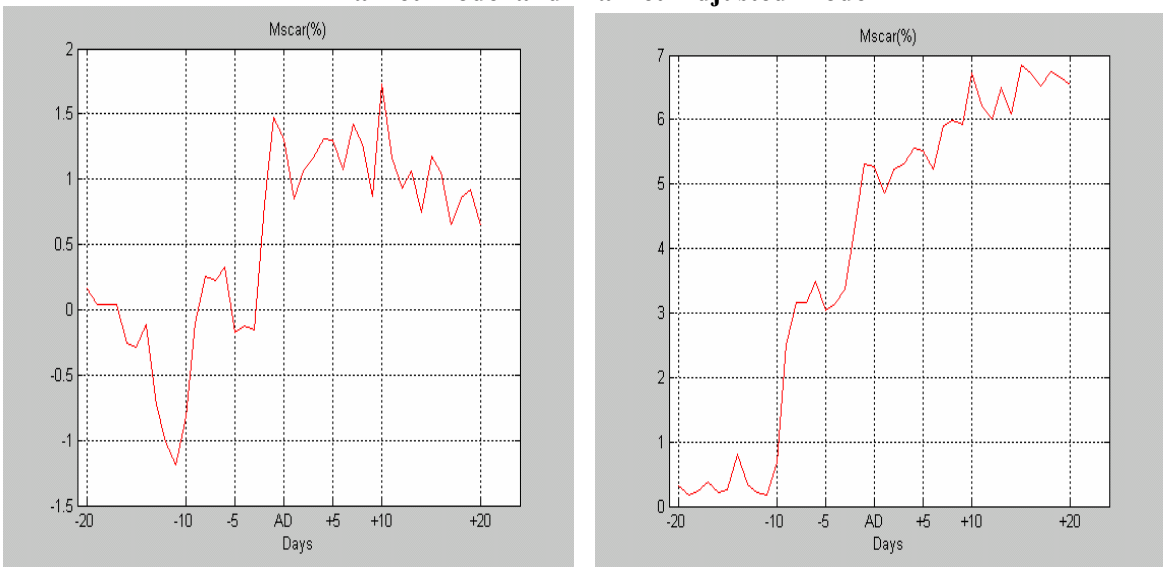
[24] 'Eventus' is the registered trademark for the software used for conducting event studies, produced by Cowan Research L.C. In our study, we did not make use of the programme but only consulted its technical reference downloaded from the web site http://www.eventstudy.com.

[25] These percentages are lower than those reported by Barclay and Holderness, but quite similar to the block transactions analysed by Trojanowski (average size of 12.35%) and Banerjee et al. (average size 11%). There are, however, event studies that involve large dollar, but small percentage, block trades (for example, Holthausen, Leftwich and Mayers, 1987).

taken over within 6 months of a trade (3 observations); d) the sample of firms that remained independent (12 events).

Figures 1 and 2 show the Mean Standardised Cumulative Abnormal Returns (MSCAR, as the cumulated sum of the MSARs, point 2 in the Appendix) for the entire sample, respectively, for the market model and the market-adjusted model.

Figures 1 and 2:
Mean Standardised Cumulative Abnormal Returns for the Entire Sample (15 companies): Market Model and Market-Adjusted Model



Source: Authors' calculations.

In both plots, prices start to increase about 10 trading days before the announcement of the event (AD=0); the market somehow anticipates the block trade. An additional upward movement in stock returns is observed 4 trading days before the event date. From approximately 10 days after the announcement, we observe a different behaviour in the abnormal returns estimated from the market model compared to those estimated from the market-adjusted model. These differences might be due to the fact that the restrictions imposed in the market-adjusted model are not completely appropriate for some securities in our sample.

Within 20 trading days of the trade, stock prices seem to settle close to the initial level, even if this downward turn is more pronounced in Figure 1. Table A-1 in the Appendix reports the daily Mean Standardised Abnormal Returns ($MSAR_t$) around the event date AD and the corresponding statistical tests[26]. Given the possibility of a misspecification in the market-adjusted model, we mostly refer to the market model when analysing our results. The null of a zero abnormal return is rejected on days (AD-

[26] Mean Standardised Abnormal Returns, Mean Standardised Cumulative Abnormal Returns and the corresponding significance tests for different sub-samples of securities are reported in the Appendix.

9), (AD-2), (AD-1); abnormal returns on these days are positive at a 1 percent and 5 percent level of significance. Significantly negative abnormal returns are instead observed 11 days after AD.

The cross-sectional average of Standardised Cumulative Abnormal Returns for different windows (MSCAR as defined at point 6 in the Appendix) is presented in Table A-2. The values of MSCAR here are generally lower than those found in Figure 1. In the table, the cumulated sum of abnormal returns for each firm is in fact standardised for a variance estimate that corrects for the eventual correlation between abnormal returns over the multiple-day window considered.

As the figures show, in the 20 days around a trade (-10, +10), the stocks involved in the block trade experience an average cumulative abnormal return 1.5 times the value of the standard deviation; most of this increase is concentrated in the 10 days preceding AD. In fact, looking at Table A-2 the highest and most significant values are observed over the windows (-2, 0) and (-9, 0). The two-day MSCAR(-2,0) is significant at a 1 percent level according to the st-test and the adj-test, at a 5 percent level according to the rank test and at a 10 percent level according to the cs-test. The MSCAR(-9, 0) is significant at a 5 percent level according to the first three tests. We can thus conclude that the event 'block trade' has a positive and significant effect on returns around the announcement date, consistent with Hypothesis 1. This effect seems to have only a transitory character; prices revert to their initial level in the 20 days following AD, as already observed in Figure 1. However, the negative value reported in Table A-2 for MSCAR over (0,+20) is statistically significant at a 10 percent level only according to the cs-test[27].

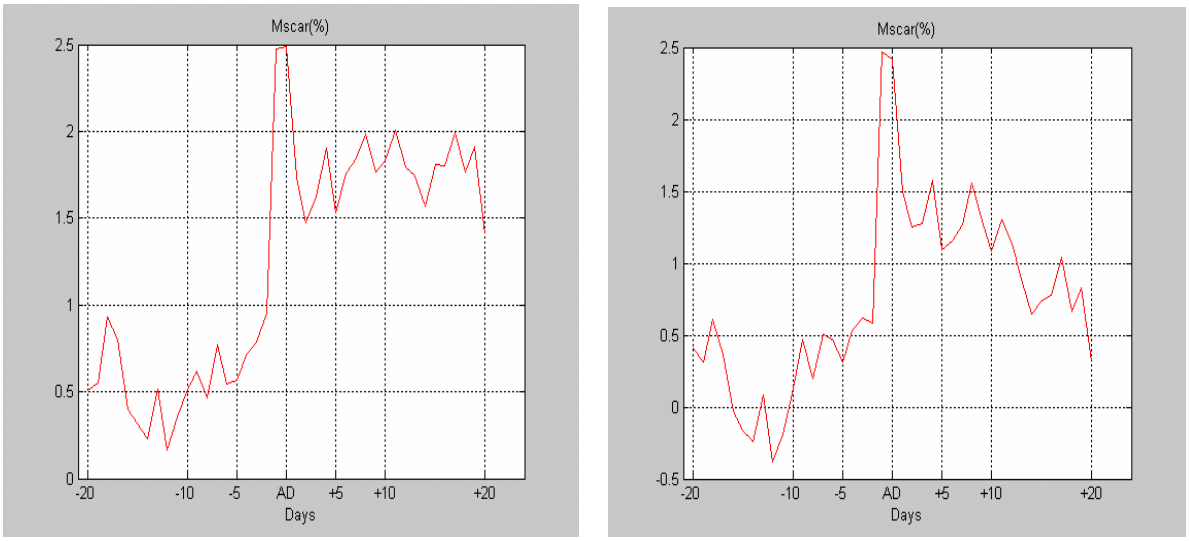
In order to alleviate the problem of missing returns and to further correct for a possible abnormality of stock returns, we replicate the analysis on a reduced sample consisting only of the securities included in the official or in the free market index. The official market index (SBI20) constituents are the prices of 20 shares that are quoted on the official market and meet certain requirements in terms of market capitalisation, average daily trading volume, turnover ratio (net of block trades and applications), and the average number of daily transactions[28]. Similar criteria for inclusion apply to the free market index. These stocks are the most traded and have very few or no missing returns. Unfortunately, imposing the participation in the index as the condition for the inclusion of stock in our study reduces our sample to six companies, four traded on the official market and two on the free market of the Ljubljana Stock Exchange. At any rate, the simulations run by Brown and Warner (1984) show that the non-normality of daily returns and excess returns has no obvious impact on event study

[27] Results for the MSCAR from the market-adjusted model are even stronger with reference to the magnitude and significance of the positive effect on returns over the windows (-2,0), (-9,0) and (-9,+20), according to the st-test, adj-test and cs-test. The positive trend in abnormal returns highlighted in Figure 2 in the 20 days after the announcement of a trade has no statistical support. See the right side of Table A-1 and Table A-2 in the Appendix.
[28] For more, see the web pages of the Ljubljana Stock Exchange (http://www.ljse.si).

methodologies and even in samples of five securities and with clustering of event dates, the standard parametric tests are generally well specified. Thus, while non-normality and biases in estimating the market model appear to be unimportant in testing abnormal returns the choice of the variance estimator is of some concern, affecting both the specification and the power of the tests.

The MSCARs for the reduced sample are plotted in Figures 3 and 4 and confirm our previous conclusions. Moreover, the behaviour of abnormal stock returns in both models is similar, even after AD. Again, the abnormal stock returns are positive from approximately nine days prior to the event and there is a decline in the stock returns starting from the first day after the announcement of the trade. According to Table A-3[29], positive and significant daily MSAR are observed on day (AD-9), with a rank test value of 2.21; on day (AD-1), with a standardised test statistic of 3.73. From AD and over the days that follow, abnormal returns are on average negative with values significant at a 5 percent level on days (AD+1), (AD+5) and (AD+9) (respectively, the cross-sectional t-statistic equals –3.88, the r-test equals –2.00 and the cs-test equals –2.71).

