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The Information Content of Institutional Trades on the London Stock Exchange

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Abstract

We construct a unique dataset that includes all institutional block trades on the London Stock Exchange as reported by companies and analyse the market reaction to the buy and sell trades. We find that the type of investors behind the trade and the combination of the size of the trade and the trader's resulting level of ownership are the major determinants of the information effects and the asymmetry between price impacts of buy and sell trades. In particular, the large trades undertaken by fund managers, the most active investors in our sample, have strong information content, while, for the remaining trades, we report a limited support for the information and the price impact asymmetry hypotheses. These results hold even after accounting for trade complexity and volatility effects in the regressions.

JEL Classification: G14, G21, G22, G23, G32
Key words: Institutional trading; Corporate monitoring; UK institutional investors.

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We would like to thank Michael Brennan, Samuel Bulmash, Maria Carapeto, David Citron, Gordon Gemmill, SuSong Hwang, Joelle Miffre, Giorgio Questa, Laura Starks, Richard Taffler, and an anonymous referee for helpful comments and suggestions. An early draft entitled *The trading behavior of UK institutional investors* was presented at the Financial Management Association meeting Europe (Paris), the European Financial Management meeting in Lugano, the Institute of Quantitative Investment Research (INQUIRE) Conference, Northumberland, and the Scottish Institute for Research in Investment and Finance (SIRIF) Conference on Behavioral Finance, Edinburgh. Financial support from the Investor Relations Society, Cass Business School and Akdeniz University Scientific Research Projects Unit are gratefully acknowledged. All errors remain our responsibility.

The Information Content of Institutional Trades on the London Stock Exchange

I. Introduction

Previous studies document a significant impact of block trades on the equilibrium share prices but report that markets react differently to buy and sell orders. Starting with Kraus and Stoll (1972), a number of studies show that block purchases have a larger permanent price impact than block sales as prices increase (decrease) after a buy (sell) transaction, they remain high after the buys but they revert after the sells (e.g., Keim and Madhavan (1996), Gemmill (1996)). Similar results are documented for institutional trades (Chan and Lakonishok (1993)) and for institutional trade packages (Chan and Lakonishok (1995)). This puzzle is referred to in the literature as the permanent price impact asymmetry.

A number of hypotheses are tested in the literature to account for this impact, including the price pressure hypothesis (e.g., Kraus and Stoll (1972)), the imperfect substitution hypothesis (e.g., Scholes (1972)) and the information hypothesis (e.g., Kraus and Stoll (1972), Scholes (1972), and Mikkelson and Partch (1985)). The first two hypotheses posit that if a stock does not have sufficiently close substitutes, the excess demand and supply curves for its shares will not be perfectly elastic, and the block trade will result in a permanent price impact. However, these hypotheses do not explain fully why the permanent price impact should depend on whether the initiator of the trade is a seller or a buyer. In contrast, the information hypothesis suggests that the trading strategy of informed traders makes the buy orders convey more information than the sell orders. For example, Keim and Madhavan (1996) argue that purchases are more likely to be based on private information because they create new long term positions. Chan and Lakonishok (1993) maintain that buy trades are more likely to convey positive firm specific news because they imply a choice of one security amongst all the stocks in the market. Saar (2001) develops a model in which the price impact corresponds to the change in market expectations of the true value of the stock. Chiyachantana, Jain, Jiang and Wood (2004) claim that in bullish markets the suppliers of liquidity will not push down prices following a sell order as it is easy to find a buyer, while in bearish markets institutions have to offer discounts to find buyers for their sell orders, resulting in buys (sells) having a bigger and permanent price impact in bullish (bearish) markets.

In this paper we contribute to the literature by relating the asymmetric price response of buy and sell trades to a combination of two types of information released by companies when institutions trade: the size of the trade and the ownership level that results from the trade. The combination of these two types of information is likely to drive the impact of the trade on share prices. This alternative hypothesis implies that large buy trades undertaken by blockholders are expected to result in an increase in prices because they are likely to convey to the market private information and/or monitoring potentialities. Similarly, large sell trades that result in a significant decrease in post-trade ownership are likely to lead to a negative price reaction as the trade will signal negative information about the company and a reduction in the degree of potential monitoring. In contrast, as argued by Keim and Madhavan (1996) and Chan and Lakonishok (1993), small trades that result in a marginal change in ownership will not be informative as they are likely to be driven by liquidity reasons or encouraged by the brokers to accumulate long inventory positions for smaller price concessions. We also investigate the extent to which the information signaled to the market from both buy and sell trades depends on the type of investor initiating the trade and the frequency of their trading, after accounting for the trade complexity and volatility effects.

The paper makes several contributions to the literature on institutional trading behaviour and price impact. First, we undertake an out-of-sample test of the previous evidence which is predominantly US-based using data on institutional trading in the UK. Second, unlike most previous studies that relied mainly on quarterly ownership data to compute changes in institutional holdings, we construct a unique dataset that includes all daily institutional block trading activity in the London Stock Exchange (LSE) from 1993 to 1999. This data is compiled from the announcements made by companies in the Regulatory News Services (RNS) where they have to disclose to the market the name of any investor who holds a minimum of three per cent of the outstanding shares and any change in this holding when the trade is made. This dataset leads us to focus mainly on trades undertaken by large institutional investors who are likely to possess private information and monitoring capabilities. Third, we split these institutions into various categories including, fund managers, insurance companies, banks, investment trusts (open-end funds), industrial and commercial companies, overseas investors, and internally-managed occupational pension funds. This categorization allows us (i) to overcome the difficulties encountered in previous

studies that used high frequency data, such as the New York Stock Exchange Trade and Quotations (TAQ) database, in classifying the direction of the trade and the identity of the trader (e.g., Finucane (2000), and Lee and Radhankrishna (2000)), (ii) to assess whether institutional investors are homogeneous in their trading pattern, and (iii) to document whether these institutions have similar affects on the share prices of the companies in which they trade. Fourth, we provide some evidence on the identity of the institutional investor who is likely to be an informed trader by analyzing share price performance after the trade, and by testing the hypothesis of Brennan and Cao (1996) that informed traders are contrarians while non-informed are trend followers. Finally, we expand the literature by providing an alternative explanation for the asymmetric price response to buys and sells based on a combination of the proportion of shares traded with the ownership of the trader.

We identify a total of 19,166 institutional trades split into 9,843 (51%) buy and 9,323 (49%) sell trades in 976 UK companies undertaken by 1,504 institutional investors. This dataset has resulted in a smaller frequency of the trades but larger average trade size than previous studies that used high frequency data. The first results indicate that the institutional investors in the sample differ in their frequency of trading, with fund managers accounting for 40% of the total trades, and that 74% of transactions amount to less than 3% of the outstanding equity, with 82% for the buy and 66% for the sell trades.

The standard event study methodology is used to compute the abnormal returns around the announcement date (day 0) of the trade as disclosed in the RNS by companies. For the sample as a whole, the abnormal returns in the pre-event period are negative for the buy and positive for the sell trades, while, in the post-announcement period, the abnormal returns following both buy and sell transactions are not statistically significant. On the announcement date, the market reacts positively to both the buy and sell trades, but the abnormal returns for the buys are statistically higher than those of the sales. The results did not change significantly when we exclude the confounding events, i.e., events where two large trades with different directions occur at the same time and cancel out any price reaction. However, when the size of the trade and the new level of ownership of the trader are taken into account, the results show a clearer share price behaviour around the trades. The market reacts strongly when the buy trade is large and results in large block ownership. In addition these large buy trades are preceded by a significant drop in

share prices in the pre-announcement period and they result in significant positive cumulative abnormal returns forty days after the trade. The large sell trades that decrease significantly the level of the trader's stock ownership result in insignificant abnormal returns on the announcement date and in negative and significant abnormal returns in the post-event period. These results suggest that large buy and sell trades convey some information to the market, but since prices rise after the buys and fall after the sells, the findings do not provide support for the asymmetric price response hypothesis.

These results are further investigated by analyzing the trading patterns of each category of institutional investor in the sample and the share price impact that follows the trades. We find that fund managers, the largest active traders in our sample, buy after a significant drop in share prices ($CAR_{-40,-2}$ = -11.39%), and their trades result in significant share price increases on the announcement date ($CAR_{-1,+1}$ = +1.17%) and in the post-event period ($CAR_{+2,+40}$ = +2.33%). In contrast, their large sales are preceded by a significant price increase ($CAR_{-40,-2}$ = +1.61%) and their trades result in negative abnormal returns on the announcement date ($CAR_{-1,+1}$ = -0.83%) and in the post-event period ($CAR_{+2,+40}$ = -2.39%). The magnitude of the abnormal returns may not be economically large but the pattern of the abnormal returns is consistent with Brennan and Cao (1996) who suggest that investors who adopt contrarian strategies by selling (buying) after a price rise (decline) are likely to be informed. The trades of the fund managers do provide information to the market about the future performance of the firms in which they trade, as prices continue to rise (decline) after the buy (sell) trade. The results could also indicate that the market compounds the potential monitoring role of these institutional investors. In this case, the buy trades indicate that, by the sheer size of the funds invested, the fund managers are expected to monitor and lead the firm to a better performance, while the sell trades signal that the fund managers chose an exit rather than a monitoring strategy.

