What Do Outside Directors Know?
Evidence from Outsider Trading[*]

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Abstract

In this paper we investigate the amount of information independent directors possess about their company, by comparing their trading performance in the company stock to that of the officers of the firm. We find that they earn positive and substantial abnormal returns when they purchase the company stock, and that the difference with the insiders is relatively small at most horizons. The results are robust to controlling for firm fixed effects, the size of the transaction and stock holdings in the firm, firm's size and book to market, and past return volatility. Both officers and independent directors make higher returns in the very worst governed firms and the gap between these two groups widens in such firms. We also find suggestive evidence that independent directors sitting on the audit committee, and attending more meetings, are more informed than others, and that larger boards are worse for insiders' performance, but beneficial for the outsiders. To check for the possibility that the outsiders are overall well informed, but only when the officers want so, rather than when it is more crucial to monitor the management, we analyze the trading performance in firms that have been involved in earning restatements. Our findings suggest that independent directors were informed about the firm, although to a lesser extent than the insiders.

I Introduction

In this paper we investigate the amount of information independent directors possess about their company, by comparing their trading performance in the company stock to that of the officers of the firm. We find that the market-adjusted returns associated to the purchase transactions of these individuals is positive and substantial, and that the difference in their performance is relatively small at most horizons.

We also analyze the effect on trading performance of governance quality, and various institutional settings of the firm that might affect the mechanism through which the directors acquire the information. We find that both officers and independent directors make higher returns in the very worst governed firms, and that the gap between these two groups widens as well. We also find suggestive evidence that independent directors sitting on the audit committee, and attending more meetings, are more informed than others, and that larger boards are worse for insiders performance, but beneficial for the outsiders.

After recent scandals, policymakers around the world have responded by creating codes to improve ethical standards in business (e.g. Sarbanes-Oxley Act (in U.S.), the Cadbury Report, and the Smith Report (in U.K.)). A common theme in these guidelines is the independence of boards of directors that oversee corporate managers. For example, in 2002, the New York Stock Exchange and NASDAQ submitted proposals that required that boards had a majority of independent directors with no material relationships with the company. An outsider is defined as someone who has never worked at the company, is not related to any of the key employees and does not/did not work for a major supplier or customer.

The rationale for this policy recommendation is that board members with close business relationships with the company or personal ties with high-ranking officers may not assess its performance and practices dispassionately.

Despite the consensus on the importance of independent directors in the board, the existing literature has found no evidence on a relationship between companies' financial performance and the proportion of outside directors in the board. Hermalin and Weisbach (1991, 1999), Mehran (1995), Klein (1998), and Bhagat and Black (2001) all report insignificant relationships between accounting performance measures and the fraction of outside directors on the board. In addition, Hermalin and Weisbach (1991) and Bhagat and Black (2001) find no relationship between Tobin's Q and the proportion of outside directors.[1]

There are two possible interpretations of these results. First, some argue that most of the studies

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[1] Hermalin and Weisbach (2003) is an excellent review of the literature.

focused on a period of time in which there was limited activism of the boards. For example, Holmstrom and Kaplan (2001) say that in the 1980s boards exerted limited oversight on the management. In fact, MacAvoy and Millstein (1999) find that CalPERS' grading of the board, a practice developed by CalPERS only in recent years, is positively correlated with measures of performance. More active monitoring by boards in the 1990s could also be the result of higher incentive-based compensation for directors (Perry, 2000). Second, some criticize the emphasis on independent board members, based on the claim that while outsiders are independent in their scrutiny they have much less information than insiders. If the insiders want to act against the interest of the shareholders, they can simply leave outsiders in the dark. Thus, their monitoring could be extremely ineffective, as they have very limited information. For example, Warren Buffet has often argued that "independent" non executive directors are in reality supine and often kept in the dark by executive counterparts.

In this paper, we take a first look at the question of whether independent directors have enough information to monitor the company's executives by analyzing the trading behavior of independent directors when they trade the company's stock. We compare the trading profits of three types of individuals: (i) executives of the firm *(insiders)*, (ii) directors who have no business or familial ties to the firm or the executives, nor own large blocks of the company stock (*independent directors,* or *outsiders*), and (iii) non executive directors who own more than 10% of the equity (*outside block-holders*). The rationale of this exercise is that a necessary condition for independent directors to be effective monitors is that they have access to information. By looking at the trading behavior of the independent directors, we will try to infer the quality of information they have while serving on the board and, therefore, the potential ability to monitor the behavior of the chief executives.