Figures 3 and 4:
Mean Standardised Cumulative Abnormal Returns for Companies Included in the Official Market Index and in the Free Market Index (6 events): Market Model and Market-Adjusted Model



Source: Authors' calculations

Table A-4 reports the significance of Mean Standardised Cumulative Abnormal Returns[30] for the reduced sample. MSCAR(-2.0) and MSCAR(-1.0) are positive and significant at a 1 and 5 level

[29] Comments refer always to the market model results.
[30] Again, Figures 3 and 4 plot the cumulated sum of daily Mean Standardised Abnormal Returns for the event window. These values are not precisely equal to the MSCARs shown in Table A-4, where Cumulative Abnormal Returns of each stock are standardised by using the variance estimate corrected for the correlation of abnormal returns over the window considered (see definitions 4 and 6 in the Appendix).

according to the st-test and to the adj-test; at a 10 percent level according to the rank test. MSCAR(0,+20) is negative but not statistically significant.

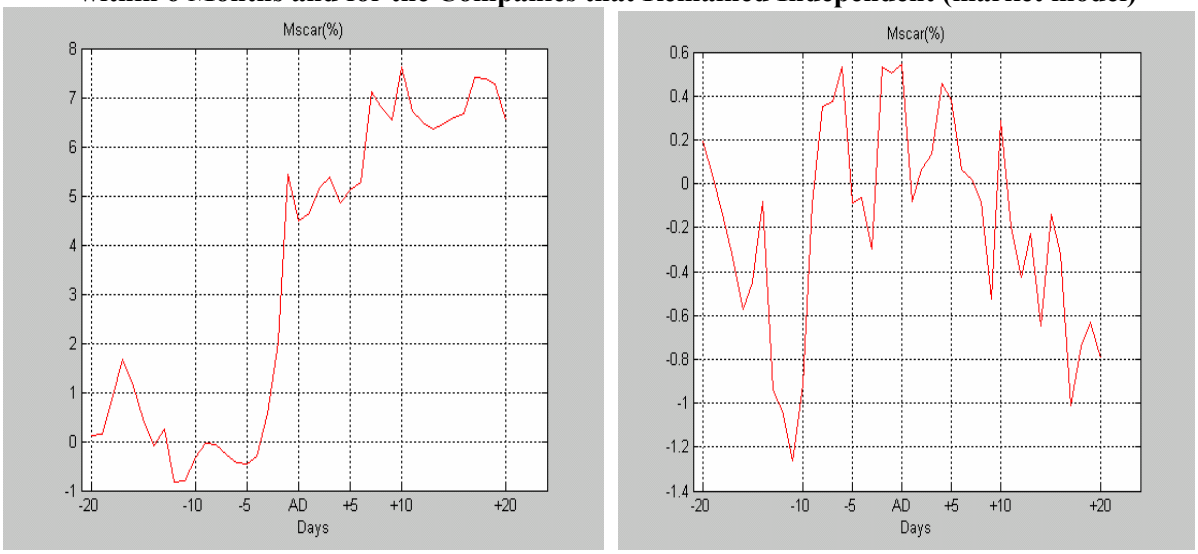
The stock performance that we observe around block trades in Slovenia is similar to that reported for Poland. Trojanowski (2002) argues that the positive abnormal stock performance some weeks before the trade might be due to a leakage of information on the trade[31]. Given that his sample includes only companies that remained independent after the block trade, the decline in abnormal returns that he finds in the three months after the deal is somewhat consistent with the previous findings by Barclay and Holderness (1991). Moreover, he provides further support for the superior market response to block acquisitions by strategic investors in the sensitivity analysis of stocks' cumulative abnormal returns (Trojanowski, 2002: 15).

In order to test Hypothesis 2 and evaluate the influence of 'strategic acquisitions' on the market value of the stock acquired, we further look separately at the cumulative abnormal returns for the three companies that were subject to a takeover bid within six months of the block trade and for those remaining independent. Figures 5 and 6 plot the Mean Standardised Cumulative Abnormal Returns from the market model, respectively for each of the two sub-samples. Over the period (-10 +20), the companies taken over experience positive abnormal returns of more than 6 times the value of their standard deviation. Looking at Table A-5, the highest and most significant increases are observed over the two days preceding the trade (in particular, MSAR(-1) = 3.42, significant at 1% according to the st-test). Consistently with Hypothesis 2, the null of zero abnormal returns is also rejected one week following the trade: MSAR(+7) = 1.84 with a st-test=3.20. The Mean Cumulative Standardised Abnormal Returns for companies subsequently taken over (Table A-6) are positive and significant at 1 percent (st-test, adj-test) and 10 percent (r-test) over the windows (-2,0), (-1,0), (-9,0), but not over (0,+20).

Unfortunately, due to the fact that the events in our study took place relatively recently we cannot provide further evidence on the long-term post-announcement stock behaviour. However, the significantly negative MSAR, observed 8 and 19 trading days after the event[32] suggest the conclusion that block trade effects on stock prices do not last for long and that most important are those observed in the period preceding the trade[33].

[31] Barclay and Holderness (1991:865) also referred to a possible leakage of information about a trade since in the 40 days preceding the trade, the stock shows positive abnormal returns of 14.0%.
[32] The negative MSAR(+8), MSAR(+12) and MSAR(+19) computed from the market-adjusted model are not significant.
[33] Results from the market–adjusted model are even stronger.

Figures 5 and 6:
Mean Standardised Cumulative Abnormal Returns for the Three Companies Taken Over within 6 Months and for the Companies that Remained Independent (market model)



Source: Authors' calculations

With regard to the companies that remained independent within six months of the block trade, Figure 6 presents evidence that the positive effect of the block trade, again starting about 10 days before it, is completely reabsorbed within 20 days of AD. In Table A-7, MSAR(-13), MSAR(-9) and MSAR(-2) (from the market model) are significantly positive; MSAR(+12)=-0.2316, with a cs-test of –1.94; MSAR(+17)=-0.689, with st-test=-2.39; MSAR(+20)=-0.1627, with cs-test=-3.50. MSCAR in Table A-8 is positive over the windows (-10,+10) and (-2, 0), significant at a 10 percent level according respectively to the ct-test and to the st-test statistics. The negative values observed over (0,+20) are not significant. These results confirm that any change of control in the firms only temporarily affects the value of their stock[34].

To sum up, our findings are consistent with Hypothesis 1 and show that block trades in Slovenia have a significantly positive effect on stock prices starting from about 10 days before the event; this is probably due to information leakage (insider trading). Moreover, the positive effect is only temporary and is reabsorbed within 20 days of the trade. These results are very similar to those reported by Barclay and Holderness (1991,1992) and Trojanowski (2002). Although the post-trade abnormal returns associated with the three acquisitions preceding the takeover are not statistically significant, the prevalently positive values and the superior pre-trade abnormal returns in comparison to the firms that remained independent speak in favour of the 'strategic changes in control', namely takeovers. In fact, the acquisition of control through a takeover should in principle be more efficient than the acquisition through a block trade since block trading normally does not lead to a concentration of

[34] MSCARs from the market-adjusted model confirm the results, with the difference on the window (0+20), where MSCAR is positive, even if not significant. However, this positive value might be due to a misspecified market-adjusted model for a sample that includes companies not part of the market indexes, as already explained before.

ownership but preserves the low ownership concentration, inducing more inefficient extraction of private benefits (Burkart et al., 2000).

While there is currently no convincing evidence of the blockholders' contribution to the firms' values, public scepticism about the role of the newly arising large owners in Slovenia[35], the observed trend of consolidation of control, the low liquidity and limited size of the Slovenian capital market as well as the relatively low enforcement of minority investors' protection suggest that private benefits from control might be relatively large. As argued by Zwiebel (1995), the extraction of private benefits also takes place in firms with many large owners, as in Slovenia (Gregoric, 2003). However, workers' representatives on supervisory boards[36], competition from the product market and pressures by the media could substantially limit blockholders' ability to extract firms' value. The next section provides an empirical evaluation of the block premiums and, consequently, of the private benefits of control.

4. Block Trades and Private Benefits of Control in Slovenia

4.1 Existing empirical evidence and hypotheses

Private benefits of control are the 'emotional' value some shareholders attribute simply to being in control as well as to the possibility of enjoying some value without sharing it among all the other shareholders (Dyck and Zingales, 2001). They may take the form of excessive compensation of those in control, large prerequisites on the cost of minority shareholders, freeze-out mergers,[37] diversion of firms' value through acquisition of inputs from other companies in the ownership of large shareholders (managers) although inefficient etc. (Hart, 1995: 192). These are the so-called pecuniary private benefits of control and have been most emphasised in the literature (Barclay and Holderness, 1992). However, controlling owners may also benefit from synergies in production or individual prestige (non-pecuniary private benefits). Hence, we expect to observe that:

Hypothesis 3 (H3): ***Given the benefits arising out of control, controlling blocks trade at a premium with respect to the exchange share price.***

The empirical studies state different factors influencing the size of the premiums paid for blocks, such as: i) the size of the block transferred; ii) the identity of the parties involved; iii) the firm-specific characteristics (leverage, previous performance, ownership structure etc.); and iv) the effect of the possibility of contested acquisitions etc.

[35] Especially the financial holdings, successors of the PIFs.
[36] Employees (workers' council) are required to elect from one-third up to one-half of the supervisory board members (Slovenian Co-Determination Law, 1993).