The results for the buy trades undertaken by insurance companies and investment trusts are relatively similar to the buy transactions of fund managers. However, the sell trades of these last two institutions do not lead to a decline in prices in the post-event period, providing support for the asymmetric price response hypothesis. For the remaining investors and for all small trades, the trading is relatively random with no strong and consistent timing and/or information content. Finally, we find that the announcement date abnormal returns of the sell trades are not

negative, except for the large sell trades of the fund managers. These results could be related to the possibility that share prices may rebound immediately after one or two trades, as shown by Gemmill (1996), or that the suppliers of liquidity are not pushing prices down when they face a selling interest, as argued by Chiyachantan et al (2004), as most of our sample period is characterized by a bullish market.

The regression results provide some further support for the information hypothesis of the buy trades. After accounting for size, trade complexity, type of trading institution, and volatility effects in the regression model, the post-event abnormal returns are found to be positively related to the buy trades undertaken by large investors. For the sell trades, the results are not too strong. The coefficient of the decrease in ownership following the sell trade is negative and significant. However, the relationship between these abnormal returns and the type of trader is mixed. On the announcement dates, none of the coefficients of the trader type is significant and in the post-event period not all the coefficients of the trader type are negative. These results suggest that the market reacts differently to buy and sell trades.

The paper proceeds as follows. Section II summarises the theoretical background. Section III describes the data and methodology. Section IV presents the empirical findings. Section V concludes.

II. Theoretical Background

Normally, block trades should have no effect on the firm value because there is a buyer for every seller. Given that investors are rational and informed decision-makers, their trades will not be informative about the firm's prospects, and, thus, will not affect the equilibrium prices. However, various studies show that block trades result is significant price impacts. They also report puzzling results as the buy trades have a larger permanent price impact than the sell transactions, because, while prices go up on buys and down on sells, they remain high after the buys but they revert after the sales, creating a permanent price asymmetry (e.g., Ball and Finn (1989), Chan and Lakonishok (1993, 1995), Kraus and Stoll (1972), and Keim and Madhavan (1996)).

The literature has identified three main sources of the price impact of trading. First, the price pressure or the short-run liquidity hypothesis suggests that the sales or purchases of large volumes of stock would be impossible to achieve without moving the markets because the demand curve for shares is downward sloping and the seller has to offer a "sweetener" to convince investors to buy the additional shares now

available in the market (e.g., Scholes (1972)). Holthausen, Leftwich and Mayers (1987) relate the price impact to the price concession given by the seller of a large block which includes compensation for the search, and the inventory costs which include a risk premium. Similarly, an investor who initiates the purchase of a large block may need to pay a premium to account for the difficulty in finding sufficient number of sellers willing to immediately part with their holding. This hypothesis predicts a temporary price effect and a quick return of prices to their equilibrium level (e.g., Kraus and Stoll (1972), Ho and Stoll (1981)). Empirically, this "rebound" is observed within 15 minutes after the transaction (Dann, Mayers and Raab (1977)) or within one or two trades (Gemmill (1996)).

A related view is the imperfect substitution hypothesis which considers that if a particular asset promises higher expected returns simply because of an increased availability in the market, the arbitrage opportunity will quickly be dissipated by market participants, and the price will move accordingly. Scholes (1972) argues that since assets are substitutes in investor portfolios, the price effects of the buy and sell trades must be very small. However, if there are insufficient close substitutes for a particular firm's stock, a seller might be faced with a downward-sloping demand curve, which will necessitate a discount in stock price for the transaction to take place. Similarly, a buyer might be faced with an upward-sloping supply curve requiring a premium for a large transaction to occur. This hypothesis predicts a permanent price effect[1] or at least a slower price 'rebound' than that of the price pressure hypothesis. These two hypotheses do not, however, explain why the permanent price impact should depend on whether a seller or a buyer initiates the trade.

Lastly, the information hypothesis suggests that the additional information signalled by the trade will move prices and that large trades will have more information because of the significant information costs necessary to beat the market. In contrast, small trades will not affect prices because they are carried out mainly for portfolio-adjustment purposes. Thus, a purchase (sale) of a large block of shares is likely to cause an upward (downward) pressure on the stock price that is not just a 'sweetener' but rather a permanent price adjustment which will take place even when there are close substitutes to the firm's stock, resulting in perfectly elastic demand curves (Kraus and Stoll (1972), Scholes (1972), Mikkelson and Partch (1985)). Empirically, Kraus and Stoll (1972) find information effect for buys but not for sells. Keim and Madhavan (1996) relate this asymmetric price response to the possibility

that buys are likely to be based on private information as they create long positions. Chan and Lakonishok (1993) suggest that the choice of one security amongst all the stocks in the market will drive the price impact of the buy trades. Saar (2001) develops a model in which the price impact corresponds to the change in market expectations of the true value of the stock and Chiyachantana et al (2004) suggests that the asymmetric price impact depends on the overall stock market conditions.

In this paper we extent this literature by testing an alternative hypothesis that emanates from the two types of information disclosed by companies when the trade is reported: the size of the trade and the ownership level that results from the trade. The combination of these two types of information is likely to indicate that the market reaction to institutional trades depends on the ability of the trader to acquire private information and/or to monitor companies in which they trade.[2] In line with the information hypothesis, the monitoring hypothesis predicts stock price increase (decrease) following buy (sell) transactions. However, previous studies argue that ownership should be high enough so that the potential benefits of monitoring are in excess of the costs.[3] We measure this ability by the post-trade level of ownership of the trader. The actual size of the trade, given the level of ownership, will indicate to the market whether the trade is driven by private information/monitoring or liquidity. Thus, a large buy trade undertaken by an institutional investor who holds a large stake is likely to result in positive abnormal returns on the announcement and post-event dates to reflect the potential monitoring and the private information. In contrast, a large block of shares sold by a large shareholder who ends up with a low ownership will result in negative event and post-event period abnormal returns to reflect the bad news and the end of the (potential) monitoring activity.

III. Data and Methodology

The sample includes all institutional block trades in the London Stock Exchange (LSE) reported to the Regulatory News Service (RNS) division of the Company Announcements Office (CAO) from January 1993 to December 1999. The disclosure requirement originates from the Continuing Obligations Section of the LSE Listing Rules (Yellow Book) which makes reference to the Companies Act 1985 for the specific percentage change figures to be used as guidelines. As from June 1990, firms have to report any beneficial ownership of 3% or more in their annual accounts and any change from this cut-off point is disclosed without delay in the RNS.

Extel Financial-Company Research compiles this information, as news item entitled 'Shareholding in Company', in the exact format that it was disseminated by the RNS to all listed and member firms on-line real-time. The news items are given as text (a short paragraph) including the date of the announcement, the name of the shareholder and the new percentage of share stake held after the trade. We include in our sample any change from the minimum cut-off point of 3% as disclosed by companies. The data is rearranged and thoroughly checked for errors. After eliminating all events with unavailable or incomplete data for the full estimation cum event windows, the final sample consists of 19,166 events for 976 companies (including currently extinct companies) and 1,504 institutional investors. This procedure of collecting the data has resulted in a relatively smaller sample than previous studies (e.g., Gemmill (1996)) that use high-frequency data.[4]

We analyze our data further by identifying for each trade the identity of the trader[5] and then classify each trader into seven categories: fund managers, insurance companies, banks, investment trusts (open-end funds), industrial and commercial companies, overseas investors, and internally-managed occupational pension funds. For example, we include in the internally-managed occupational pension funds any known pension funds, such as Hermes, and any institutional trader's name that includes the keywords *pension*, *pension funds*, *retirement*, *superannuation and superannuation schemes*. Investors that are not in these seven categories are classified into "Other Financial Institutions". This categorization allows us to overcome the difficulties encountered in previous studies that used stock exchanges trade by trade data (e.g., the New York Stock Exchange Trade and Quotations (TAQ) database) as we are able to identify the direction of the trade and the identity of the trader, and also to assess whether institutional investors are homogeneous in their trading activity and whether they affect share prices of the company in which they trade in the same way.

The market model (Brown and Warner (1985)) with the parameters (α and β) calculated over the estimation period [-290,-41], is used to compute the abnormal returns over the event period covers -40 to +40 days where day 0 is the announcement date of the trade. We use the company share prices adjusted for capital changes and dividends to calculate the log security i's returns (R_i), the FTSE-All Share Index which covers about 800 UK quoted companies to compute the market return (R_m) and the Scholes and Williams (1977) procedure to correct for non-synchronous trading.

IV. Empirical Results

A. Descriptive Statistics

Table 1 reports the descriptive statistics of the sample. The average size of a trade, as measured by the percentage of the number of shares outstanding, is 2.72% and the average value is £14.76m. We find no evidence of clustering of our trades in a particular year.[6] The size of the trades in our sample is relatively similar to that reported by Wahal (1996) but larger than Chan and Lakonishok (1995) who find that institutions break up their trades into small blocks and that under one-fifth of institutional buy orders by value are completed in one day but more than half of purchases take four days or longer.