Using a comprehensive sample of reported board of executives' and directors' transactions from 1986-2003 in U.S. companies, we find that insiders, defined as current officers of the firm, earn higher abnormal returns than the market and that so do independent directors. We focus on purchases transactions, as they are more information sensitive than sales transactions: since these individuals tend to be overexposed to the company stock and might sell for diversification purposes or just rebalancing their portfolios after a grant.The difference between the returns earned by insiders and independent directors is relatively small at most of the horizons analyzed. The results are robust to the inclusion of firm fixed effect in the regression, to be able to compare insiders and outsiders within the same firm and control for time invariant firm specific characteristics that might affect returns, as well as individuals' incentives and constraints. The results are also robust to controlling for the evolution of firm characteristics that might affect returns, such as firm size and book to market, and past return volatility. Consistent with the insider trading literature we find that controlling for size and book to market leads to lower, yet still positive, trading returns. The results do not change after

controlling for the size of the trade, and the size of the individual's holdings of the company's stock. Finally, to make sure that few extremely large transactions do not unduly influence our results, we repeat the regressions after dropping from the sample transactions in the largest one percent within each group of individuals, and find no change.

We also look at whether performance of insiders and independent directors differ depending on the governance index of the firm using the classification of Gompers et al. (2003). Better governance may affect both the performance of insiders and outsiders when they trade in the company stock. There is some evidence in the literature (Giannetti and Simonov, 2005) that shows that insider trading is more common in firms with weak governance structure. In better governed firms the executive feel more restrained from trading on private information. As a consequence, in these firms the difference between independent directors and insiders profit would be smaller, and the insiders would make less money compared to the market. On the other hand, firms with better governance structure could have better mechanisms in place that allow independent directors to receive more information. For example, in some companies, the independent directors meet with the audit committee without the CEO. Also, in this case, the wedge between independent directors and insiders diminishes as the independent directors have access to more information. We find evidence for the second story: the performance of executives and independent directors are similar for firms with better governance index while independent directors perform worse than insiders in firms with worse governance index. At the same time we do not find evidence that insiders and independent directors of better governed firms trade less than similar individuals in firms with a worse governance index.

We also check how the individuals on the board acquire information about the firm. In particular, we check how much information outside directors obtain through their committee work and attendance to board meetings, as opposed to informal channels and personal contact with the management, or independent research and prior knowledge of similar companies. We find that independent directors benefit from sitting on the audit committee, and earn an additional return of 3.21% at the longest horizon. There are many reasons why certain committees are associated with higher average returns, and, more generally, independent directors earn positive abnormal returns. One reason is that their duties involve the acquisition of different types and degrees of information, which the directors can then use in their trading. An alternative explanation is that the insiders give trading tips to the indipendent directors to bribe them. Distinguishing between these two conflicting hypotheses is very hard. Nevertheless, if the insiders reward directors by providing them with more/less inside information, we would expect that the best performing independent directors are those sitting on the compensation and nominating committee. On the contrary, if independent director acquire information about the firm irrespective of whether it is good or bad for the insiders, audit committee

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members, who have a better knowledge of the financial statements, should enjoy higher returns.

Next, we analyze the effect of various internal governance mechanisms on the difference between insiders and outsiders within a given firm. In particular, we check whether the information that independent directors have about the firm also depends on other features of the corporate boards that have been shown by previous studies to matter for monitoring effectiveness, such as board size and directors attendance. We find that independent directors do better in bigger boards, possibly because more independent directors serve on such board and that attendance positively affects the trading performance of the outsiders, but not of the insiders.

Finally, we examine more closely those firms in which there have been problems to see if there the outsiders were indeed aware of these problems and this is reflected in their trading performance. Repeating the regressions on a subsample of firms that underwent an earnings restatement indicates that independent directors were informed about the firm, although to a lesser extent than the insiders.

The remainder of the paper is organized as follows. In the next section we describe the data and investigate whether independent directors have enough money at stake to have the incentive to tarde optimally, and whether our sample of firms and individuals is representative of the larger universe of U.S. firms. In Section 3 we discuss our results. Section 4 contains various robustness checks. We repeat the analyses using a stricter definition of independence, to make sure that the results are not simply the effect of a misclassification. We also control for firm characteristics that might influence returns irrespective of whom is trading, such as size, book to market and past return volatility. In Section 5 we examine the effect of governance quality and we investigate in more detail the mechanisms through which the independent directors can acquire information, such as the effect of committee memberships, board size, attendance and the presence of large institutional investors. In Section 6 we focus on firms that underwent an earning restatement. Section 7 contains extensions to the paper that are the object of future research, and Section 8 concludes.