Hypothesis 4 (H4): ***When controlling for firm-specific characteristics, the premium paid for a block of shares increases with the percentage of shares traded in the block and with the relative voting power gained by the block buyer.***

Several empirical studies confirm that blocks trade at a premium, that premiums increase with the percent of shares purchased and that block buyers actually anticipate some other payoffs above the fraction of expected dividends and other pro rata distributions to shareholders, even when the trade does not transfer majority control (Mikkelson and Regasa, 1991:514). For 63 block trades of at least 5% (average size 20%, min 6.6% and max 63.4%) Barclay and Holderness (1989) report an average block premium of 20.4 percent to the post-announcement exchange price (4.3 % of the total market value of the firm's equity). Barclay et al. (2001) found similar results in a later study involving 204 block trades and 549 private placements in the 1978-1997 period. The 11 percent average premium associated with block trades actually anticipates an improvement in the control and an active involvement of the new block-owner.[38] For US corporations, Mikkelson and Regassa (1991) reported 9.3 percent premiums for 37 negotiated transfers of blocks incorporating less than a majority control (average size 17.8%) in the 1978-1987 period.

In Italy, blocks trade at 27.4 percent premium to the post-announcement exchange price. The mean premium represents about 8.7 percent of a firm's equity, twice the value of the standardised premiums in the USA (Nicodano and Sembelli, 2001). The size of the private benefits associated with a block depends on the strategic importance of the block in forming controlling coalitions rather than on the size of the block itself.[39] The premiums in Germany are lower, about one-half of those in the USA. This low price attributed to control may be the consequence of the 'limited gains of control' due to the existence of the two-tier system of corporate governance, stronger workers' influence (co-determination) and the presence of other large shareholders and minorities (Franks and Mayer, 2000).

Trojanowski (2000) analyses 53 block trades of an average size of 12.35 percent on the Polish capital market: the reported average pre-trade block premiums is 9.08 percent (median value = 10.56%) and the average post-trade block premiums is 6.80 percent (median value = 9.01%). These relatively low premiums are mostly due to the high liquidity costs associated with the Polish market of block trades (Trojanowski, 2002: 17).

[37] For example, when managers merge the target company with another company they own, at a price (ex post) disadvantageous to minority shareholders.
[38] This is not the case, however, of private placements. The new owners entering through a private placement rarely become actively involved in management. In fact, due to the relatively passive role of the new owners the shares in the private placements are priced at substantial discounts (Barclay et al., 2001).
[39] The strategic importance of a singular shareholder in forming a controlling coalition is measured by the Shapley values.

Dyck and Zingales (2001) provide an extensive comparative analysis of the private benefits in the world. By applying the same measure of private benefits used by Barclay and Holderness (1989), on a sample of 412 block transactions in 39 world countries over the years 1999-2000 (average block size of 37%, block changing the ownership stake of the buyer from below to above 20%), they find that blocks trade at an average premium of 14 percent of the value of a firm's equity, varying from 1 percent (2%) in Canada, Norway, Hong Kong (USA, UK, Finland and France[40]) to 37 percent in Italy and Austria, 54 percent in the Czech Republic and 65 percent in Brazil. The size of the private benefits depends on the legal tradition of the country, its legal institutions (anti-directors' rights, information disclosure to minority shareholders, law enforcement), the extra legal institutions such as public market competition, public opinion pressure, moral norms, labour monitoring and the role of the government through tax enforcement.[41]

4.2 Block premiums in Slovenia. Empirical analysis and results

The database consists of 31 blocks of at least 5% traded on the Ljubljana Stock Exchange in the 2000/2001 period.[42] The relatively low number of blocks considered is mostly due to the impossibility of identifying the purchaser of the block; there is no official disclosure available on the identity of the parties involved in a block trade. The Ljubljana Stock Exchange only reports the number and size of shares traded in a block, its total value and the time of the trade.[43] However, we were able to identify a few buyers and sellers by relying on two different information sources: a) articles referring to block trades from the daily newspaper *Finance*; and b) the register of notifications of the Securities Market Agency. In fact, according to the Slovenian Takeovers Act any acquisition of blocks above 5 percent should be reported to the Securities Market Agency and to the company issuer of the securities acquired within three days of the acquisition.[44] Since this legal requirement is not properly implemented in practice, we were able to associate a given block trade with an actual report to the Agency, but only for about 23 percent of the blocks in our sample.

[40] The average value of private benefits in France differs substantially from that found by Nenova (2001). Further, this result is somewhat in contradiction with the LLSV analysis of investors' protection: since investors are less protected in countries belonging to the French legal family (France included), private benefits from control in these countries are expected to be high. For more, see Coffee (2001).

[41] Private benefits are high in the former communist countries (34%) and in the French origin countries (21%); lower (11%, 6% and 4%) in countries of German, English and Scandinavian legal origin (Dyck and Zingales, 2001). When correcting by the extra-legal institutions, the common law countries jump to the 'high private benefits' group.

[42] For the total sample of 75 blocks (medium size 8.2 percent) traded in the same period, Gregoric (2003) reports that on average these blocks trade at a 27 percent premium to the post-announcement exchange price and at a 46 percent premium to the post-announcement exchange price at least two days (one week and one month) from the announcement of the trade. On average, these premiums represent above 4 percent of the total market value of a firm's equity. Besides the information on the web pages of the Ljubljana Stock Exchange, information on block trades is reported in the business journal Finance on the day following the trade; hence, we refer to this day as the day of the announcement of the block trade.

[43] Any block trade has to be reported in a special form to the Ljubljana Stock Exchange, on the day of the trade if concluded before 12.30 p.m.; otherwise, on the day after.

[44] The company whose shares are acquired has to make the acquisition public within three days after receipt of the notification in a daily newspaper (Takeovers Act, Article 64, Paragraph 2).

Moreover, with regard to block buyers' and sellers' identities Slovenian block trading shows some peculiarities. First, some block trades take place between affiliated PIFs and hence do not represent a real change in control. Second, while in the USA blocks are mostly traded by individuals (corporate insiders) and by corporations (Barclay and Holderness, 1989:378), except for one case, the blocks constituents our sample were acquired by banks (25.8%), privatisation investment funds (32.26%) and by brokerage and non-financial companies (38.7%). These acquisitions, however, not always represented the acquisition of the largest block.[45] In order to keep attention fixed on control transfer, we excluded from the sample six observations involving blocks exchange between two associated privatisation investment funds (PIFs) and between a PIF and its management company (normally a bank). We further excluded three observations that were 'greenmail payments' (repurchase of shares by the firm's management in order to avoid a takeover). The descriptive statistics of the variables used in the empirical analysis are presented in Table 4 below.

Table 4 : Descriptive statistics for variables used in the regression analysis of block premiums.

Variables	N	Mean (Sd)	Median	Min	Max
Pre-trade Premium %	31	46.77 (78.84)	15.38	-28.57	280.12
Post-trade Premium %	31	46.69 (74.74)	20.77	-16.66	258.4
Standardised Pre-trade Premium %	31	5.82 (10.85)	1.55	-1.57	38.77
Standardised Post-trade Premium %	31	5.96 (10.74)	1.49	-0.92	38.78
Size of Block (in N of shares in block)	31	53410.87 (50086.43)	44638	7027	216916
Size of Block (in Percent)	31	9.82 (4.87)	8.12	5.00	21.24
Size of Block (in '000 SIT)	31	2.32 e+08 (3.13e+08)	1.20e+08	4.75e+07	1.77e+09
Firm Size (Market Capitalisation)	31	2.39e+09 (3.48e+09)	1.24e+09	1.81e+08	1.96e+10
Firm Size (Book Value of Capital)	31	3.93e+09 (3.29e+09)	2.95e+09	1.10e+09	1.71e+10
Firm Size (Book Value of Assets)	31	5.87e+09 (5.11e+09)	4.37e+09	2.09e+09	2.75e+10
Leverage* (in %)	31	59.89 (45.16)	58.06	3.92	149.7
Roe (in %)	31	2.90 (6.49)	3.44	-17.62	14.70
Roe Adj. (in %)	31	4.36 (13.21)	6.33	-43.53	25.53
Profit per Share ('000 SIT)	31	392.62 (710.81)	199.33	-790.54	2865.63
Roa (in%)	31	1.43 (3.07)	1.32	-3.24	7.16
Operating Profit per Share ('000 SIT)	31	328.40 (995.45)	121.93	-1056.65	3502.34
Market to Book Value	31	0.47 (0.21)	0.47	0.20	1.12

[45] For example, this is the case of 8/20 cases for which we could identify the ownership structure after the block trade.

Market to Book Value Adjusted	31	0.89 (0.33)	0.79	0.46	1.82
Sum of Blocks (in %)	31	66.53 (18.05)	70.66	25.13	94.06
Buyer's Power Index	20	1.42 (0.91)	1.20	0.55	4.22
Ocean Power Index	20	0.68 (0.61)	0.65	0.02	2.90
Difference in the Power Ratio	20	0.74 (1.13)	0.61	-1.81	3.77

Source: Authors' calculations from the database on block trades.