Panel B and Panel C show that the average size of sell trades of 3.10% is greater than the 2.36% for the buy transactions (p of differences in means = 0.00). Similar results are observed for the medians (1.33% vs. 1.15%, p = 0.00) and for the trade values (£16.56m vs. £12.96m, p = 0.00). Accordingly, the average proportion of shares held immediately after the sell trade of 7.72% is smaller than the 12.13% for buy trades (p = 0.00). There is no strong difference between the market capitalizations of companies that experienced the buy compared to those that had sell transactions.

[Insert Table 1 about here]

The distribution of trades across different types of institutional investors, reported in Table 2, shows that Fund Managers are by far the largest category of traders with 41% of all buy trades (4,043 out of 9,843) and 39% (3,613 out of 9,323) of all the sell trades. They are followed by Insurance Companies and Overseas Institutions. Internally-managed occupational pension funds, the largest shareholder category in the UK (Faccio and Lasfer (2000)), represent only 4% of the total trades, suggesting that pension funds are not active traders, but long-term passive investors.[7]

These trades are split into different size categories by the proportion of share capital traded. Table 2 shows that 82% of all buys (8,050 out of 9,843) and 66% of all sells (6,118 out of 9,323) fall into the less than 3% category. The distribution of these trade categories by type of institutional investor shows relatively similar tendency. The trades in which more than 20% of share capital changes hands are rare (only 0.4% of all buy and 0.5% of all sell trades). We note that most of these large trades above 20% of outstanding shares are undertaken by fund managers, overseas institutions, industrial and commercial companies and other institutional investors.

[Insert Table 2 about here]

B. Abnormal Returns

Table 3, Panel A., provides a summary of the behavior of share prices around the announcement of the trades for the sample as a whole. The results indicate that on the event dates ($CAR_{-1,+1}$) share prices of both buy and sell orders increase significantly. However, the abnormal returns of 0.65% on the buy trades are statistically higher that the 0.30% abnormal returns of the sell trades (*t* of differences in means is -5.72). In the pre-event period the trends in abnormal returns are different: for the buy orders the $CAR_{-40,-2}$ are negative and significant (-0.41%, t = -1.99) and for the sell trades they are positive and significant (+3.03%, t = 6.67). The difference between the mean abnormal returns of the buy and sell orders is statistically significant (t = -11.43). The last column shows that the post-event abnormal returns ($CAR_{+2,+40}$) are not significant for both the sell and buy trades. Overall, these results suggest that, on average, institutional investors follow contrarian strategies in their buy and sell trades but the findings do not provide strong support for the information hypothesis which predicts that the abnormal returns should be positive (negative) on the announcement date and in the post-event period following the buy (sell) trades.

[Insert Table 3 about here]

These results are not fully consistent with the previous findings. For example, Chan and Lakonishok (1995) report negative CARs just before the commencement of the buy trade package[8], cutting the x-axis (0%) half-way into the trade package and yielding positive CARs afterwards. Although, our cumulative abnormal returns appear to follow the trend documented by Chan and Lakonishok (1995), the post-buy trades are not significant. However, for the sell trades, our results are somehow similar to the findings of Chan and Lakonishok (1995) who report price run-up to day 0, although of a much smaller magnitude (0.37% compared to our results of 3.03%). They interpret this finding as consistent with prior evidence (Lakonishok and Smidt (1987)) that "volume (and hence both buying and selling activity) tends to rise after increases in the stock price" (Chan and Lakonishok (1995), p.1158). However, they find a drop in CARs at the start of a sell package which recovers on the last day of the package. This rapid rebound seems to be in support of the price pressure hypothesis. In contrast, we find a slower fluctuation which may provide some support for the imperfect substitution hypothesis. Our results are also not consistent with Grinblatt,

Titman and Wermers (1995) who find that institutions are momentum investors and tend to follow past prices. Finally, we find no downward pressure on prices in the post-event period. These results are consistent with Chan and Lakonishok (1993) who argue that money managers might be involved in strategic trading in a way that will minimize the short-run liquidity and information effects. This possibility is investigated further by analyzing the impact of confounding events.

C. Confounding Events

If investors trade to minimize the short-run liquidity and information effects, they would split their trades into small amounts, although this may be costly. We test this possibility by excluding all trades that occurred over the 7-day period [-3 to +3] around the date of the first announcement (day 0). The overall results, reported in Table 3, Panel B, are similar to those reported in Panel A. Share prices decrease by -1.16% before the buy trade, increase by 0.48% on the announcement date, and then they revert by decreasing significantly by -0.70% in the post-event period. These results suggest that the information content of the buy trade is observed only on the announcement date. For the sell trades, share prices increase by 1.69% from day –40 to day 0, carry on increasing (but not significantly) by 0.09% in the event period [-1, +1] and in the post-event period they drift by 0.49% and become significant. Overall, these results do not provide enough evidence to suggest that confounding events drive the abnormal performance.[9]

D. Impact of the trade size

Easley and O'Hara (1987) and Glosten (1989) report that the price impact of a trade is affected by the size of the transaction. In addition, the size of the transaction can be used as a proxy for the information conveyed by the trade. Kyle (1985), in his rational expectations model, hypothesises that informed traders are more likely to maximise their trading profits by unfolding their trades gradually in the presence of liquidity (noise) traders. We test this hypothesis by analysing the abnormal returns of trades classified by size. We use various measures of size. First we classify our trades into small and large trades on the basis of the median, then, we use the average values and finally the following size categories: less than 3%, 3%-5%, 5%-10%, 10%-15%, 15%-20% and greater than 20%. The results are mixed and in most cases not statistically significant. We do not report these results and we think that they are

driven by the possibility that trade size measured in terms of percentage of shares traded is not a good proxy for size when testing the information hypothesis.

Instead, we test the hypothesis that the size of the trade as well as that of the after-trade ownership affect the market reaction to the buy and sell trades. We exclude all cases without data on ownership. The final sample includes a total of 11,872 split into 6,077 buys and 5,795 sales. We sort our buy trades first by size of the trade and then by the subsequent ownership level by descending order. We, then, split the ranked sample into four groups. The top group is referred to as the large trade group and includes the largest trades by size and the largest ownership. The last group is referred to as the small trade group and includes the smallest trade by size and resulting ownership levels. We do the same for the sell trades except that we rank the trades by descending order and the ownership by ascending order. The top group is referred to as large trade group and includes large trades that resulted in small ownership. The bottom group is referred to as the small trade group which includes small trades that had marginal effect on the ownership level.

The findings are reported in Table 3, Panel C. For the large buy trades, we find larger and significant announcement date abnormal returns of 1.14%. In the pre- and post-event periods, the abnormal returns of -6.22% and 1.53%, respectively, are statistically significant. On the announcement dates, share prices increase by 1.14%. These results indicate that large buy trades that result in high ownership are undertaken after a significant price drop and their positive price impact expands beyond the announcement date, suggesting permanent price impact resulting from information and/or monitoring effects. In contrast, small buy trades are undertaken after a run-up in share prices and result in positive announcement date abnormal returns of 0.16% and negative abnormal returns of -2.12% in the post-event period. Although these results for the sell trades are not consistent with our hypothesis, the differences in mean abnormal returns between large and small trades are statistically significant; indicating that these two types of trades follow different patterns and have different effects on the announcement date abnormal stock price performance.

The small sell trades are preceded by positive abnormal returns of 4.65% and result in positive abnormal returns of 0.44% on the announcement dates. In the post-event period the abnormal returns are not statistically significant. For the large sell trades the announcement date abnormal returns are 0.21%, not statistically significant. These results are not consistent with our hypothesis as they indicate that the sell trades

do not provide negative information to the market. However, for the large sell trades, the post-event period abnormal returns are negative and significant, suggesting that large sell trades that result in low ownership are likely to be driven by private information. These large sell trades are also undertaken after significant price run-ups. The differences in mean abnormal returns in the pre- and post-event periods between large and small trades are significant.

Overall, these results indicate that the large trades provide information to the market, and as argued by Brennan and Cao (1996), they are likely to be undertaken by informed investors because they are based on contrarian strategies. In the post-event period share prices increase (decrease) after the buy (sell) trades, suggesting that our results are not consistent with the asymmetric price response hypothesis. Finally, the behavior of share prices in the pre-announcement period implies that large price declines are likely to trigger only large buy trades while large price run-ups lead equally to small buy as well as large and small sell trades.

We test for the possibility that the significant post-announcement returns are driven by the short-run liquidity effects by computing the cumulative abnormal returns over [+31 to +40] period. We find these CARs to amount to 0.24 percent for large buys and –0.38 percent for large sells, both of which are statistically significant at the 1 percent level and the difference in means between these two CARs is statistically significant at the 5 percent level. For small sells and small buys however, the picture is not very clear. This could be explained by the fact that we are unable to identify whether these small trades are performed merely for portfolio rebalancing purposes or as part of a larger trade. For example, Chan and Lakonishok (1993) find that the size of a typical trade is surprisingly small although their sample of transactions comes from large money managers. They argue that large money managers "trade strategically to reduce the influence of short-run liquidity costs or information effects" (p.177). We test for robustness of these results by splitting our sample into small and large trades using the 3% level.[10] The results are qualitatively similar to those reported in Table 3, Panel C. For example, we find statistically significant post announcement CARs of 1.60% for buys (–1.64% for sales) for trades greater than 3% which lead to large (small) new ownership levels. Thus, the evidence in support of the information hypothesis does not depend on alternative specifications to capture the trade size effect.