II   The Trades of Insiders and Independent Directors in the Company Stock

A   Data Description

Our main source of data is the TFN Insider Filing Data, which contain information on all corporate insider trading activity reported on SEC Forms 3, 4, 5, and 144 from 1986 to 2003.[2] The Securities

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[2]More specifically, Form 3 contains an initial statement of beneficial ownership for all individuals required to file with the SEC. Form 4 contains changes in ownership position, including stock purchases, sales, option grants, option exercises, and gifts. Form 5 contains the annual statement of change in beneficial ownership, and exempt transactions

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and Exchange Act of 1934 requires all individuals that have "access to non-public, material, insider information" to report sales or acquisitions of the company's securities to the SEC. These individuals include the company's officers, directors, and beneficial owners of more than 10% of the company's stock. The data set contains the name of each filer, the various positions she holds in the firm (i.e. President, VP, large blockholder), the date of the transaction, the number of shares bought/sold, the price paid/received, and the size of her resulting holdings in the company stock.

To investigate the different degrees of information that independent directors and insiders might have about the company, we merge the data with the CRSP data set, and examine the returns at different horizons from mimicking the trades of the following categories of individuals: (i) executives of the firm *(insiders)*, (ii) directors who have no business or familial ties to the firm or the executives, nor own large blocks of the company stock (*independent directors,* or *outsiders*), and (iii) non executive directors who own more than 10% of the equity (*outside blockholders*).[3] Although the focus of our analysis is the trading activity of the first two groups, we analyze the transactions of the outside blockholders as well. Despite not related to the officers, these individuals should be distinguished from other outside directors because they might have better access to information, or more incentives to trade optimally, given their large stake in the company.[4]

To capture information-driven trading activity that does not follow mechanically from stock or option grants, we focus on open market sales and purchases and we control for stock holdings in the regression analyses. In addition, we are able to identify open market transactions that are fully or partially related to the exercise of an option, and avoid double counting and misclassifications.[5]

After excluding utilities and financial companies, which are subject to specific regulations, and dropping firms for which less than 200 daily returns are available in CRSP prior to the transaction date, we are left with 586,828 trades, involving 89,903 individuals and 8,913 firms. The individuals in our data set make 527,999 transactions. Of these transactions, 305,349 are made by insiders of the firm, 196,211 by independent directors, and 26,439 by large blockholders who are also independent directors.

Panel A of Table I displays the summary statistics for the whole sample. Consistent with the literature on insider trading, we find that both insiders and independent directors are net sellers:

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not reported on Form 4, and Form 144 contains any declarations of intention to sell restricted stock.

[3]The Appendix contains the list of titles that we categorize in each of these three groups. Transactions executed by relatives, and those originating from indirect ownership, are attributed directly to the individual.

[4]Also, to the extent that some outside blockholders are misclassified into the independent director category, we want to make sure that the returns enjoyed by the independent directors are not the consequence of such potential misclassification.

[5]The acquisition of a share of company stock through the exercise of an option is not included among the purchases in our data set, as the share has not been acquired through an open market transaction. However, if the insider decides to sell such share, the resulting transaction will be classified as an open market sale, and included in our data set. The sales related to the exercise of an option are 39%, 20% and 8% of the sales transactions made by the insiders, the independent directors, and the outside blockholders, respectively.

sales represents 66% of the overall transactions made by these individuals, and have a higher mean value than purchases. This difference is at least partly due to diversification motives, and portfolio rebalancing after stock grants and option exercises. The average (median) value of the sale transactions is $456,600 ($94,200) for insiders, $800,000 ($85,500) for independent directors, and $2,121,411 ($121,300) for large blockholders. The average (median) value of the purchase transactions is $72,730 ($8,711) for insiders, $184,000 ($13,000) for the independent directors, and $223,000 ($12,500) for large blockholders. Consistent with the nature of the trade data, the sample is highly skewed, with few individuals executing very big transactions. To make sure that such trades do not unduly influence our results, we repeat the regressions after dropping from the sample transactions in the largest one percent within each group of individuals, and find that the results do not change.

Independent directors tend to make fewer and bigger transactions than the insiders, and display more balance between the number of sales and purchases they make. Also, the distribution of their transactions is slightly more skewed than that of the insiders, especially for the sales. Therefore, to the extent that transactions of higher value provide more incentives to trade optimally, it is going to be important for a correct interpretation of the results to control for the size of the transactions in the regressions. Finally, the trades made by large outside blockholders are fewer, sizably bigger, and display higher skewness and variation across individuals than those of the other two groups of individuals.