Notes on Table 4.1.5:
Pre-trade Premiums (in %) are calculated as ((pbi – pmi)/pmi)*100, where pbi is the price paid per share in the block and pmi is the closing price three days prior to the announcement of a block trade.
Post-trade Premium has the same definition as Pre-trade Premium, but with reference to the closing price two days after the announcement of the block trade instead of the pre-trade closing price. The missing values in four observations were replaced by the closing price one week after the announcement of the trade.
The Standardised Pre- and Post-trade Premiums are simply pre-trade premiums (post-trade premiums) multiplied by the percentage of shares in the block.
Leverage is defined as the ratio between the book value of debt and the book value of the capital calculated at the end of the year preceding the block trade.
Both Book Value of Assets and Book Value of Capital refer to the end of the year preceding the block trade.[46]
Roa Adj. is the operating profit divided by the value of assets (excluding cash and marketable securities). Roe is net profit per unit of equity, while Roe Adj. is the ratio between net profits and the value of equity adjusted for revalorisation.
The Market to Book Value is calculated as the ratio between the market share value and book share value. The book value per share refers to the end of the year preceding the block trade and equals the book value of the firm's capital divided by the number of shares issued. The market value per share is the closing price per share three days preceding the block trade.
The alternative specification of the Market to Book Value (Adjusted) follows the definition of the Ljubljana Stock Exchange. In this second specification, the book value per share is the book value of capital off revalorization divided by the number of a firm's shares.
Sum of Blocks is the total sum of all the shareholdings exceeding 5% of the ownership rights.
The Buyers' Power Index is the ratio between the Shapley value and the ownership share of the buyer of the block. Where the buyer of the block was already among the firm's blockholders prior to acquisition of the block, the Power Index equals the increase in the buyers' Shapley value due to the acquisition of block, divided by the percentage of shares transferred in the block. The Power Index of the ocean is simply the Shapley value of the ocean divided by the percentage of shares not tied up in the block. The latter definition follows the one used by Zingales (1995).

To evaluate the private benefits of control in Slovenia, we rely on the estimation procedure provided by Barclay and Holderness (1989), namely the relative difference between the price paid for a share within a negotiated block trade and its post-transaction exchange price. Indeed, this estimation seems to measure private benefits (and not overpayment) and it does so by introducing smaller biases compared to alternative methods (Dyck and Zingales (2001:24)).[47] As shown in Table 4, Slovenian shareholders acquire these blocks at a 46.7 percent average premium and these premiums amount to approximately 5.7 percent of a firm's equity. Given the relatively low size of the blocks transferred (in comparison with the evidence for other countries), the private benefits of control in Slovenia are quite large; they substantially exceed the benefits attributed to holding blocks in American corporations. Hence, in accordance with Hypothesis 3 control in Slovenia is valuable despite the presence of other

[46] The stated definitions follow in large part the definitions by Barclay and Holderness (1989) and Trojanowski (2002).
[47] For example, one criticism is that the superior price for the shares may not necessarily derive from buyers' anticipation of private benefits. If the acquisition of a block entails lower transactions costs than the purchase of shares directly from minority shareholders, the bidder in a potential takeover might be willing to pay a greater premium for existing blocks than for widely held shares. The blockholder anticipating a takeover will thus pay the amount for a block that reflects the probability of a takeover offer and the expected premium offered for the block in an event of a takeover (Mikkelson and Regassa, 1991: 514).

large owners that might challenge the power of the block-buyer and despite the strong influence of the inside owners (managers and employee representatives on the supervisory boards).

In order to test Hypothesis 4 and confirm that the evaluated block premiums actually reflect the private benefits of control, we perform a cross-sectional analysis to highlight the determinants of block pricing in Slovenia. Following Barclay and Holderness (1989), Zingales (1994, 1995), Nicodano and Sembelli (2000), Banerjee et al. (1997), Rydqvist (1998) and Trojanowski (2002), we ran a series of regressions with four different dependent variables (normal post- and pre-trade block premiums and their correspondent standardised values) and various explanatory variables as suggested in the literature. For the sake of brevity, only those models with better statistical properties are reported below, in Tables 5, 6 and 7.

Table 5 refers to post-trade block premiums calculated in relation to the closing exchange prices after the announcement of a trade, while Table 6 refers to the pre-trade block premiums calculated in relation to the closing exchange price prior to the announcement of a trade. The definitions of the post-trade exchange price and the pre-trade exchange price follow those of Barclay and Holderness (1989), Mikkelson and Regassa (1991) and Trojanowski (2002). If the buyer and the seller of the block anticipate the stock price response, they should incorporate the expectations about the post-transaction price when pricing the block. Mikkelson and Regasa (1991: 513) speak about the so-called 'with-information premium'; this post-trade premium seems to be a more accurate measure of the private benefits of control (Barclay and Holderness, 1992). However, if the parties to the block transaction cannot forecast the price response (and this might be the case in a less efficient capital market like Slovenia's), they negotiate with reference to the pre-trade exchange price. Hence, the pre-trade premiums incorporate both the shared benefits of control (the anticipated improvement in a firm's value due to the control change) and private benefits of control; the former should already be reflected in the post-trade exchange price.

Table 5: Determinants of block premiums in Slovenia.
Dependent variable: Standardised Post-trade Block Premium in percent[48]
(Ordinary Least Squared Regression with Robust Standard Errors)

	Regres.1 Coef. (t-test)	**Regres.2 Coef. (t-test)**	**Regres.3 Coef. (t-test)**	**Reg.4 Coef. (t-test)**	**Regr.5 Coef. (t-test)**
Intercept	45.258 (1.09)	44.25 (1.04)	22.28 (0.65)	11.47 (0.21)	46.89 (1.15)
Percent %	1.037** (2.16)	0.995** (2.11)	0.656 (1.49)	0.98** (2.16)	1.057** (2.0)
Leverage	3.96 (0.87)	3.855 (0.83)	5.84 (1.51)	4.93 (1.01)	3.940 (0.86)
Size	-2.328 (-1.25)	-2.252 (-1.19)	-1.106 (-0.74)	-0.76 (-0.31)	-2.439 (-1.31)
Roe Adj.			-0.373*** (-3.45)		
Roa Adj.		-0.133 (-0.45)			
Profit per S.				-0.003 (-1.35)	
Adj. Market/Book					0.728 (0.22)
RSV difference					
N	31	31	31	31	31
R2	0.34	0.34	0.50	0.36	0.34
F	2.11	1.55	5.47	1.71	1.59

Table 6: Determinants of block premiums in Slovenia.
Dependent variable: Standardised Pre-trade Block Premium in percent
(Ordinary Least Squared Regression with Robust Standard Errors)

	Regres.1 Coef. (t-test)	**Regres.2 Coef. (t-test)**	**Regres.3 Coef. (t-test)**	**Reg.4**	**Regr.5 Coef. (t-test)**
Intercept	44.85 (0.99)	43.97 (0.95)	21.11 (0.55)	10.43 (0.18)	45.799 (1.04)
Percent %	0.963** (1.98)	0.995** (2.11)	0.569 (1.30)	0.91* (1.97)	0.975 (1.82)*
Leverage	4.583 (0.97)	4.490 (0.93)	6.526 (1.64)	5.51 (1.10)	4.571 (0.95)
Size	-2.300 (-1.14)	-2.233 (-1.09)	-1.037 (-0.62)	-0.71 (-0.28)	-2.364 (-1.22)
Roe adj.			-0.385*** (-3.75)		
Profit per s.				-0.003 (-1.34)	
Roa adj.		-0.116 (-0.40)			
Adj. Market/Book					0.422 (0.12)
n	31	31	31	31	31
R2	0.31	0.31	0.48	0.34	0.30
F	1.99	1.48	5.72	1.75	1.49

(*) significant at the 10 percent level; (**) significant at the 5 percent level; (***) significant at the 1 percent level

[48] We ran the same regressions also with reference to the price one week after the trade. The coefficient of the variable 'percent' is still positive, but loses significance.

The regression results reported above show a positive correlation between the 'PERCENTAGE OF SHARES TRANSFERRED IN THE BLOCK' and the value of control (block premium), in accordance with Hypothesis 4. However, this relation is not highly significant and implies that other factors might influence the price of a block (for example, the bargaining power of the buyer and seller). Other empirical studies (Trojanowski, 2002; Mikkelson and Regassa, 1991) lend further evidence to the positive relation between the block size and the private benefits of control and to the fact that this relation is not monotonic. In fact, a larger block provides the buyer with a larger ownership share, greater influence on the management, improved protection from hostile takeovers and proxy contest and, consequently, higher private benefits of control. Beyond a certain fraction of ownership, additional blocks may result only in higher costs of monitoring but not in higher benefits; the relation between fractional ownership and the net value of private benefits may then be negative (Barclay and Holderness, 1989:385).

Contrary to expectations, a lower value is on average attributed to the control of better performing companies ('PERFORMANCE' is measured as profit per unit of capital net of revalorisation). This negative relation is highly significant and, although contrary to the US findings, complies with the analysis of the private benefits in Poland.[49] According to Trojanowski (2002: 18), other factors rather than the possibility to extract private benefits (such as the expected stream of dividends) are more important in determining the acquisition of blocks in better performing companies. However, the relation loses significance when we measure the performance by operating return or profit per share. Further, the best performing firms in our sample are also the firms with the highest market capitalisation; the firm's 'SIZE' has a negative impact on premiums, although not statistically significant. In fact, the effect of a firm's size can be twofold: acquiring stock in a larger firm offers higher private benefits and possibilities of expropriation; on the other hand, bigger firms are more closely monitored by supervisory agencies and institutional investors (Barclay and Holderness, 1989: 385; Banerjee et al., 1997). This aspect is probably more relevant in a small market such as the Slovenian capital market and might explain the negative relation between the return on equity, a firm's size and the block premium. The large firms are moreover under continuous observation by the media, whose pressure might importantly reduce the blockholders' power to extract private benefits (also see Dyck and Zingales, 2001).

In all regressions, the variable 'LEVERAGE' has a positive and statistically insignificant effect. This result is similar to other empirical studies (Barclay and Holderness, 1989; Trojanowski, 2002; Banerjee et al., 1997; Nicodano and Sembelli, 2000). The effect of leverage is in general not very

[49] We also ran a regression with profit per firm's share, as a measures of a firm's performance, and expected dividend stream. The relation is still negative, but not statistically significant (t-statistics = -1.35), while the relation between the percentage of shares acquired and the premium is positive and significant (t-statistics = 2.16). The variables 'leverage' and 'size' are still insignificant and of the same sign.

clear. On one side, higher leverage may induce higher monitoring by the firm's lenders and constrain the cash flow expropriation by the firm's management (Jensen, 1986). On the other side, according to Harris and Raviv (1988), at a given equity an increase in leverage results in higher effective control. In some sense, the nature of leverage is two-edged: it permits the acquisition of additional assets without losing control but, at the same time, it limits the discretion in allocating them (Nicodano and Sembelli, 2000:17).