E. Impact of trader identity

Another question that needs to be asked is whether the identity of the trader has a bearing on our results. Previous empirical studies show that investors do not trade homogeneously (e.g., Badrinath and Wahal, (2002)). They may also have different objectives in their trades and different monitoring roles (e.g., Brickley, Lease and Smith (1988, 1994), and Bethel et al. (1998)). Scholes (1972) explains that the information effect of a large block transaction will depend on the identity of the buyer or the seller since certain categories of investors are expected to have more information about the company than others. A detailed analysis of the different trading styles and trading strategies adopted by different institutional investors, along with the price impact of such diverse trading behaviour is beyond the scope of this paper. Instead, this section tries to determine whether a pattern emerges when the trades are grouped by type of institution initiating the trade. That is, we test whether a buy (sell) trade executed by a particular type of institutional investor can be considered good (bad) news and thus be associated with positive (negative) abnormal returns due to the (loss of) expected effectiveness of monitoring in driving the firm to better performance. We, thus, split our sample into seven categories of institutional investors and compute for each the abnormal returns around the buy and sell trades.

Table 3, Panel D presents the results for trades undertaken by fund managers, the most active investor category in our sample. For the buy trades, the results are similar to those reported in Panel C: Fund managers buy large stakes after significant stock price decline ($CAR_{-40,-2}$ = -11.39%) and these trades result in significant positive abnormal returns in the event period ($CAR_{-1,+1}$ = 1.17%) and in the post event period ($CAR_{+2,+40}$ = 2.33%). These results are also similar to the buy trades undertaken by insurance companies (Panel E) and Investment Trusts (Panel F). Overall, the results indicate that these three large institutional investors which account for 62% of the total trades (see Table 2) display similar trading patterns and market reaction: they buy after significant price decline and their large trades provide positive information.

For small trades, the trading of fund managers results in $CAR_{-40,-2}$ of 6.67% and the $CAR_{+2,+40}$ of -1.98% which are both statistically significant but the event date abnormal returns ($CAR_{-1,+1}$) are not significant. These results indicate that the fund managers that undertake the small trades are market followers but the market reverts

after the trade. The results for insurance companies and investment trusts are mixed. Overall, these results are not consistent with the information signalling hypothesis.

In the case of the sell trades, the small and large transactions are undertaken after significant price run up. However, the large sell trades undertaken by fund managers result in negative event date abnormal returns of -0.83% and post-event abnormal returns of -1.99%. In contrast, small trades result in positive announcement date abnormal returns of 0.42% and insignificant returns in the post-event period. These results indicate that small trades are likely to be undertaken for liquidity considerations while large sell trades are strategic decisions to reduce significantly the holding in the company. Our findings provide further support for the information content of large sell trades undertaken by fund managers. The results for insurance companies and investment trusts are not consistent with the information hypothesis.

The remaining investors do not appear to have a significant effect on the equilibrium share prices when they trade. Overseas institutional investors (Panel G) buy and sell after large price declines but in the post-event period the CARs are negative particularly for both large buy and sell trades. Banks (Panel H) sell small stakes after price run-up and the $CAR_{+2,+40}$ amount to -7.85% and significant. They sell large stakes in companies that have already underperformed ($CAR_{-40,-2}$ = -2.56%) and this underperformance extends beyond their trading date ($CAR_{+2,+40}$ = -3.37%). For industrial and commercial companies, the market reaction on the announcement date of purchases of large stakes is positive, probably in expectation of a takeover bid, but the pre- and post-event periods abnormal returns are not statistically significant. Finally, for pension funds, the $CAR_{+2,+40}$ after small buy trades are negative and significant. Their large buy trades are undertaken after significant price run-up and they are followed by significant positive abnormal returns in the post-event period ($CAR_{+2,+40}$ = 4.24%). In contrast, their sell trades are not followed by significant negative returns, and the event date abnormal returns of 1.25% are positive and significant.

Overall, the information hypothesis appears to be supported mainly by the large buy and sell trades undertaken by fund managers. The large trades undertaken by the remaining institutional investors are not fully consistent with the information hypothesis or only one direction of the trade provides support for this hypothesis, and this direction is not always the buy trades, as shown in previous studies. For small trades, the results provide a weak support for the information content hypothesis.

F. Are the results sample-period dependent?

In this section we test whether our results are affected by the changes in the publication rules that occurred during our sample period and whether they hold in bullish and bearish periods. Over our sample period a number of reforms in the publication rules came into effect in the London Stock Exchange. We have taken the announcement dates as the dates when companies report the trades in the RNS. The London Stock Exchange rules require companies to report any such trades without delay. However, the traders may have up to 5 days to report to the company their trades. In order to assess whether such potential delay affects our results, we split the data into 2 periods according to the trade delay rules' change dates.[11] Period 1 relates to the pre-13 December 1993, when the maximum allowable delay is 90 minutes for trades larger than 3 times Normal Market Size (NMS), that is the individual stock's typical trade size. Period 2 spans from 13 December 1993 onwards, where the maximum allowable delay is 5 days for trades larger than 75 times NMS.

We find that in Period 1 both buys and sells behave in a similar way before the announcement date. After the announcement of the trade, buys continue to yield positive abnormal returns, whereas for sells, we find a downward price pressure. However, the abnormal returns over the event window (-1, +1) are not significant. These results are likely to be driven by the relatively smaller number of observations in this first period (11% of the total number of observations). The results for the second period resemble those reported in Table 3, even when the event period is defined as [-5, +1]. Overall, consistent with Gemmill (1996), we find no evidence that changes in trade publication rules affect the market response to buy and sell trades.[12]

We also check whether our results are sample period dependent. Chiyachantana et al (2004) argue that the behaviour of the suppliers of liquidity is likely to depend on market conditions. In particular, in bullish markets, they run up prices in the face of a strong buying interest but they do not push down the prices as much when they face a selling interest because they are not so cautious about the institutional sell orders. The situation is the opposite in bearish markets because many traders are willing to sell at the prevailing prices but fewer traders are willing to buy. Thus, in bearish markets many institutions can buy shares without paying a large liquidity premium while, they will be forced to offer bigger price discounts to find buyers for their sell trades. They predict that in bullish (bearish) markets, buys (sells)

have a bigger price impact. They find that the price impact is higher for institutional purchases in 1997/98 (bullish) but in 2001 (bearish market) institutional sell orders had a bigger price impact. They conclude that the price impact of institutional trades is not driven by private information but by the payment of a higher premium for liquidity when they trade on the same side of the market.

This hypothesis is tested by tentatively splitting our sample period into 1993-1996, the relatively bearish period, and 1997-1999, the bullish period. We find similar trends for the large buy and sell trades in both sub-periods: large buy (sell) trades are preceded by strong negative (positive) returns and followed by positive (negative) returns. However, the magnitude of the abnormal returns in the pre- and post-event periods and on the announcement dates differs across the two periods. In the first period, the price impact on the announcement date is slightly smaller for large buy trades (0.40% vs. 0.74% in the second sub-period) but higher, although not significant, for the large sell trades (0.14% vs. 0.07%). The differences in means between the two sub-periods are not statistically significant. Similarly, we find some differences between the two sub-periods in the pre- and post-event abnormal returns, but they are not significant. These results are likely to be due to the fact that, although in 1997-1999 the market was bullish, the first period is not totally bearish. Additional data in the post-2000 period will be more appropriate to test this hypothesis.

G. Regression results

In this section we conduct a regression analysis by taking into account other variables identified in the prior empirical research to potentially have an impact on the abnormal returns. We adopt a similar approach to that used by Chan and Lakonishok (1993, 1995), and include variables to accommodate in the model the influence of firm size, trade difficulty and identity of trader. We also include variables to account for stock and market volatility effects, following Grinblatt and Keloharju (2001). We, therefore, construct the following regression model:

$$CAR_{i,t} = \alpha + \beta O_{i,t} + \sum_{j=1}^{3} \delta_j S_{ij} + \sum_{j=1}^{4} \gamma_j C_{ij} + \sum_{j=1}^{7} \varphi_j I_{ij} + \sum_{j=1}^{4} \lambda_j M_{ij} + \sum_{j=1}^{4} \psi_j V_{ij} + \varepsilon_i \quad (1)$$

where $CAR_{i,t}$ is the cumulative abnormal return of large trades for the (-40,-2), (-1,+1) and (+2,+40) event windows. The explanatory variables are O_i, the new ownership percentage, that is, the percentage of shares of the firm held by the trading institution as a result of the trade; S_{ij} is a dummy variable for the trade's classification

by market capitalization corresponding to the quartiles of the distribution of value of outstanding equity at the prior year-end; C_{ij} is a dummy variable for the trade's classification by complexity as measured by the quintiles of the distribution of normal volume computed as average daily volume over a prior 40-day interval, following Chan and Lakonishok (1993), I_{ij} is a dummy variable for the type of Institution; M_{ij} is a dummy variable for market volatility; V_{ij} is a dummy variable for stock volatility. There are five classifications by stock and market volatility, corresponding to the quintiles of the distribution of stock's and market's average squared daily return over the prior 60 trading days (computed following Grinblatt and Keloharju (2001)). We run separate regressions for large buy and large sell trades.