An important issue for our study is whether these individuals, and especially the independent directors, have enough money at stake for their trades to reflect the information they possess. Table I shows that holdings of the company stock are conspicuous for all the three categories, and suggests that they have the incentive to trade optimally. The average (median) value of stock holdings is 12.2 million dollars ($360,028) for insiders, 12 million dollars ($283,774) for independent directors, and 71 million dollars ($6,407,808) for large outside blockholders. One might be surprised that the outside directors have bigger holdings than the insiders. This is *not* a specific feature of our sample. Yermack (2003) collected information on outside directors elected to the board of Fortune 500 companies between 1994 and 1996. He shows that stock ownership increases with tenure and that outside directors in their fifth year have average (median) stock holdings of $8,481,000 ($375,000). The maximum holdings for outsiders with a tenure of five years is $3.5B. These values are comparable to those in our sample, where the average and median tenure for a director are 11 and 8 years, respectively.

Despite this evidence, one might still be concerned that the results are driven by the presence on the board of investors that own a big stake in the firm, but less than 10% of the equity, and thus are classified as independent directors. The analysis of the large outside blockholder category allows an indirect investigation of the effect on the returns of this potential misclassification.

The data also show high skewness and large variation across individuals, especially within the officers' group. For comparison, notice that stock ownership of the top five officers in the firm, obtained from Compustat, is similar in magnitude, although it displays less variation and less skewness. The difference could be due to the fact that our insiders category comprises many other officers in addition to the top five executives. To make sure that the trades of few individuals with extremely large holdings do not influence the results, we replicate the regressions dropping from the sample the trades corresponding to the top 1% of holdings value in each of the three groups, and the results do not change.

Another important issue is whether our sample is representative of the universe of U.S. firms and, relatedly, how many firms give equity compensation to their directors. Yermack (2003) documents that 77% of the directors in his sample receive either stock or options awards, and Perry (2000) shows that the trend toward equity-based compensation for directors has been increasing over time. Moreover, outside directors can acquire the company stock through open market purchases, even if they are not awarded shares by the firm. Further, an examination of firm characteristics such as size, book to market, governance deciles and return volatility, indicates that our sample is representative of the firms in Compustat over the period between 1986 and 2003. The average size of the firm, measured as the natural logarithm of the firms' assets, is 5.5, compared to the Compustat value of 5.03, while the average book to market value is 0.35 in our sample, compared to 0.60 in Compustat. A breakdown of the firms by governance index indicates that all the deciles are approximately equally represented in the sample, with the exception of the three deciles with worse governance that constitute only 7, 6 and 4.59 percent of the transactions, respectively. Finally, the average firm return volatility, measured as the standard deviation of the daily market-adjusted returns over the period between 380 and 20 trading days prior to the transaction, equals 0.03 daily, and 0.1785 monthly. This evidence suggest that the results are generalizable to a larger universe of firms than those in our data set.

Another potential concern is that independent directors trade very infrequently and only when they have private information, and consequently good performance relatively to the market does not imply that they are able to access information all the time, nor that they have information at times in which is important to monitor. To quantify whether this issue is important, in Figure I we break down the average numbers of transactions by time of the year for each group of individuals. Figure I shows that outsiders trade uniformly throughout the year. Possibly due to blackout periods and fear of violating insider trading regulations, the average number of trades diminishes for both insiders and independent directors around quarterly announcement dates, but more so for insiders. Since this is an average across firms, a more precise test would make this comparison within each firm. This is the object of a future revision of the paper.

To further investigate whether individual and firm characteristics influence returns, and to potentially shed light on the mechanism through which the information flows, we combine the stocks trades from the SEC with data on individual demographic characteristics, tenure, committee memberships, and number of other directorships from the IRRC data set (1996-2003), board characteristics from Fich and Shivdasani (2005), firm characteristics from Compustat, and the Governance Index constructed by Gompers, Ishii, and Metrick (2003). Panel B and C of Table 1 contain the summary statistics for the subset of transactions for which such information is available. Panel B illustrates the breakdown of individuals into committees, the frequency of possible links between the individual and the firm that could impair the director's independence, and various demographic characteristics. The audit and the compensation committees are the most common, with 13.30% and 12.47% of the individual-firm-year combinations, while the nominating, corporate governance and executive committees represent a smaller fraction of the data, either because they are smaller in size, or because they have been established more recently and do not account for many observations yet. If we look into the demographic characteristics and the links with the company, the number of director-company-year combinations for which we have information drops to less than half, from 49,457 to 15,645. Of these observations, most cases refer to individuals that are former employees (8.53% of the observations), made business transactions with (2.69%), or provided professional services to the firm (6.62%). Finally, we have information on interlocking with other companies boards (0.92% of the observations), poor attendance (less than 75% of the meetings), being a director designated by a big investor, age (average is 57), tenure, and institutional holdings (on average 58.7%).