Given the low trust in the market evaluation, Slovenian block-buyers might actually rely on a firm's book value rather than on the value of the stock and hence offer higher premiums for firms with a lower 'MARKET TO BOOK VALUE' ratio and vice-versa. The empirical results do not confirm this assumption; the relation is positive, although not statistically significant (see Tables 5 and 6 above). We tried other possible specifications of the regression models by including as explanatory variables proxies for liquidity costs of blocks (the logarithm of the value of block traded), the ratio of dispersed shares, the identity of the shareholder (namely, whether the shares were acquired by a PIF or not). None of these variables seem to have a significant impact on the size of block premiums.

Last but not least, if control is contestable a certain fraction of the voting premium might be already incorporated in the stock exchange price, reflecting the expectation that voting rights attached to minority shares will become valuable in the case of a battle for control. The latter depends on the firm's ownership structure or namely on the probability of the small shareholders to be pivotal in forming a controlling coalition; this probability can be measured by the Shapley value of the votes held by small shareholders – the power ratio of the ocean (Zingales, 1995:1048). Higher probability of a contested acquisition should result in a higher fraction of the private benefits incorporated in the stock exchange price and, consequently, a lower voting premium of the shares in the block. On the other hand, the higher the probability of the block buyer being pivotal for a controlling coalition, the higher should be the voting premium of the shares in the block. Thus, we expect this probability, measured by the 'power ratio of the buyer' (Milnor and Shapley, 1978), to be positively correlated with the voting premium. Following Rydqvist (1998), Nicodano and Sembelli (2000),[50] and Trojanowski (2002), we estimated four alternative models (see Table 3.1.8)

[50] Nicodano and Sembelli report the voting premium to the difference in the Shapley value of the buyer (seller) of the block prior to and after the trade. Except for three cases in which we actually considered the difference in the Shapley value after and prior to the acquisition, in all remaining cases the buyer of the block was not a blockholder prior to the acquisition, while the seller normally sold out the whole block.

Table 3.1.8: Determinants of block premiums in Slovenia.
Dependent variable: Pre-trade Premium (regressions 1 and 2),
Post-trade Premium (regressions 3 and 4) in percent
(Ordinary Least Squared Regression with Robust Standard Errors)

	Reg.1[51] **(t-test)**	**Reg.2 (t-test)**	**Reg.3 (t-test)**	**Reg.4 (t-test)**
Intercept	327.18 (1.32)	338.736 (1.18)	276.566 (1.04)	355.176 (0.699)
RSV Difference	17.025 (2.53)**		8.833 (1.55)	
Market Size	-14.894 (-1.28)	-15.341 (-1.17)	-12.14 (-0.98)	-15.184 (-1.09)
RSV Buyer		16.244 (1.50)		3.527 (0.39)
RSV Ocean		-18.567*** (-2.85)		-19.322 (-3.95)***
N	20	20	20	20
R2	0.273	0.2733	0.116	0.144
F	4.00**	4.22**	1.90	3.67**

RSVBuyer is the power ratio of the block buyer, RSV Ocean is the power ratio of the minority shareholders (the ocean), while the RSV Difference is simply the difference between the power ratio of the blockholder and the power ratio of the ocean. Also see Rydqvist, 1998).
(*) significant at the 10 percent level; (**) significant at the 5 percent level ; (***) significant at the 1 percent level

The analysis is limited by the small number of observations (it was impossible to get ownership data in order to calculate the Shapley values for all blocks in the initial sample) but consistent with Hypothesis 4 and with the results of other empirical studies. The voting premium is positively related to the 'RSV DIFFERENCE' (the difference between the power ratio of the block buyer and the power ratio of the ocean). Further, the 'RSV Ocean' (regressions 2 and 4) has a negative and statistically significant influence on both the post- and pre-trade block premiums. The results are similar to those reported by Rydqvist (1998) for 22 block trades in Sweden in 1984 (average block premium 10.3%, average size of the block 32.2%). While he finds no significant correlation between the block premium and a firm's size (proxy for the cost of control), he reports a significant positive correlation between the block premium and the difference in the power ratios (coefficient of 5.6, significant at 2 percent). The negative influence of the market's Shapley value (the power of the ocean) was also reported by Nicodano and Sembelli (2002: 18) for 94 block transactions between 1987 and 1992 in Italy.

5. Conclusions

Price movements around block trades in Slovenia lead to the conclusion that these trades are major corporate events and, as such, might bring about some changes in the governance and performance of Slovenian firms. The Slovenian stock market seems to react to trades of large ownership stakes, even when they only transfer partial control. Moreover, despite the low liquidity of Slovenian stocks and

[51] Controlling for other variables, such as prior firm performance and leverage, does not improve the model (all variables are highly insignificant).

the quite limited transparency of stock transactions price reactions to block trades do not differ much from those observed in other countries, in particular in countries with less developed capital markets; the positive stock returns preceding the trades evidence the well-known problem of insider trading, while the fact that the returns mostly normalise in the 20 days following a trade give little support to any positive influence of the new blockholders on a firm's value. However, when publicly disclosed, the 'strategic orientation' of the parties involved in block trades matters. Slovenian companies seem to benefit more from control changes when the acquisition of a block precedes a takeover by a strategic investor (in our case, a non-financial company in the same industry).

On the other hand, there is evidence that control is valuable and that large Slovenian shareholders actually expect to gain some 'private benefits' from exercising control in their corporations. This represents an additional stimulation for further concentration of ownership in the companies listed on the Ljubljana Stock Exchange. However, it calls for an improvement in the minority investors' protection and in the transparency of the control transactions, of the identity and of the activity of the large owners. As argued at the beginning, the changes in the ownership and control structure alter the agency problem; with consolidated control, the main challenge for Slovenian corporate governance system may actually become the protection of minority shareholders against expropriation by 'those in control'.

APPENDIX

Note: The tables are not placed in consecutive order due to the sake of space.

Table A-1: Mean standardised abnormal returns and test statistics for the entire sample (15 companies) - market model and market-adjusted model

	Market model				Market-adjusted model			
AD=0	MSAR	sttest	cs-test	rtest	MSAR	sttest	cs-test	rtest
-20	0.166175	0.64	0.87	-0.73	0.312991	1.21	1.41	-0.12
-19	-0.1296	-0.50	-0.51	0.76	-0.13841	-0.54	-0.49	-0.12
-18	0.002559	0.01	0.01	1.29	0.058963	0.23	0.27	0.71
-17	0.005652	0.02	0.02	0.15	0.145777	0.56	0.41	0.40
-16	-0.29721	-1.15	-1.63	0.89	-0.16042	-0.62	-0.78	0.42
-15	-0.0388	-0.15	-0.19	-0.15	0.046854	0.18	0.21	1.20
-14	0.182187	0.71	0.51	-1.29	0.550501	2.13**	0.88	-1.69*
-13	-0.61579	-2.38**	-1.14	-0.46	-0.47901	-1.86*	-0.91	0.09
-12	-0.29193	-1.13	-1.72	0.91	-0.1214	-0.47	-0.45	-0.56
-11	-0.17203	-0.67	-1.33	-1.01	-0.03491	-0.14	-0.27	-0.16
-10	0.37304	1.44	0.35	0.13	0.51162	1.98**	0.47	0.71
-9	0.715984	2.77***	1.05	1.69*	1.818311	7.04***	1.11	-0.80
-8	0.354226	1.37	1.31	-0.25	0.651426	2.52**	1.56	-0.21
-7	-0.02721	-0.11	-0.14	0.73	-0.00629	-0.02	-0.03	-0.05
-6	0.09727	0.38	0.29	-1.49	0.332051	1.29	0.99	0.07
-5	-0.50232	-1.95*	-1.09	-1.09	-0.45452	-1.76*	-0.94	-1.18
-4	0.049786	0.19	0.12	-2.05**	0.107784	0.42	0.23	2.52**
-3	-0.02195	-0.09	-0.05	0.51	0.231141	0.90	0.48	-1.62
-2	0.955734	3.70***	2.07*	1.29	1.003267	3.89***	1.81*	0.63
-1	0.662263	2.56**	0.80	2.38**	0.933644	3.62***	1.05	0.28
0	-0.15821	-0.61	-0.64	0.35	-0.04697	-0.18	-0.16	0.80
1	-0.46007	-1.78*	-1.72	0.05	-0.39955	-1.55	-1.02	1.39
2	0.218039	0.84	0.83	0.28	0.365688	1.42	1.26	0.96
3	0.095108	0.37	0.36	0.43	0.088932	0.34	0.28	-0.75
4	0.150779	0.58	0.57	1.67*	0.247529	0.96	0.76	-0.14
5	-0.01172	-0.05	-0.03	0.15	-0.04377	-0.17	-0.09	-1.69*
6	-0.22371	-0.87	-1.06	0.30	-0.29891	-1.16	-1.21	-0.96
7	0.338876	1.31	0.96	-0.86	0.674338	2.61***	1.41	1.08
8	-0.14752	-0.57	-1.29	-0.76	0.080587	0.31	0.53	0.71
9	-0.39968	-1.55	-0.72	-0.66	-0.06148	-0.24	-0.08	-0.85
10	0.85516	3.31***	1.11	-0.73	0.811165	3.14***	0.98	1.03
11	-0.56077	-2.17**	-1.23	-1.09	-0.52307	-2.03**	-1.14	1.46
12	-0.23465	-0.91	-2.46**	-0.08	-0.19424	-0.75	-1.76*	-1.39
13	0.13848	0.54	1.01	0.94	0.494635	1.92*	1.16	-0.07
14	-0.31938	-1.24	-1.85*	-0.81	-0.41979	-1.63	-1.34	-1.15
15	0.432475	1.67*	1.05	-0.33	0.755989	2.93***	1.03	0.00
16	-0.1308	-0.51	-0.89	-1.01	-0.11339	-0.44	-0.50	-0.31
17	-0.40037	-1.55	-0.82	1.59	-0.20066	-0.78	-0.38	1.39
18	0.210107	0.81	0.33	0.56	0.208931	0.81	0.31	-0.09
19	0.060616	0.23	0.21	-0.71	-0.07053	-0.27	-0.17	0.24
20	-0.27443	-1.06	-1.50	-1.49	-0.1352	-0.52	-0.77	-2.16**