Table 4, Panel A, reports the results of the full model for each of the three CAR measures for both buy and sell trades. We find that for the pre-trade period, the coefficients of the new ownership percentage variable are negative for both buy and sell trades. However, around the announcement day of the trade and the post-trade period, there is a positive association between the market reaction and the new ownership level for buy trades, while there is a negative association for sell trades. The results for firm size and trade complexity are generally consistent with Chan and Lakonishok (1993, 1995).

These findings provide some support to the information hypothesis. Even after taking into account firm size, trade complexity, type of trading institution, and volatility effects, as the new ownership level achieved as a result of the buy trade increases, markets interpret this as good news and react positively. In this case, the information conveyed to the market could be that, by the sheer size of the funds invested, the institutional buyer is expected to monitor and lead the firm to better performance. We can rule out the possibility that short-run liquidity effects could be driving these results, since they are accounted for by including the volatility dummies in the model. In contrast, markets react negatively to announcements involving lower levels of remaining ownership as a result of the sell trade. The information now signaled to the market could be that, the institutional shareholder has chosen not to monitor and decided to dispose of some or all of its holdings in the firm.[13]

Another finding reported in Panel A is the difference in the market response to trading by different types of institutions. For the buy trades, the coefficients of the fund managers and investment trusts are negatively and significantly related to the pre-announcement abnormal returns, but then become positive and significant when

the dependent variable is the announcement and post-announcement abnormal returns. For the remaining institutional investors, the impact is mainly observed in the post-announcement period, with the exception of pension funds, the industrial and commercial companies and overseas investors where the coefficients are negative and significant. For the sell trades, the coefficients of fund managers, investment trusts, pension funds and banks are negatively related to the post-event period abnormal returns. In the pre-announcement period and on the announcement dates, the level of significance is weak. Overall, the results for different types of institutions are mixed. We could be missing out important detail by aggregating the trades into institutional investor types. Further tests using alternative classifications based on investment styles and views on activism are necessary but beyond the scope of this study.

Table 4, Panel B, assesses the marginal explanatory power of the dummy variables, by excluding each set, one at a time, from the full model (1). We report the adjusted R^2 and F-values for each specification. A great deal of the explanatory power is lost when we exclude stock volatility effects. However, consistent with Chan and Lakonishok (1993, 1995), excluding the dummy variables for firm size and trade complexity has little effect on the R^2. The type of institution behind the trade has some effect but marginal. Chan and Lakonishok (1993, 1995) find strong institutional effect, probably because they are able to include into the model the effect of each money manager in isolation by using 36 dummy variables, one for each money manager, in their sample. However, in our study we were unable to include in the model a dummy variable for each of our 1,504 trading institutions and our best available option was to group them into institutional types. Although the overall effect of the identity of the trader is small compared to the other sets of dummies, there are significant differences among different types of institutions, as reported in Panel A.

[Insert Table 4 here]

V. Conclusions

We use a unique dataset to analyse the market reaction to the arrival of news regarding block trades undertaken by institutional investors in the UK from 1993 to 1999. We test the asymmetric price response hypothesis and investigate whether the market response to the information signaled by the trades depends on the type of institutional investor initializing the trade. We find limited support for this hypothesis for the sample as a whole and when confounding events are excluded. We find that

the type of investors behind the trade and the combination of the size of the trade and the trader's resulting level of ownership, are the major determinants of the price impact. In particular, the large buy and sell trades undertaken by fund managers, the most active investors in our sample, have strong information content, while for the remaining institutional traders, the results provide a limited support for the information content of the trades and for the asymmetry between price impacts of buy and sell orders. We also show that fund managers adopt contrarian strategies as they sell on a price rise and buy on a price decline and, as suggested by Brennan and Cao (1996), these active investors are likely to be informed traders. Similar results are found for the large buy trades of insurance companies and investment trusts. The trades undertaken by the remaining investors appear to be randomly distributed.

The regression results also provide some support for the information hypothesis. After including firm size, trade complexity, type of trading institution, and volatility effects in the regression model, the new ownership level achieved as a result of the buy trade increases the abnormal returns suggesting that the market is interpreting this as good news, probably because the institutional buyer is expected to monitor and lead the firm to better performance. In contrast, the market reacts negatively to the announcements involving lower levels of remaining ownership resulting from the sell trade. The information now signaled to the market could be that, the institutional shareholder has chosen not to monitor and decided to dispose of some or all of its holdings in the firm.

These results, however, call for more research to understand fully the price impact of institutional trades. In particular, we find that the market reaction on the announcement date of the large sell trades is not negative for the institutional investors other than fund managers, suggesting that share prices rebound rapidly after a sell trade is announced or that the suppliers of liquidity are not pushing prices down when they face a selling interest as the market was bullish over our sample period. These results could also be due to the specific data we used. Our announcement dates are based on the company disclosures of the trades. We assume that the market gets the information when the company discloses the trade in the RNS. We believe that such announcements are likely to convey more information because when trades are executed, especially if they are in small amounts, their information content will not be observed, while, when companies make the announcement in the RNS, the market gets informed about the identity of the trader, the amount traded and the new holding.

Although companies have to disclose these trades to the market without delay, they may get the information up to five days after the trade. The trades that are executed in small amounts but reported to the company as one aggregated trade will result in one single announcement. Since, as shown in our results, the market appears to react more to the large trades, the traders are likely to avoid aggregating their trades and make a single announcement to the companies to mitigate the information effect. Thus, they are likely to opt for an execution of the trades in small blocks to minimize the information effects and report multiple trades individually to the company. This is likely to be the case for the sell trades and the resulting non-negative abnormal returns on the announcement date. Our data does not allow us to analyse this issue further and the disclosure of the trades is an interesting empirical issue for further research.

The analysis of the pre- and post-event abnormal returns indicates that the possibility of multiple executions of block trades is not likely to affect substantially our results. If the block trades are executed in small trades but reported to the company as one aggregated trade, we would expect positive abnormal returns before the buy trades and negative abnormal returns before the sell transactions. We did not find any significant daily abnormal returns 10 days before our event date. In addition, if the trading has started during days -40 to -2, we would expect $CAR_{-40,-2}$ of the buy trades to be positive and $CAR_{-40,-2}$ of the sell transactions to be negative. The results reported in Table 3 indicate that $CAR_{-40,-2}$ of the buy trades are mainly negative while $CAR_{-40,-2}$ of the sell trades are mainly positive.

Our analysis could also be expanded to cover further the characteristics of the investors. The data does not provide any information on the institutions' affinity or tendency to monitoring or whether these trades are done for their own account or on behalf of clients. It would be interesting to analyse the impact of the investment styles (indexed, value, growth, diversified), portfolio turnover rates and separate dummy variables to identify the effect of each individual trader. Given the large number of institutional investors in our sample (1,504), it was not possible to include these effects in our study. Finally, there is a need to test further the impact of macro economic effects by using data the post 1999 period when the market is bearish. The extent to which all these factors will support or alter our conclusions is a matter of further research.

References

Admati, A.R., P. Pfleiderer, and J. Zechner. "Large Shareholder Activism, Risk Sharing, and Financial Market Equilibrium." *Journal of Political Economy,* 102 (1994), 1097-1130.

Badrinath, S.G., and S. Wahal. "Momentum Trading by Institutions." *Journal of Finance*, 57 (2002), 2449-2478.

Ball, R., and F. J. Finn. "The Effect of Block Transaction on Share Prices in a Pure Auction Market." *Journal of Banking and Finance*, 13 (1989), 397-420.

Bethel, J.E., J.P. Liebeskind, and T. Opler. "Block Share Purchases and Corporate Performance." *Journal of Finance,* 53 (1998), 605-634.

Board, J., and C. Sutcliffe. "The Effects of Trade Transparency in the London Sock Exchange: A Summary." London School of Economics, Financial Markets Group Special Paper Series 67 (1995).

Board, J., and C. Sutcliffe. "The Proof of the Pudding: The Effects of Increased Trade Transparency in the London Stock Exchange." *Journal of Business Finance and Accounting,* 27 (2000), 887-909.

Brennan, M. J., and H. H. Cao. "Information, Trade, and Derivative Securities." *Review of Financial Studies,* 9 (1996), 163-208.

Brickley, J.A., R.C. Lease, and C.W. Smith. "Ownership Structure and Voting on Anti-takeover Amendments." *Journal of Financial Economics,* 20 (1988), 267-291.

Brickley, J.A., R.C. Lease, and C.W. Smith. "Corporate Voting: Evidence from Charter Amendment Proposals." *Journal of Corporate Finance,* 1 (1994), 5-30.

Brown, S. J., and J. B. Warner. "Using Daily Stock Returns: The Case of Event Studies." *Journal of Financial Economics,* 14 (1985), 3-31.

Chan, L.K.C., and J. Lakonishok. "Institutional Trades and Intraday Stock Price Behaviour." *Journal of Financial Economics,* 33 (1993), 173-199.

Chan, L.K.C., and J. Lakonishok. "The Behavior of Stock Prices around Institutional Trades." *Journal of Finance*, 50 (1995), 1147-1174.