Panel C contains summary statistics for the firms for which board size from Fich and Shivdasani (2005) is available. The board size data have been collected by Fich and Shivdasani for the Fortune 1000 firms, and are described in detail in their paper. After the merge we are left with 2,739,886 trades, corresponding to 12.97% of the original observations, 1,350 of the original 10,564 firms, and 56,481 of 446,315 individuals. Consistent with the findings of Fich and Shivdasani (2005), Yermack (1996), and others, the average and median board size is at around 10, with a standard deviation of 2.625.

Finally, to further study the concern that independent directors might not have information at exactly the times at which it would be crucial to have it for monitoring purposes, we repeat our analyses for the firms that between January 1997 and June 2002 restated their earnings due to accounting irregularities. The sample is collected by the U.S. General Accounting Office (GAO) and provides information on the reason of the restatement, whether it was prompted by the company or an external entity (i.e. the SEC/auditor/FASB), and the date the restatement has been announced. Of these 919 restatement cases, 309 involve firms in our data set. Most firms experience one restatement,

while 14 firms experience two, and 4 firms three restatements. Overall, these 309 cases involve 287 firms, 5,703 individuals and 27,850 trades and account for 5.28% of the original data set. The GAO data set is the only publicly available source of information on restatements and it is widely used. One drawback of the data is the lack of information on the economic size of restatements, with the consequence that it is possible to estimate their economic impact only indirectly through their effect on the returns. The economic impact that is not captured by subsequent returns adds noise to the findings, but does not bias them in favor of finding a small difference between insiders and independent directors. To further address this issue we also control for whether the restatements are due to revenue recognition, which according to Anderson et al. (2002) yields the most pronounced negative market reaction. Such restatements constitute 41.56% of our sample, while cases in which the restatement was prompted by an external party, such as the SEC, FASB, or an auditor, account for 25.81% of the transactions.

To make sure that there are no biases due to the specificity of the sample analyzed, Panels B through D also reproduce the summary statistics reported in Panel A for the various subsamples. In this respect, firms that have committee information are bigger, have higher market to book values than the whole sample, while the individuals tend to have higher stock holdings. The same is true for the subsample for which the size of the board is available and the firms that restated their earnings. As expected, the latter group also tend to have worse governance, with an average governance index of 11, as opposed to the 9 of the other samples.

Given these differences across samples, before adding any control variables we re-estimate all the regressions performed on the whole sample on each of the subsample to check whether any difference in the findings is due to the controls or just to different samples.

III   Empirical Results

To investigate the informativeness of the trades of insiders, independent directors, and large outside block-holders, we first perform an event study, and examine the average and median returns earned at various horizons by mimicking the trades of these individuals. Then, we re-evaluate our findings within a regression framework to control for various individual, firm and transaction characteristics more flexibly, and, most important, to compare insiders and independent directors within the same firm, through the use of firm fixed effects.

Like most of the literature, we calculate the return from investing one dollar in the same way as the individual does, by either purchasing one dollar worth of the company stock when she buys, or by

shorting one dollar worth of the company stock when she sells.[6] Figure II and III show the evolution over time of cumulative abnormal returns (CARs), raw returns, and market-adjusted buy-and-hold returns (BHARs) for purchase and sale transactions, respectively. We analyze purchases and sales separately, since for individuals whose portfolios are highly tied to the firm, due to salary, stock, and option grants, purchases are more likely to be information-driven, while sales might reflect portfolio rebalancing and diversification.