Table A-2: Mean standardised cumulative abnormal returns and corresponding significance tests over different event windows for the 15 securities of the whole sample

	Market model					Market-adjusted model				
	MSCAR	sttest	adj-test	cs-test	rtest	MSCAR	sttest	adj-test	cs-test	rtest
AD-10, AD+10	0.159711935	1.20	0.62	2.38**	0.45	0.632563194	2.47**	2.45**	2.21**	0.42
AD-2, AD	0.867114609	3.23***	3.36***	1.96*	2.32**	1.071159253	4.17***	4.15***	2.33**	0.99
AD-1, AD	0.400125693	1.39	1.55	0.64	1.93*	0.62250382	2.42**	2.41**	1.03	0.76
AD-9, AD	0.583761624	2.57**	2.26**	2.17**	0.34	1.42491647	5.55***	5.52***	3.22***	0.29
AD-9, AD+20	0.076371198	1.12	0.30	0.56	-0.24	1.087250769	4.24***	4.21***	2.33**	-0.06
AD,AD+20	-0.190149308	-0.68	-0.74	-1.87*	-0.48	0.253657929	1.00	0.98	0.72	-0.11

Table A-4: Mean standardised cumulative abnormal returns and corresponding significance tests for the 6 securities constituents of the SB120 and IPT indexes

	Market model					Market-adjusted model				
	MSCAR	sttest	adj-test	cs-test	rtest	MSCAR	sttest	adj-test	cs-test	rtest
AD-10, AD+10	0.021	0.06	0.05	0.85	0.09	0.083338	0.20	0.20	2.99**	-0.33
AD-2, AD	1.1919	2.39**	2.92***	1.74	1.75*	1.03213	2.52**	2.53**	1.58	0.87
AD-1, AD	1.3652	2.63***	3.34***	1.47	1.94*	1.290667	3.15***	3.16***	1.51	0.63
AD-9, AD	0.6154	1.62	1.51	1.36	0.97	0.802257	1.95*	1.97**	1.84	-0.15
AD-9, AD+20	0.2302	0.53	0.56	1.02	-0.43	0.125467	0.30	0.31	0.44	-0.47
AD,AD+20	-0.091	-0.56	-0.22	-0.78	-0.88	-0.46417	-1.13	-1.14	-2.77**	-0.37

Table A-6: Mean standardised cumulative abnormal returns and corresponding significance tests for the companies taken over within 6 months from the block trade

	Market model					Market-adjusted model				
	MSCAR	sttest	adj-test	cs-test	rtest	MSCAR	sttest	adj-test	cs-test	rtest
AD-10, AD+10	0.105313	0.28	0.18	1.52	1.47	0.215585	0.37	0.37	1.96	1.11
AD-2, AD	2.550678	3.90***	4.42***	1.68	1.63	2.482841	4.29***	4.30***	1.85	2.27**
AD-1, AD	2.12037	3.00***	3.67***	1.05	1.65*	1.96524	3.40***	3.40***	1.08	1.36
AD-9, AD	1.665357	2.64***	2.88***	1.68	1.82*	1.952998	3.38***	3.38***	1.97	1.60
AD-9, AD+20	0.776253	2.25**	1.34	1.94	0.82	1.735675	3.00***	3.01***	5.84**	0.23
AD,AD+20	-0.01433	0.41	-0.02	-0.18	-0.07	0.400267	0.69	0.69	0.53	-0.73

Table A-8: Mean standardised cumulative abnormal returns and corresponding significance tests for the companies that remained independent over the 6 months after the block trade

	Market model					Market-adjusted model				
	MSCAR	sttest	adj-test	cs-test	rtest	MSCAR	sttest	adj-test	cs-test	rtest
AD-10, AD+10	0.173312	1.19	0.60	2.09*	-0.24	0.736808	2.57**	2.55**	2.09*	-0.11
AD-2, AD	0.446224	1.66*	1.55	1.25	1.61	0.718239	2.52**	2.49**	1.61	-0.10
AD-1, AD	-0.02994	0.04	-0.10	-0.05	1.20	0.28682	1.01	0.99	0.47	0.12
AD-9, AD	0.313363	1.55	1.09	1.63	-0.52	1.292896	4.51***	4.48***	2.54**	-0.49
AD-9, AD+20	-0.0986	0.14	-0.34	-1.09	-0.65	0.925145	3.24***	3.20***	1.61	-0.17
AD,AD+20	-0.2341	-0.97	-0.81	-1.90	-0.46	0.217006	0.77	0.75	0.52	0.24

NOTES: st-test is the standardised abnormal return test for the null MSCAR=0 over the window and is asymptotically normally distributed; adj-test is the test corrected for an eventual correlation of the abnormal returns over the multiple day windows (technical reference of 'Eventus'); cs-test is based on a cross-sectional variance estimator and has a Student-t distribution with (N-1) degrees of freedom; rtest is the rank test, asymptotically normally distributed.
*Significant at 10 percent; ** Significant at 5 percent; ***Significant at 1 percent.

Table A-3: Mean standardised abnormal returns and test statistics for the 6 securities constituents of the SB120 and IPT indexes - market model and market-adjusted model

	Market model				Market-adjusted model			
AD=0	MSAR	sttest	cs-test	rtest	MSAR	sttest	cs-test	rtest
-20	0.505053	1.24	1.34	-0.37	0.403851	0.99	1.07	-0.39
-19	0.0501	0.12	0.13	1.43	-0.09514	-0.23	-0.22	-0.11
-18	0.380078	0.93	1.65	0.12	0.303017	0.74	1.41	1.93*
-17	-0.13481	-0.33	-0.54	0.78	-0.24577	-0.60	-0.70	0.32
-16	-0.40354	-0.99	-0.96	-0.08	-0.39914	-0.98	-0.99	0.93
-15	-0.07609	-0.19	-0.59	-0.78	-0.1313	-0.32	-1.41	-0.14
-14	-0.09072	-0.22	-0.58	-0.74	-0.07629	-0.19	-0.61	-1.47
-13	0.288595	0.71	0.92	1.27	0.320037	0.78	1.03	1.11
-12	-0.3519	-0.86	-1.80	0.78	-0.45946	-1.13	-3.17**	0.50
-11	0.18813	0.46	1.17	-1.55	0.194079	0.48	1.16	-0.21
-10	0.159931	0.39	0.80	0.37	0.31022	0.76	1.79	0.46
-9	0.103722	0.25	0.66	2.21**	0.340896	0.84	1.04	-0.97
-8	-0.15582	-0.38	-1.21	-0.65	-0.26552	-0.65	-1.06	0.43
-7	0.305474	0.75	2.13*	0.90	0.300823	0.74	1.34	-0.75
-6	-0.2212	-0.54	-0.82	-0.29	-0.03085	-0.08	-0.23	-1.25
-5	0.019842	0.05	0.03	-1.72*	-0.15875	-0.39	-0.24	-1.82*
-4	0.146745	0.36	1.46	-0.12	0.215782	0.53	1.09	1.97**
-3	0.070698	0.17	0.13	1.18	0.091226	0.22	0.17	0.11
-2	0.172347	0.42	0.72	0.29	-0.0383	-0.09	-0.14	0.61
-1	1.521128	3.73***	1.71	1.02	1.893623	4.64***	1.70	0.43
0	0.009395	0.02	0.03	1.72*	-0.06038	-0.15	-0.18	0.46
1	-0.74995	-1.84*	-3.88**	0.98	-0.91539	-2.24**	-4.24***	2.75***
2	-0.26312	-0.64	-0.73	-1.55	-0.2498	-0.61	-0.62	0.11
3	0.150861	0.37	0.58	-0.12	0.025388	0.06	0.09	-1.04
4	0.276351	0.68	1.63	-0.16	0.303513	0.74	2.17*	-0.25
5	-0.37053	-0.91	-1.51	-2.00**	-0.48297	-1.18	-1.69	-1.47
6	0.230331	0.56	1.36	0.78	0.060222	0.15	0.41	-1.25
7	0.08246	0.20	0.25	-1.06	0.111491	0.27	0.38	0.46
8	0.139296	0.34	0.75	0.16	0.289101	0.71	1.26	-0.46
9	-0.22087	-0.54	-2.71**	-1.06	-0.26376	-0.65	-3.15**	-0.11
10	0.07169	0.18	0.49	-0.45	-0.20417	-0.50	-0.90	0.07
11	0.172175	0.42	1.69	-0.29	0.212996	0.52	1.27	0.21
12	-0.20833	-0.51	-0.91	1.02	-0.16535	-0.41	-0.64	-0.54
13	-0.05338	-0.13	-0.51	0.61	-0.2445	-0.60	-1.13	1.61
14	-0.17894	-0.44	-0.68	0.25	-0.2416	-0.59	-0.81	-0.46
15	0.243059	0.60	0.62	0.08	0.094697	0.23	0.29	-0.75
16	-0.00493	-0.01	-0.04	-1.51	0.035585	0.09	0.41	0.86
17	0.188622	0.46	0.47	0.65	0.258148	0.63	0.61	0.29
18	-0.22791	-0.56	-0.63	-1.63	-0.37481	-0.92	-0.99	-1.18
19	0.145963	0.36	1.06	0.04	0.170206	0.42	1.55	0.43
20	-0.50529	-1.24	-1.14	-0.49	-0.50966	-1.25	-1.31	-1.43