Chan, L.K.C., and J. Lakonishok. "Institutional Equity Trading Costs: NYSE versus Nasdaq." *Journal of Finance,* 52 (1997), 713-735.

Chiyachantana, C.N., P.K. Jain, C. Jiang, and R.A. Wood. "International Evidence on Institutional Trading Behavior and Price Impact." *Journal of Finance,* 59 (2004), 869-898.

Conrad, J., K.M. Johnson, and S. Wahal. "The Trading of Institutional Investors: Theory and Evidence." *Journal of Applied Finance,* 12 (2002), 13-20.

Dann, L.Y., D. Mayers, and R.J. Raab, Jr. "Trading Rules, Large Blocks and the Speed of Price Adjustment." *Journal of Financial Economics*, 4 (1977), 3-22.

Easley, D., and M. O'Hara. "Price, Trade Size and Information in Securities Markets." *Journal of Financial Economics,* 19 (1987), 69-90.

Faccio, M., and M.A. Lasfer. "Do Occupational Pension Funds Monitor Companies in which they Hold Large Stakes." *Journal of Corporate Finance,* 6 (2000), 71-110.

Finucane, T.J. "A Direct Test of Methods for Inferring Trade Direction from Intra-Day Data." *Journal of Financial and Quantitative Analysis*, 35 (2000), 553-576.

Gemmill, G. "Transparency and Liquidity: A Study of Block Trades on the London Stock Exchange under Different Publication Rules." *Journal of Finance*, 51 (1996), 1765-1790.

Glosten, L. "Insider Trading, Liquidity, and the Role of the Monopolist Specialist." *Journal of Business,* 62 (1989), 211-235.

Goetzmann, W.N., and M. Massa. "Daily Momentum and Contrarian Behavior of Index Fund Investors." *Journal of Financial and Quantitative Analysis*, 37 (2002), 375-389.

Griffin, J.M., J.H. Harris, and S. Topaloglu. "The Dynamics of Institutional and Individual Trading." *Journal of Finance,* 58 (2003), 2285-2320.

Grinblatt, M., S. Titman, and R. Wermers. "Momentum Investment Strategies, Portfolio Performance, and Herding: A Study of Mutual Fund Behavior." *American Economic Review,* 85 (1995), 1088-1105.

Grinblatt, M., and M. Keloharju. "What Makes Investors Trade?" *Journal of Finance,* 56 (2001), 589-616.

Ho, T., and H. Stoll. "Optimal Dealer Pricing under Transactions and Return Uncertainty." *Journal of Financial Economics,* 9 (1981), 47-73.

Holderness, C.G., "A Survey of Blockholders and Corporate Control." Federal Reserve Bank of New York Economic Policy Review, (*Forthcoming*).

Holthausen, R.W., R.W. Leftwich, and D. Mayers. "The Effect of Large Block Transactions on Security Prices: A Cross-Sectional Analysis." *Journal of Financial Economics,* 19 (1987), 237-267.

Huang, R.D., and R.W. Masulis. "Trading Activity and Stock Price Volatility: Evidence from the London Stock Exchange." *Journal of Empirical Finance,* 10 (2003), 249-269.

Kahn, C., and A. Winton. "Ownership Structure, Speculation, and Shareholder Intervention." *Journal of Finance,* 53 (1998), 99-129.

Keim, D.B., and A. Madhavan. "Anatomy of the Trading Process: Empirical Evidence on the Behavior of Institutional Traders." *Journal of Financial Economics*, 37 (1995), 371-398.

Keim, D.B., and A. Madhavan. "The Upstairs Market for Large Block Transactions: Analysis and Measurement of Price Effects." *Review of Financial Studies*, 9 (1996), 1-36.

Keim, D.B., and A. Madhavan. "Transactions Costs and Investment Style: An Inter-Exchange Analysis of Institutional Equity Trades." *Journal of Financial Economics*, 46 (1997), 265-292.

Kraus, A., and H. R. Stoll. "Price Impacts of Block Trading on the New York Stock Exchange." *Journal of Finance,* 27 (1972), 569-588.

Kyle, A.S. "Continuous Auctions and Insider Trading." *Econometrica*, 53 (1985), 1315-1336.

Lakonishok, J., and S. Smidt. "Volume for Winners and Losers: Taxation and other Motives for Stock Trading." *Journal of Finance,* 41 (1986), 951-976.

Lee, C.M.C., and B. Radhakrishna. "Inferring Investor Behavior: Evidence from TORQ Data." *Journal of Financial Markets,* 3 (2000), 83-111.

Maug, E. "Large Shareholders as Monitors: Is there a Trade-off between Liquidity and Control?" *Journal of Finance,* 53 (1998), 65-98.

Mikkelson, W., and M. M. Partch. "Stock Price Effects and Costs of Secondary Distributions." *Journal of Financial Economics,* 14 (1985), 165-194.

Saar, G. "Price Impact Asymmetry of Block Trades: An Institutional Trading Explanation." *Review of Financial Studies*, 14 (2001), 1153-1181.

Scholes, M.S. "The Market for Securities: Substitution vs. Price Pressure and the Effects of Information on Share Prices." *Journal of Business,* 45 (1972), 179-211.

Scholes, M., and J.T. Williams. "Estimating Betas from Nonsynchronous Data." *Journal of Financial Economics,* 5 (1977), 309-327.

Wahal, S. "Pension Fund Activism and Firm Performance." *Journal of Financial and Quantitative Analysis,* 31 (1996), 1-23.

Table 1. Descriptive Statistics

The table presents the descriptive statistics of the proportion of shares traded, their value, the size of companies and the proportion of ownership following the trade. The sample includes all institutional trades with complete data undertaken in the London Stock Exchange (LSE) from 1993 to 1999 as reported in the Regulatory News Service (RNS). Panel A. includes all the trades. Panel B. reports the buy trades and Panel C. the sell trades.

	Mean	Min	25th percentile	Median	75th percentile	Max
Panel A. All Trades (n=19,166)						
% of share capital traded	2.72%	0.01%	0.44%	1.21%	3.62%	68.71%
% of shares held after the trade	9.98%	0.00%	4.70%	8.16%	14.52%	92.08%
Market Capitalization (£ million)	739.2	0.036	44	160	592	62,276
Value of the trade (£ million)	14.76	0.001	0.36	1.32	5.28	5,537
Panel B. Buys (n=9,843)						
% of share capital traded	2.36%	2.72%	0.47%	1.15%	2.36%	68.71%
% of shares held after the trade	12.13%	0.64%	6.08%	10.90%	15.91%	92.08%
Market Capitalization (£ million)	726	0.036	46	162	600	55,745
Value of the trade (£ million)	12.96	0.00001	0.36	1.2	4.92	4,025
Panel C. Sales (n=9,323)						
% of share capital traded	3.10%	0.01%	0.41%	1.33%	4.08%	68.71%
% of shares held after the trade	7.72%	0.00%	0.00%	5.74%	13.01%	87.28%
Market Capitalization (£ million)	753.6	0.036	43	158	584	62,276
Value of the trade (£ million)	16.56	0.00002	0.36	1.44	5.88	5,537

Table 2. Distribution of trades by trade size and investor category

The table reports the distribution of the size of the trades by institutional investor. The sample comprises all trading activity (with complete data) in the London Stock Exchange (LSE) from 1993 to end of 1999 as reported to the Regulatory News Service (RNS). ICCs is for industrial and commercial companies. Other financial institutions include life assurance companies, charities, trusts and foundations, joint and nominee accounts, other financial institutions and groups, venture capital companies, and the public sector. Panel A. includes all the trades. Panel B. reports the buy trades and Panel C. the sell trades.

% of share capital traded (S)	S< 3%	3% ≤ *S* < 5%	5% ≤ *S* < 10%	10% ≤ *S* < 15%	15% ≤ *S* < 20%	S≥20%	Total
			Panel A. All trades				
Fund Managers	5,885	690	401	530	113	37	7,656
Insurance Companies	2,356	741	128	19	3	0	3,247
Overseas Institutions	1,827	271	112	31	6	24	2,271
Banks	841	239	73	102	12	3	1,270
ICCs	718	115	60	20	8	10	932
Investment Trusts	639	198	67	15	1	2	922
Pension Funds	427	220	63	8	3	3	724
All Other Institutions	1,474	410	128	109	13	10	2,144
Total	14,168	2,884	1,032	834	159	89	19,166
			Panel B. Buy trades				
Fund Managers	3,300	268	203	201	57	14	4,043
Insurance Companies	1,230	197	59	5	1	0	1,492
Overseas Institutions	1,173	89	48	16	3	13	1,342
Banks	393	64	32	42	6	3	540
ICCs	501	42	19	5	3	4	574
Investment Trusts	440	56	21	5	1	1	524
Pension Funds	206	53	21	2	1	2	285
All Other Institutions	807	118	59	48	6	5	1,043
Total	8,050	887	462	324	78	42	9,843
			Panel C. Sell trades				
Fund Managers	2,585	422	198	329	56	23	3,613
Insurance Companies	1,126	544	69	14	2	0	1,755
Overseas Institutions	654	182	64	15	3	11	929
Banks	448	175	41	60	6	0	730
ICCs	218	73	41	15	5	6	358
Investment Trusts	199	142	46	10	0	1	398
Pension Funds	221	167	42	6	2	1	439
All Other Institutions	667	292	69	61	7	5	1,101
Total	6,118	1,997	570	510	81	47	9,323

Table 3. Cumulative Abnormal Returns Classified by Size and Identity of Traders

The sample includes all institutional trades with complete data undertaken in the London Stock Exchange (LSE) from 1993 to 1999 as reported in the Regulatory News Services (RNS). Returns are calculated using OLS market model with Scholes and Williams (1977) adjustment. Day 0 is the announcement day of the trade. Samples in Panels C to J exclude confounding trading events and companies without data on resulting ownership. In Panel C to J, small (large) refers to trades after which the % of shares held in the company by the trader is in the bottom (top) group. ***, **, * are significant at 1%, 5% and 10% level, respectively.