We define an event window around the time of the trade that spans the 20 days preceding the transaction, up to 180 days after it. Following the methodology of Dodd and Warner (1983), for every trade we calculate daily abnormal returns (AR) as

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}) \tag{1}$$

where R_{it} is the company stock daily return, R_{mt} is the value weighted daily return for the market portfolio, while α_i and β_i are the coefficients from the regression of R_{it} on the market return over the 360 trading days preceding the event window. Cumulative abnormal returns are obtained by summing the daily abnormal returns, and average and median CARs are computed for each category of traders separately. Raw returns are given by R_{it}, and averaged within each group of individuals for each of the 200 trading days in the event window. Similarly, market-adjusted returns are calculated by subtracting the market return from the firm daily return, $(R_{it} - R_{mt})$, and then averaged.[7]

Figure II shows that, no matter which measure of returns we focus on, mimicking the purchases of insiders and independent directors generates substantial returns. The cumulative abnormal return from buying a dollar worth of company stock at the same time as an officer does, and keeping the position for 180 trading days, is on average 15 percent, while the raw return and BHAR are around 23 and 13 percent, respectively. Consistent with the hypothesis that the officers of the firm are more informed about the current and future conditions of their company, they tend to perform better than the independent directors. Nevertheless, the outside directors earn on average a substantial 10, 17 and 9 percent, depending on which measure of returns we focus on. The difference between the two groups shrinks to zero once we look at median returns, indicating that a few very profitable transactions might affect the averages. The level of the median returns is lower, but still positive and substantial in most cases.[8]

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[6] The regression analysis will control for size of the transaction, holdings of the company's stock, and other characteristics that might influence returns.

[7] The main difference between these measures of returns is that CARs ignore compounding, while raw returns and BHARs account for it. Barber and Lyon (1997) provide a detailed description of the consequences of such differences. They also describe various statistical difficulties that plague event studies at long horizons (1 to 5 years). Given our shorter horizon, these problems are less likely to be relevant in our context. Nonetheless, the regression analysis will help us make sure that our results are robust.

[8] Note that we don't include transaction costs into the return calculations. This approach is common in the literature

The graphs also show that these individuals have *timing abilities* and don't just happen to be trading at times in which the stock has been doing well for a while. If we plot the returns from trading a little earlier than they do (20 trading days in the graphs), we can see that their returns would have been much lower.

Further, we confirm previous findings that these individuals are contrarians, who tend to buy after price declines and sell after price increases (Lakonishok and Lee (2001) and Jenter (2005)).

Figure III plots mean CARs, raw returns, and market-adjusted returns (BHARs) for sale transactions. While the CARs indicate positive abnormal returns after sales, both the raw and the market adjusted returns are negative or close to zero. The reason for this difference is likely to be related to the well-known instability of firm-specific $\beta's$, which we used to compute the daily abnormal returns. Interestingly, the difference in returns between outsiders and insiders are smaller (even though still statistically significant) in sales transactions. This is consistent with Seyhun (1992). The different results between sales and purchases has been interpreted in several ways. First, it is possible that independent directors are more informed about bad news rather than good ones. Second, it is possible that the scrutiny of selling activities of directors and insiders of the firm is more attentive when the company is performing poorly. Finally, purchases may be more related to information, while sales could be the result of portfolio rebalancing after stock grants and diversification motives.

The finding that these individuals earn abnormal returns on their purchases and not on their sales is consistent with most studies in the insider trading literature (Jaffe (1975), Seyhun (1986, 1992, 1998), Rozeff and Zaman (1988), Jeng, Metrick and Zeckhauser (2003) among others). These studies find that insider trading forecasts future stock returns and that such predictability survives after accounting for the return of the market, past stock returns, and firm size. One exception is the study by Eckbo and Smith (1998), who, using Swedish data and various conditional performance measures, find evidence of zero or negative abnormal returns. More recently, Lakonishok and Lee (2001) find that, after accounting for size and book to market, insider buys lead to positive but lower abnormal returns than previously estimated. They also find that these individuals tend to be more active in small value firms, that have historically performed well. To check whether this tendency is driving our results, we will control for size and book to market in the regression analysis, and show that the evidence of positive abnormal returns persists for both insiders and independent directors. In addition, in Panel E and F of Table I, we report the results of breaking the sample into 5x5 size-B/M portfolios constructed using the breakpoints in Fama and French (1992). For each of

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and, in this particular case, will not lead to a bias, as both insiders and outsiders face the same transaction costs. Also, grants, option exercises, and stock aquired before the insider status was achieved make it impossible to determine the exact holding periods for most of the transactions. For this reason, we cannot measure insiders' information with the actual returns they earn on their trades, but, like the rest of the literature, we rather focus on the returns earned at various horizons by mimicking their trades.