NOTE: see Table A-1

* Significant at 10 percent; **Significant at 5 percent; ***Significant at 1 percent

Table A-5: Mean standardised abnormal returns and test statistics for the companies taken over within 6 months of a block trade – market model and market-adjusted model

	Market model				Market-adjusted model			
AD=0	MSAR	sttest	cs-test	rtest	MSAR	sttest	cs-test	rtest
-20	0.114335	0.20	0.57	1.57	0.1848	0.32	1.15	1.52
-19	0.043463	0.08	0.05	-0.92	0.006503	0.01	0.01	-0.93
-18	0.694952	1.20	1.88	-0.54	0.81535	1.41	1.71	-0.49
-17	0.814361	1.41	0.88	-1.08	1.228957	2.13**	1.01	-0.20
-16	-0.53803	-0.93	-0.60	-1.08	-0.27719	-0.48	-0.26	-1.03
-15	-0.68088	-1.18	-4.76**	-1.08	-0.64641	-1.12	-3.42*	0.05
-14	-0.55224	-0.96	-2.68	-0.54	-0.43367	-0.75	-1.85	-0.10
-13	0.356888	0.62	0.78	-1.79*	0.516581	0.89	1.48	0.69
-12	-1.08668	-1.88*	-2.16	0.81	-1.1232	-1.95*	-2.12	-0.79
-11	0.028124	0.05	0.11	-0.22	0.060987	0.11	0.31	-0.89
-10	0.470274	0.81	1.48	0.49	0.629654	1.09	3.50*	-0.30
-9	0.289708	0.50	0.64	2.28**	0.253951	0.44	0.55	1.87*
-8	-0.00946	-0.02	-0.04	1.30	0.11047	0.19	0.61	0.34
-7	-0.21917	-0.38	-0.52	0.43	-0.30361	-0.53	-0.61	0.30
-6	-0.15154	-0.26	-0.49	-1.08	0.152894	0.26	0.29	-0.69
-5	-0.02203	-0.04	-0.03	-0.11	0.198708	0.34	0.21	0.74
-4	0.152364	0.26	0.51	0.27	0.140424	0.24	0.37	1.08
-3	0.850862	1.47	1.85	0.11	1.233279	2.14**	6.37**	-0.84
-2	1.46394	2.54**	1.24	0.49	1.531917	2.65***	1.33	2.02**
-1	3.425737	5.93***	1.91	1.03	4.012915	6.95***	1.91	0.98
0	-0.96868	-1.68*	-1.08	1.30	-1.22868	-2.13**	-1.42	0.93
1	0.173048	0.30	0.20	0.76	0.57424	0.99	0.40	-0.15
2	0.482588	0.84	0.92	0.27	0.562612	0.97	1.19	1.23
3	0.245243	0.42	0.86	-1.25	0.317171	0.55	1.47	-2.36**
4	-0.521	-0.90	-0.92	0.11	-0.53809	-0.93	-0.88	-0.15
5	0.253812	0.44	0.28	0.00	0.466716	0.81	0.38	0.20
6	0.16441	0.28	0.24	1.52	0.077717	0.13	0.11	-1.48
7	1.849167	3.20***	1.14	-0.27	2.481089	4.30***	1.07	1.87*
8	-0.31554	-0.55	-3.62*	-1.08	-0.39725	-0.69	-2.14	-1.23
9	-0.26868	-0.47	-0.42	0.38	-0.53442	-0.93	-0.62	-0.54
10	1.086883	1.88*	0.80	-0.22	1.081157	1.87*	0.75	1.23
11	-0.89981	-1.56	-1.23	-1.08	-0.93801	-1.62	-1.42	0.30
12	-0.24751	-0.43	-2.76	1.14	-0.24516	-0.42	-1.70	-1.03
13	-0.115	-0.20	-0.86	0.38	-0.19988	-0.35	-0.94	-0.10
14	0.088564	0.15	0.33	-2.39**	0.117595	0.20	0.42	-0.25
15	0.137559	0.24	0.29	1.03	0.048593	0.08	0.10	-1.08
16	0.068825	0.12	0.77	-1.03	0.124515	0.22	0.67	-0.34
17	0.756805	1.31	1.41	0.38	0.75863	1.31	1.53	-0.93
18	-0.02844	-0.05	-0.09	-1.08	-0.0046	-0.01	-0.02	-0.93
19	-0.11583	-0.20	-4.34**	0.54	-0.06864	-0.12	-0.67	1.23
20	-0.72367	-1.25	-0.72	0.27	-0.59145	-1.02	-0.65	0.25

NOTE: see Table A-1
*Significant at 10%; **Significant at 5 %; ***Significant at 1 %

Table A-7: Mean standardised abnormal returns and test statistics for the companies that remained independent over the 6 months after the block trade – market model and market-adjusted model

	Market model				Market-adjusted model			
AD=0	MSAR	sttest	cs-test	rtest	MSAR	sttest	cs-test	rtest
-20	0.193357	0.67	0.78	-1.51	0.345038	1.20	1.25	-0.86
-19	-0.17223	-0.60	-0.68	1.22	-0.17464	-0.60	-0.58	0.33
-18	-0.16319	-0.57	-0.74	1.59	-0.13013	-0.45	-0.58	0.96
-17	-0.19493	-0.68	-0.67	0.68	-0.12502	-0.43	-0.39	0.50
-16	-0.23485	-0.81	-1.87*	1.43	-0.13123	-0.45	-1.08	0.93
-15	0.1233	0.43	0.53	0.36	0.220171	0.76	0.88	1.19
-14	0.367523	1.27	0.85	-1.07	0.796542	2.76***	1.03	-1.67*
-13	-0.86264	-2.99***	-1.32	0.39	-0.7279	-2.52**	-1.14	-0.24
-12	-0.0923	-0.32	-0.71	0.55	0.129047	0.45	0.48	-0.19
-11	-0.22417	-0.78	-1.49	-0.94	-0.05888	-0.20	-0.37	0.26
-10	0.342654	1.19	0.25	-0.10	0.482111	1.67*	0.35	0.86
-9	0.825247	2.86***	0.96	0.65	2.209401	7.65***	1.08	-1.72*
-8	0.443739	1.54	1.34	-0.89	0.786665	2.73***	1.52	-0.38
-7	0.022042	0.08	0.09	0.55	0.068035	0.24	0.24	-0.19
-6	0.160693	0.56	0.38	-1.02	0.37684	1.31	0.93	0.41
-5	-0.62036	-2.15**	-1.11	-1.07	-0.61782	-2.14**	-1.09	-1.55
-4	0.02302	0.08	0.05	-2.24**	0.099624	0.35	0.17	2.03**
-3	-0.23744	-0.82	-0.48	0.47	-0.01939	-0.07	-0.03	-1.24
-2	0.834574	2.89***	1.61	1.09	0.871104	3.02***	1.34	-0.33
-1	-0.02869	-0.10	-0.03	1.95*	0.163826	0.57	0.19	-0.19
0	0.038547	0.13	0.18	-0.26	0.248461	0.86	0.97	0.36
1	-0.6257	-2.17**	-2.33**	-0.31	-0.64299	-2.23**	-1.86*	1.48
2	0.146329	0.51	0.46	0.16	0.316458	1.10	0.91	0.38
3	0.069087	0.24	0.21	1.04	0.031873	0.11	0.08	0.38
4	0.32424	1.12	1.12	1.67*	0.443935	1.54	1.20	-0.07
5	-0.07602	-0.26	-0.17	0.16	-0.17139	-0.59	-0.30	-1.82*
6	-0.31914	-1.11	-1.50	-0.42	-0.39307	-1.36	-1.48	-0.26
7	-0.04192	-0.15	-0.32	-0.76	0.22265	0.77	1.40	0.19
8	-0.10328	-0.36	-0.73	-0.26	0.200047	0.69	1.18	1.31
9	-0.44302	-1.53	-0.64	-0.86	0.056761	0.20	0.06	-0.60
10	0.811151	2.81***	0.86	-0.65	0.743667	2.58***	0.74	0.45
11	-0.48231	-1.67*	-0.87	-0.60	-0.41934	-1.45	-0.76	1.34
12	-0.23162	-0.80	-1.94*	-0.63	-0.18151	-0.63	-1.34	-0.91
13	0.203003	0.70	1.22	0.78	0.668264	2.31**	1.28	-0.02
14	-0.42276	-1.46	-2.13*	0.31	-0.55413	-1.92*	-1.45	-1.05
15	0.508996	1.76*	1.00	-0.83	0.932838	3.23***	1.02	0.53
16	-0.18056	-0.63	-0.99	-0.55	-0.17287	-0.60	-0.62	-0.14
17	-0.6899	-2.39**	-1.20	1.46	-0.44049	-1.53	-0.68	1.86*
18	0.267892	0.93	0.33	1.09	0.262315	0.91	0.31	0.36
19	0.110085	0.38	0.30	-0.99	-0.071	-0.25	-0.14	-0.36
20	-0.16265	-0.56	-3.50***	-1.67*	-0.02113	-0.07	-0.29	-2.32**

NOTE: see Table A-1
*Significant at 10 percent; **Significant at 5 percent; ***Significant at 1 percent

FORMULAS USED FOR ABNORMAL RETURNS AND STATISTICAL TESTS:

The benchmark models used for the estimation of normal stock returns are the market and the market adjusted models. The abnormal returns are measured as the prediction errors over the 'event window'. That is, the period around the event over which stock returns are examined. The abnormal return for stock i on day t is calculated as follows:

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt}.$$

To adjust for missing returns, we followed the 'Eventus' procedure. If q is the number of non-trading days (the number of days with no closing price reported), the abnormal return for the first post-missing day is calculated as follows:

$$AR_{it} = R_{it} - \left[(q+1)\hat{\alpha}_i - \hat{\beta}_i \sum_{h=0}^{q} R_{m(t-h)} \right].$$

In order to correct for differences in the stock return variance and to release the strong assumption of cross-sectional homoscedasticity (De Jong, 1996:7), we standardise the abnormal returns in the following way:

$$SAR_{it} = \frac{AR_{it}}{s_{it}}.$$

The variance s_{it}^2 is then estimated by:

$$s_i^2 = \frac{1}{D_i} \sum_{t=TD_e}^{TD_b} (AR_{it} - MAR_i)^2.$$

When the abnormal returns are calculated as residuals from the estimated market model, an unbiased estimate of s_{it}^2 is given by:

$$s_{it}^2 = s_i^2 \left\{ (q+1)(1+\frac{1}{D_i}) + \frac{\sum_{h=0}^{q} (R_{m(t-h)} - \overline{R_m})^2}{\sum_{k=TD_e}^{TD_b} (R_{mk} - \overline{R_m})^2} \right\},$$

where

$$s_i^2 = \frac{\sum_{t=TDb}^{TDe} AR_{it}^2}{D_i - 2};$$

R_{mk} is the return on market index observed on day k;

$\overline{R_m}$ is the mean market return over interval T_{D_b} through T_{D_e} used to estimate the parameters for i (the estimation period); and

D_i is the number of non-missing trading day returns in the estimation period of i.

This unbiased estimate adjusts for the fact that the coefficients α and β are estimated from the market model and it is further corrected (following the 'Eventus Technical Reference') for the multi-period character of the returns in the event window.

Hence, we compute the following measures:

1. The cross-sectional average of abnormal returns at date t:

$$MAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it} ;$$

2. The cross-sectional average of standardised abnormal returns at date t: $MSAR_t = \frac{1}{N}\sum_{i=1}^{N} SAR_{it}$;

This measure is a weighted average of the abnormal returns of individual stocks, with weights inversely related to the estimated time-series standard deviation of the corresponding abnormal returns.

3. Cumulative abnormal return, defined as the cumulative sum of the abnormal returns of stock i over the event window (t_1, t_2):

$$CAR_i(t_1, t_2) = \frac{1}{T}\sum_{j=t_1}^{t_2} ARij ;$$

4. Standardised cumulative abnormal return of stock i over (t_1, t_2):

$$SCAR_i(t_1, t_2) = CAR_i(t_1, t_2) / s_{CAR_{i(t_1,t_2)}}$$

where

$$s^2_{CAR_{i(t_1,t_2)}} = s_i^2 \left\{ L\left[1 + \frac{L}{D_i} + \frac{\left(\sum_{t=t_1}^{t_2} R_{mt} - L\overline{R_m} \right)^2}{\sum_{k=1}^{D_i} (R_{mk} - \overline{R_m})^2} \right] \right\},$$

and

$L = (t_2 - t_1 + 1)$ is the length of the window (t_1, t_2) over which we cumulate the abnormal returns.

This variance estimate is used to construct a corrected version of the 'standardised abnormal return test' (or 'Patell test') below. The correction affects only multiple day windows and accounts for the eventual correlation of the abnormal returns within the window. The latter might occur due to the fact that the abnormal returns are all functions of the same market model intercept and slope estimators. The bias for uncorrected tests is more serious in longer event windows (Mikkelson and Partch, 1988, cited in 'Eventus', Technical reference: 81). For the market-adjusted model, abnormal returns are calculated as the difference between the realised return of the security over the event window and the return on the market index. In this case, there is no estimation of the mean and the expression for the variance is simply:

$s^2_{CAR_{i(t_1,t_2)}} = s_i^2(L)$.

5. Mean cumulative abnormal return defined as the average of the cumulative abnormal returns across the observations:

$$MCAR(t_1, t_2) = \frac{1}{N}\sum_{i=1}^{N} CAR_i(t_1, t_2);$$

6. Mean standardised cumulative abnormal return, the average of the standardised cumulative abnormal returns across the observations:

$$MSCAR(t_1, t_2) = \frac{1}{N}\sum_{i=1}^{N} SCAR_i(t_1, t_2).$$

The statistical significance of abnormal returns is assessed by applying three different tests:

(i) The 'standardised abnormal return test', which is asymptotically normally distributed and assumes that the ARs are cross-sectionally independent:

$$z_t = \frac{MSAR_t}{1/N}$$ (referred to as the st-test in the MSAR tables in the Appendix);

The corresponding test statistic for the null hypothesis that $MSCAR(t_1, t_2) = 0$ is corrected for the correlation of abnormal returns over the window (t_1, t_2) (see definition 4, page.7):

$$z_{MSCAR} = \frac{1}{N^{1/2}}\sum_{i=1}^{N} \frac{CAR_{i(t_1 t_2)}}{s_{CAR_{i(t_1,t_2)}}}$$ (referred to as the adj-test in the MSCAR tables in the Appendix);

We also employ the following test for the null hypothesis that $MSCAR(t_1, t_2) = 0$:

$$z_{t_1,t_2} = \frac{1}{\sqrt{N}} \sum_{i=1}^{N} \frac{1}{\sqrt{Q^i_{t_1,t_2}}} \sum_{t=t_1}^{t_2} SAR_{it}$$ (referred to as the st-test in the MSCAR tables in the Appendix),

where

$$Q^i_{t_1,t_2} = (t_1 - t_2 + 1)\frac{D_i - 2}{D_i - 4}$$ is a small sample correction term.

On the assumption of cross-sectional independence[52], this statistic follows the standard normal distributions under the null.

(ii) A t-test that uses a cross-sectional variance estimator, which depends on the number of firms in the sample and is robust to an increase in the variance of the ARs around the event dates. On the assumption that abnormal returns are cross-sectionally independent and identically normally distributed, the test for day t in the event period is defined as:

$$z_t = \frac{MAR_t}{s_{csar,t}} \sim \mathrm{T}_{N-1}$$ (referred to as the cs-test in the MSAR tables in the Appendix),

where

$$s^2_{csar,t} = \frac{1}{N} \sum_{i=1}^{N} \left[SAR_i(t) - MSAR(t)\right]^2 / (N-1).$$

By following the 'Eventus', we extend this method to multi-period windows to get the standardised cross-sectional test statistic for the null hypothesis that $MSCAR(t_1, t_2) = 0$:

$$z_t = \frac{MSCAR(t_1,t_2)}{s_{cscar,t}} \sim \mathrm{T}_{N-1}$$ (referred to as the cs-test in the MSCAR tables in the Appendix),

where

$$s^2_{cscar,t} = \frac{1}{N} \sum_{i=1}^{N} \left[SCAR_i(t_1,t_2) - MSCAR(t_1,t_2)\right]^2 / (N-1).$$

The expressions of the cross-variance estimates and t-tests for the non-standardised MAR_t and $MCAR_t$ are analogous. According to Brown and Warner (1985), the cross-sectional test is well specified for event date variance increases but not very powerful. The standardised cross-sectional test is, on the other hand, well specified and more powerful.

(iii) The rank test[53]; this non-parametric test can be used for event studies with small cross-sections. It further solves the problem related to non-normality of abnormal returns as well as thin trading of stock.

[52] See Patell (1976).
[53] Corrado and Zivney (1992) showed that the rank test dominates the t-test and the sign test.

Here we adopt the rank test proposed by Corrado (1989). This test takes into account the magnitude of the abnormal returns, as the t-test does, but without the distributional assumptions which are necessary to implement the parametric t-test. The null is that the shift in the distribution of event date excess returns is zero, that is, it should be uniformly distributed under the null that event periods are not different from non-event periods. The rank procedure assigns a rank to each daily return for each firm where rank 1 indicates the smallest abnormal return. Hence, the expected rank over a window $L_2 = (t_2 - t_1)$ around t=0 is $(L_2+1)/2$. Letting K_{it} be the rank of the excess return AR_{it} at event date t, the day 0 test statistic is:

$$z_r = \frac{1}{N}\sum_{i=1}^{N}\left(K_{i0} - \frac{(L_2+1)}{2}\right) / s(U)$$ (referred to as the rtest in the MSAR tables),

where

$$s^2(U) = \sqrt{\frac{1}{L_2}\sum_{t=t_1+1}^{t_2}\left[\frac{1}{N}\sum_{i=1}^{N}\left(K_{it} - \frac{(L_2+1)}{2}\right)\right]^2} \quad .$$

The test of the null is implemented by using the result that the asymptotic null distribution of this statistic is standard normal. Compared with the t-test, the rank test is expected to work better in small samples, because it may converge faster to the normal distribution. In practice, non-parametric tests are used in conjunction with parametric tests to check the robustness of the conclusions based on the last ones.

When testing the significance of the cumulative abnormal returns over a multiple day window (t_1, t_2), we apply the following version of the rank test (assuming the independence of daily returns ranks within the window):

$$z_r = (t_1 - t_2 + 1)^{1/2}\left[\frac{\overline{K}_{t_1,t_2} - \widetilde{K}}{\left[\sum_{t=1}^{E}(\overline{K}_t - \widetilde{K})^2 / E\right]^{1/2}}\right]$$ (referred to as the rtest in the MSCAR tables),

where

$\overline{K}_{t_1,t_2} = \frac{1}{t_2 - t_1 + 1}\sum_{t=t_1}^{t_2}\frac{1}{N}\sum_{i=1}^{N}K_{it}$ is the average rank across N observations, through days (t_1, t_2);

$\overline{K}_t = (1/N)\sum_{i=1}^{N}K_{it}$, and

E is the number of non-missing returns in the event period.

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