	Buy Trades				***Sell Trades***			
	N	**$CAR_{-40,-2}$**	**$CAR_{-1,+1}$**	**$CAR_{+2,+40}$**	**N**	**$CAR_{-40,-2}$**	**$CAR_{-1,+1}$**	**$CAR_{+2,+40}$**
Panel A. All Events N = 19,166								
%	9,843	-0.41***	0.65***	0.20	9,323	3.03***	0.30**	0.11
t-test Buy – Sell		*-11.43****	*-5.72****	*-1.08*				
Panel B. Non Confounding Trading Events N = 13,498								
%	6,886	-1.16***	0.48***	-0.70***	6,612	1.69***	0.09	-0.49**
t-test Buy – Sell		*-8.59****	*5.66****	*-0.64*				
Panel C. Size of New Ownership Groups								
Small	1,519	2.86***	0.16***	-2.12***	*1,448*	4.65***	0.44*	0.33
Large	1,520	-6.22***	1.14***	1.53***	*1,449*	1.61***	0.21	-1.50**
t-test Small – Large		*10.68****	*-4.80****	*-5.39****		*2.85****	*0.88*	*2.68****
t Buy – Sell(Small)		*-3.39****	*-1.24*	*-3.21****				
t Buy – Sell(Large)		*-8.51****	*3.58****	*3.86****				
Panel D. Fund Managers								
Small	628	6.67***	0.02	-1.98**	579	7.22***	0.42***	0.59
Large	629	-11.39***	1.17***	2.33**	580	2.70***	-0.83***	-2.39***
t-test of difference		9.93***	-2.50***	-2.75***		2.00***	2.74***	1.91**
Panel E. Insurance Companies								
Small	287	0.82	0.11	-1.76**	320	3.08***	0.08	4.60***
Large	287	-2.93***	0.96**	2.92**	320	4.94***	1.12***	1.55
t-test of difference		1.72*	-1.76*	-2.36***		0.83	-1.54	0.48

Table 3. Cont.

	Buy Trades				*Sell Trades*			
	N	**$CAR_{-40,-2}$**	**$CAR_{-1,+1}$**	**$CAR_{+2,+40}$**	**N**	**$CAR_{-40,-2}$**	**$CAR_{-1,+1}$**	**$CAR_{+2,+40}$**
Panel F. Investment Trusts								
Small	100	-1.14*	0.29	1.28	80	9.78***	2.03***	-0.64
Large	100	-4.44***	2.20***	4.21***	80	1.28	1.79**	-0.61
t-test of difference		0.83	-1.55	-0.67		1.51	0.17	0.00
Panel G. Overseas Institutional Investors								
Small	239	-3.02***	0.48	-1.74**	173	-1.85	0.53	0.23
Large	240	-6.28***	0.44	-3.06***	173	-6.02***	0.98*	-3.98***
t-test of difference		1.09	-0.30	-0.20		1.14	-0.34	1.15
Panel H. Banks								
Small	101	5.88***	0.78	0.59	143	4.78***	0.13	-7.85***
Large	101	0.49	0.02	1.87	143	-2.56*	-0.19	-3.37***
t-test of difference		1.37	0.70	-0.37		2.01**	0.50	-1.68*
Panel I. Industrial and Commercial Companies								
Small	112	1.10	0.53	-6.35***	66	4.98***	0.46	-2.29**
Large	112	1.21	3.59***	-0.61	66	4.24***	0.49	-0.07
t-test of difference		-0.04	-2.45***	1.96**		0.10	-0.02	-0.35
Panel J. Pension Funds								
Small	52	0.72	-1.55	-10.24***	88	1.09*	0.80	-0.58
Large	52	5.69***	-0.19	4.24**	88	2.33**	1.25*	-0.73
t-test of difference		-0.60	-1.01	-2.16**		-0.36	-0.34	0.05

Table 4. Regression results

The table reports the regression estimates using the following model:

$$CAR_{i,t} = \alpha + \beta O_{i,t} + \sum_{j=1}^{3} \delta_j S_{ij} + \sum_{j=1}^{4} \gamma_j C_{ij} + \sum_{j=1}^{7} \varphi_j I_{ij} + \sum_{j=1}^{4} \lambda_j M_{ij} + \sum_{j=1}^{4} \psi_j V_{ij} + \varepsilon_i$$

where CAR_i is the cumulated abnormal return (in %) for the (-40,-2), (-1,+1) and (+2,+40) event windows. O_i is the new ownership percentage, that is, the percentage of shares of the firm held by the trading institution as a result of the trade; S_{ij} is a dummy variable for the trade's classification by market capitalisation corresponding to the quartiles of the distribution of value of outstanding equity at the prior year-end of sample firms; C_{ij} is a dummy variable for the trade`s classification by complexity corresponding to the quintiles of the distribution of normal volume computed as average daily volume over a prior 40-day interval (following Chan and Lakonishok (1993)); I_{ij} is a dummy variable for the type of Institution; M_{ij} is a dummy variable for market volatility effects; V_{ij} is a dummy variable for stock volatility effects. There are five classifications by stock and market volatility, corresponding to the quintiles of the distribution of stock's and market's average squared daily return over the prior 60 trading days (computed following Grinblatt and Keloharju (2001)). The equation is estimated separately for sell and for buy trades. The sample includes all institutional trades in the LSE from 1993 to 1999 as reported on the Regulatory News Service. ***, **, * are significant at 1%, 5% and 10% level, respectively.

	Buy Trades			**Sell Trades**		
	$CAR_{-40,-2}$	**$CAR_{-1,+1}$**	**$CAR_{+2,+40}$**	**$CAR_{-40,-2}$**	**$CAR_{-1,+1}$**	**$CAR_{+2,+40}$**
Panel A: Estimated coefficients for full model						
Intercept	0.032 ***	-0.002	0.037 ***	0.006	0.000	0.011
New Ownership Percentage	-0.206 ***	0.017 **	0.056 **	-0.230 ***	-0.007 ***	-0.101 ***
Size 2 (small)	-0.006	-0.006 ***	-0.028 ***	0.030 ***	-0.007 ***	-0.022 ***
3	0.006	-0.007 ***	-0.022 ***	0.065 ***	-0.012 ***	-0.016 *
4 (large)	0.028 ***	-0.001	0.004	0.047 ***	-0.008 ***	-0.010
Complexity 2 (easy)	-0.004	0.005 **	-0.002	-0.017 **	0.005 **	-0.011
3	-0.011	0.000	-0.024 ***	-0.001	0.002	-0.012 *
4	-0.014 *	0.000	-0.008	-0.012	0.006 ***	-0.025 ***
5 (hard)	-0.017 **	0.005 *	-0.020 ***	-0.037 ***	0.004	-0.024 ***
Trader						
Fund Manager	-0.023 **	0.009 **	0.022 *	0.017	-0.001	-0.011 *
Investment Trust	-0.018 *	0.007 **	0.023 *	0.002	0.006	-0.029 **
Pension Fund	0.009	0.001	-0.029 *	-0.018	0.001	-0.014 *
Insurance Company	-0.002	0.005 *	0.020 *	-0.011	-0.001	0.013 *
Bank	0.023 *	0.002	0.034 **	-0.026 **	-0.004	-0.024 **
Industrial & Commercial Co.	-0.004	0.006 *	-0.029 *	-0.022	-0.001	0.014 *
Overseas Investor	-0.006	0.002	-0.016 *	-0.049 ***	0.000	-0.012
Market Volatility 2 (low)	-0.025 ***	-0.004 *	0.001	-0.010	0.001	0.020 ***
3	-0.016 **	0.000	-0.013 **	0.001	0.005 **	0.012 *
4	-0.031 ***	-0.001	-0.036 ***	-0.018 **	0.001	-0.005
5 (high)	-0.090 ***	-0.005 ***	-0.024 ***	-0.082 ***	0.001	0.016 **
Stock Volatility 2 (low)	0.010	0.001	0.007	0.011	0.001	0.005
3	0.019 ***	0.005 **	0.014 **	0.029 ***	0.002	0.007
4	0.031 ***	0.006 ***	0.005	0.060 ***	0.007 ***	0.010
5 (high)	0.080 ***	0.016 ***	0.048 ***	0.157 ***	0.017 ***	0.058 ***
Panel B: Adjusted R^2 (%) and F-values (in parentheses) for full model and models with each set of dummy variables excluded one set at a time (p-values for all models are significant at the 1% level)						
Full Model	4.80 (19.9)	1.56 (7.1)	2.89 (12.2)	8.98 (35.4)	1.98 (8.2)	3.20 (12.8)
Excl. trader effects	4.72 (27.5)	1.55 (9.6)	2.77 (16.4)	8.14 (45.4)	2.00 (11.2)	2.87 (16.0)
Excl. size effects	4.63 (21.8)	1.36 (7.0)	2.41 (11.7)	8.34 (37.5)	1.64 (7.9)	2.99 (13.6)
Excl. complexity effects	4.78 (23.6)	1.44 (7.8)	2.69 (13.6)	8.72 (41.4)	1.92 (9.6)	3.06 (14.6)
Excl. market volatility effects	2.44 (12.5)	1.46 (7.9)	2.28 (11.6)	7.13 (33.6)	1.93 (9.6)	2.98 (14.2)
Excl. stock volatility effects	2.44 (12.4)	0.70 (4.3)	2.08 (10.8)	2.56 (12.3)	0.89 (5.0)	1.81 (9.0)

Appendix

The London Stock Exchange

The London Stock Exchange has a number of features that differentiates it from the other International Exchanges. This section attempts to summarise some of these features that may be relevant within the context of this study.