the 25 portfolios, we calculate the number of transactions and the average BHAR, broken down by trader category. These individuals trade more in the lowest and highest quintiles of both size and book to market. This dichotomy persists if we look at purchase transactions only, although there is a slightly higher concentration in value firms. Sales tend to occur more in growth firms, especially in the officers' case. Panel E shows that purchase transactions are overall evenly distributed across portfolios, although some patterns are identifiable. Officers tend to make more purchases in small growth stocks, while independent directors make a bigger fraction of their purchases in very small or very big firms within each B/M decile, and tend to trade more in small growth and value firms, and in big value firms. As expected, the average market-adjusted returns are decreasing with size, and increasing with BM, although not monotonically. Panel F contains similar data for sales, and indicates that within each BM quintile the number of transactions increases with size, while within each size quintile, transactions decrease with BM. An exception is the biggest size-BM quintile, where there is a relatively big number of transactions. The trading returns decrease with BM and with size. This evidence suggests that in our sample traders earn abnormal returns beyond those due to their purchases of small value firms.

A concern is that some independent directors have relative big stakes in their company, and might have different incentives and access to information than the other directors. To check whether the performance of such individuals drives the results, in Figure IV we compare the market-adjusted returns earned by mimicking the trades of insiders and independent directors to those of large outside blockholders sitting on the board. The rationale is that if the independent directors' trading returns are due to their high stakes, then the large blockholders should perform even better, or at least similarly, since they have even higher stakes. The graphs suggest that this does not happen. Large outside blockholders perform poorly relative to the other two groups of traders: the median returns from purchase and sale transaction are significantly lower than the independent directors, and the same is true for average BHARs from sales, but not for purchases, possibly due to the effect of some big transaction. The results for this group of traders rely on limited data, and are therefore only indicative.

The relatively good performance of the independent directors spurs the question of whether these individuals are good on average, but less consistent in their performance than the officers. To check whether this is the case, at each horizon we compared the cross sectional standard deviations of the independent directors' market adjusted returns to those of the executives (not reported). We find that they are indistinguishable. This result indicates that the outsiders not only enjoy returns that are comparable to the insiders', but also, taken as a group, are as consistent as the insiders in performing well.

Finally, in Figure V we check whether the trading returns are statistically different from zero. Since the residuals of a given firm may be correlated across transactions (time series dependence), we clustered the standard errors to account for the dependence created by the firm effect (see Petersen (2006)). In the top panel of Figure V, we report the t statistics from the null hypothesis that the market-adjusted returns earned by the insiders are not significantly different from 0 at the various horizons, while in the bottom panel we examine whether the insiders' returns differ from those of the other two groups. The graphs provide strong evidence that insiders' purchases earn market-adjusted returns that are different from 0 at the 95% confidence level (the t-statistics range from 7 to 23). The returns of the independent directors are high, but statistically lower than the insiders' (t-statistics between 3 and 7). When we examine sale transactions we find the opposite result. Both the executives of the firms and independent directors have market adjusted returns that are not statistically different from 0. We also report the t-statistics for large outside blockholders sitting on the board, but we don't have enough statistical power to reject the null hypothesis of no difference with the insiders' returns. The t-statistics for CARs and raw returns (not reported) yield similar results.

The results above support the view of part of the insider trading literature that executives make positive returns when buying the company stock. They also augment this result with a new finding: independent directors without large stakes in the company also do substantially better than the market when they buy the company stock.

Although suggestive, the event study results alone are unconvincing. Many issues remain open, including a selection bias related to different fractions of independent directors and different stock ownership levels across firms, and the effect on returns of transaction size and stock holdings, firm characteristics, governance quality, and institutional arrangements. For this reason, in the remaining part of the paper we repeat the same analysis using regressions, and adding firm fixed effects. If there are some omitted firm characteristics that drive both the choice of directors and their ability to collect information, the event study results could be entirely explained by the firm selection. It is also possible that firms that experience more outsider trades have characteristics that would lead to higher average returns irrespective of whom is trading. Finally, most firms have company-specific blackout periods, and if the relative fraction of independent directors and insiders in the board is correlated with these governance characteristics, it is possible that our results are due to firm-level governance rules. Adding firm-specific effects to the regressions will account for any time-invariant difference across firms, and will provide a comparison of insiders and outsiders belonging to the same firm and facing the same institutional environment.