A Characteristics

After the 'Big Bang' in October 1986, several important changes have occurred in the London Stock Exchange (LSE). One of these changes has been the introduction of a system whereby competing market makers sustain a continuous presence in the market and act as counter party to equity transactions. This represents a substantial move towards a more order-driven system.

The LSE also has a policy of ensuring the proper checks and controls are in place in order to protect investors, while at same time trying to avoid making these rules and regulations so rigid that it may scare-off companies who want to achieve a listing[14]. According to Board and Sutcliffe (1995), the ability and the relative ease of institutional investors in buying and selling large blocks of shares in a single transaction is actually one of the factors that bring a competitive advantage to the LSE when compared with other stock exchanges. They explain that this system requires the market makers to take quite substantial inventory positions, which increases the risk that they are subjected to. Therefore, market makers demand protection against this additional inventory risk. Protection can take several forms some of which can be delaying the publication of a large trade or the development of Inter Dealer Broker Systems (IDB) which provides a private, order–driven method by matching buys and sells and allowing the surplus to be traded among the other market makers.

B Delayed Publication

Despite the obvious advantage of offering protection to market makers, delayed publication can in fact be detrimental to the transparency of the market due to the information asymmetries that arise among the market participants.

Since the Big Bang the delayed publication policies for unusually large trades at the LSE have changed quite a bit. Prior to January 1991, although the volume of trades was published immediately, the publication of prices could be delayed for up to 24 hours for alpha stocks over £100,000 and 3 minutes for all other trades. From 14 January 1991, the publication of price and volume for trades larger than 3 times Normal Market Size (NMS) could be delayed for up to 90 minutes, while the delay allowed for all other trades remained the same. On 13December 1993, an additional delay was allowed on top of the previously prevailing level and the market makers could choose to delay publication of trades larger than 75 times NMS from 90 minutes to 5 business days, or until 90% of the position has been unwound, whichever is sooner.

On 1 January 1996, in a move towards increasing the transparency of the market, the delayed publication of trades between 3 and 6 times NMS was abolished. Also, all IDB trades now had to be published with a delay of at most 3 minutes. Additionally, the delay period for trades greater than 75 times NMS was brought down from 90 minutes to 60 minutes (the minimum requirement).

Board and Sutcliffe (2000) report that the value of all trading subject to publication delay has decreased by 43% after the delayed publication changes in 1996. In addition, they find a 75% jump in the proportion of trading published immediately. They conclude that we can now expect to see the information effects of trades between 3-6 times NMS swiftly compounded in the stock prices.

C Disclosure Requirements

On 18 September 1993, amendments, affecting both listed and unlisted companies, to the Companies Act (1985) (CA85) came into force in order to reflect the influence of the EU Transparency Directive 88/627/EEC. The regulations apply only to share capital with voting rights intact and require that any equity stake of at least 3% in a public company or an equity stake that no longer exceeds this threshold must be communicated to the company in the form of a written notification within two days of the change. Hence, the 3% level is termed as the 'notifiable interest' level. Any increase or decrease in the stake (above the 3% threshold) that causes the total to move up or down to the next percentage point necessitates a new notification. The company then needs to make appropriate changes to its share register within a period of 3 days subsequent to the date of receipt of the notification. Additionally, listed companies are required to inform the Company Announcements Office (CAO) of the London Stock Exchange as soon as they receive such notification. The information reported to the CAO needs to contain, among other details of the change in shareholding, the date of receipt of the notification and, if known, the date of the transaction. However, any interest and change in interest of the executive and non-executive members of the board of directors has to be reported to the CAO with the date of the disclosure as well as the date of the transaction.

Notes

[1] The permanent effect depends on the size of the block (Mikkelson and Partch (1985)).

[2] Following Maug (1998), the word "monitoring" encompasses all value enhancing activities, including intervention and shareholder activism, in company's operations and information acquisition to pinpoint possible problem areas that may need intervention. The corporate governance literature views the purchases of blocks of shares as a route to monitoring. (See Holderness (*Forthcoming*) for a review). The trend in monitoring has been observed in the 1990s when activist investors such as large pension funds, money managers and individual investors purchased blocks of shares to exert influence over company policies (Wahal (1996)) and previous studies report that the rise of block share purchases lead to operational, financial and governance changes in corporations, and resulted in a decline in hostile takeovers as a means of disciplining managers (Maug (1998), Bethel, Liebeskind and Opler (1998)).

[3] Theoretical models of monitoring are provided by Admati, Pfleiderer and Zechner (1994), Maug (1998) and Kahn and Winton (1998).

[4] Our sample is relatively smaller than US studies. For example, Conrad, Johnson and Wahal (2002) use 1.63m orders with an average number of trades of 1.97 per order in the calendar year 2000. Their data came from a consulting firm that monitors the costs of institutional trading. In the UK there are also many trades per day and per company. For example, Gemmill (1996) uses a sample of 3,010 buy and 2,977 sell trades in 26 of the largest companies on the London Stock Exchange in May of each year 1987-1992. His high-frequency data is from the London Stock Exchange tapes. We were unable to get this type of private data. Instead, we rely on the actual trades reported by companies in our sample in the Regulatory News Service. This procedure has limited the number of trades in our sample and has resulted in relatively larger trades. It is possible that the trades in our sample are undertaken in small parts over many trades. However, we were unable to estimate the order break-up as in Chan and Lakonishok (1995) or Keim and Madhavan (1995, 1997).

[5] We identify separately each institution because of the issues raised in previous studies on the execution costs in various stock markets (e.g., Chan and Lakonishok (1997)), their trading practices and strategies (e.g., Brennan and Cao (1996), Badrinath and Wahal (2002), Goetzmann and Massa (2002), Huang and Masulis (2003), and Griffin, Harris and Topaloglu (2003)), their activism (e.g., Wahal (1996), Bethel *et al*. (1998), Faccio and Lasfer (2000)) and the determinants of their trading activity (e.g., Grinblatt and Keloharju (2001)).

[6] Similarly, there is no evidence that the size of the trades differs strongly across years in the sample period. For example, the average trade size ranges between 2.39% in 1999, and 3.72% in 1994, and the medians are 1.12% in 1999, and 1.70% in 1993. The average value of the trade ranges between £11.4m in 1999, and £17.2m in 1995. The median values range between £1.1m in 1994-1995 and 1997-1998, and £1.3m in 1993.

[7] This category represents the internally managed funds. Part of the trading of other institutional investors such as fund managers is likely to be undertaken on behalf of pension funds. However, we were unable to identify this proportion.

[8] They define a buy trade package as successive purchases of the same stock by the same money manager with a break of less than 5 days in between the individual trades and the event dates they use are based on actual trade dates. However, in our sample, day 0 corresponds to the announcement day, which can be up to 5 days after the trade took place, due to the legal notification period allowed for shareholders to inform the company of the trade. If the exact trade date is known, these results might resemble each other even more.

[9] The results are checked for robustness by excluding all other news items, such as earnings, mergers and acquisitions, corporate reorganisation and capital changes, announced by the companies in the sample over the [-10, +10] window. This screening reduced the sample to 13,282 events. The overall results, not reported for space considerations, are similar to those reported in Panel B.

[10] A brief description of the disclosure requirements in the LSE, which forms a basis for our choice of 3% is in the Appendix, Section C.

[11] The data on NMS is not available to split the two period. See appendix for details.

[12] These results are not reported for space considerations. We have also analysed the daily abnormal returns of the sell trades from day -10 to day -2 to check further whether the positive abnormal returns of the sell trades are due to the fact that companies announce the transaction in the RNS five days after the trade is completed, as stipulated in the publication rules. We find that none of the daily abnormal returns are negative and significant.

[13] We expect the information conveyed to the market by an 'exit' trade to be very different from a trade that is simply carried out for portfolio rebalancing purposes. Our data does not allow us to split directly the trades into portfolio rebalancing and strategic trading purposes. However, since these trades are mainly large and result in large changes in ownership, they are unlikely to be for liquidity purposes.

[14] Nicola Humpage, London Stock Exchange at the Expo'99, 23 November 1999, London.