In the regressions, we focus on market-adjusted returns, to control for changes in business conditions and make sure that positive returns do not simply follow from more trading activity during

economic booms. As before, we analyze purchases and sales separately. The first five columns of Table 2 Panel A present the results of a regression where the dependent variable is the market adjusted return of holding the individual long position for 0, 30, 60, 90, and 180 trading days, respectively.[9] All the regressions include firm fixed effects and cluster the standard errors at the individual level. Purchases are more information-driven and will therefore be the main focus of the analysis. The constant measures the market-adjusted return the company officers. Consistent with the view that insiders profit on information related to the long term prospects of the firm, rather than short term tangible information, we find that returns increase with the horizon (Ke, Huddart and Petroni (2003)). On average, mimicking the insiders' buys yields a 12% market-adjusted return in 180 days.[10] This effect is highly statistically significant, and it confirms that insiders earn higher returns than the market, even after accounting for firm-specific characteristics. Similarly, mimicking the buys of the independent directors yields a 10% market-adjusted return over the same horizon. This finding indicates that the high returns associated to the independent directors in the event study are not due to a selection bias at the firm level, since, after accounting for firm fixed effects, the difference with the insiders' returns is even lower, although it remains statistically significant.

On average, the outsiders make larger transactions than the insiders. If bigger transactions generate an incentive to trade better, then the difference in mean returns between these two groups could be biased downward. To make sure that this is not the case, in the last 5 columns of Panel A we control for transaction size and stock holdings, and look at the interaction between these variables and the identity of the individual trading. We find that adding these controls to the regressions does not change the results. Mimicking the insiders' trades generates a statistically significant 15% market-adjusted return, while the difference between insiders and outsiders is unchanged and equal to 2.5%. In general, transaction size does not affect returns, except at the longer horizon where, all else equal, an increase in the amount traded significantly reduces returns, possibly due to price pressure. In particular, an increase of $10,000 in the size of the transaction leads to a drop in the return of 2.882%. To interpret this magnitude, notice that the mean transaction size is $72,731, while the median one is $8,712. On the contrary, holdings size significantly reduces returns at all horizons, although this effect is not economically significant. An increase of $10M in stock holdings is associated with a decrease in returns of only 0.33%. Recall the average stock holdings is $12.2M, while the median holdings are $360,028. Interestingly, we find that independent directors who have

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[9]For comparison, Figures II and III plot the coefficients of a regression of the return on a indicator variable equal to one if the trader is an executive of the firm, and zero otherwise; an indicator variable that is equal to one if the director is independent, but not a large blockholder and zero otherwise; and an indicator variable if the director is a large blockholder and also an independent director, and zero otherwise.

[10]This horizon is interesting because Rule 16(b) of the Securities and Exchange Act of 1934 requires these individuals to surrender any profit made on transactions that are offset within six months.

larger holdings in the firm do slightly better than independent directors with smaller holdings (0.27%
more at the longer horizon). This result is consistent with a story that insiders get information due
to their role, while outsiders need to exert effort to get information. The higher the incentives to find
out information, the more the independent director will try to acquire it.

The coefficient of large outside blockholders indicates that the high returns of independent di-
rectors are not due to large stock holdings and are not biased upward by potential misclassification
of large blockholders into the independent director category. The difference between insiders and
large outside blockholders is bigger than the one between insiders and independent directors at most
horizon, although not statistically significant due to the few observations available for this group.

The regressions that control for transaction size and stock holdings are also reassuring that the
skewness of such variables does not unduly affect the results. As a further check (not reported) we also
repeat the regressions after trimming the sample of the top 1 percent for transaction size and stock
holdings in each of the trader categories. We find that the results are not affected by this change.

In Panel B we re-run the same regression for sale transactions. Consistent with the findings of the
insider trading literature, insiders do not earn higher abnormal returns on sales. Indeed, the difference
between insiders and outsiders' returns for sales is of the same magnitude and statistical significance
as for purchases, but since the insiders do not make higher returns, the independent directors make
negative returns. In the last 5 columns of Table 2, Panel B we control for the size of the transaction
and of the holdings. These controls do not modify our previous findings.

IV   Robustness Checks

A natural question that arises when looking at our findings is whether the individuals categorized by
the governance rules as independent are truly such. To investigate this issue, we exploit a stricter
definition of independence proposed in the Higgs report for the UK. Accordingly, we define as strictly
independent directors who are outsiders and not former employees, nor employees of an organization
to which the firm gives charity contributions. In addition, for a director to be defined as strictly
independent, the Higgs report also requires that she or he does not have any business transaction
with the company, does not give the company any professional service, and is not a relative of any
officer. Finally, a strictly independent director does not have interlocking directorship with one of the
executives, and does not have any other affiliation with the company.[11] The information to implement

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[11] According to the Sarbanes Oxley Act, a director is independent if she is "not receiving, other than for service on
the board, any consulting, advisory, or other compensatory fee from the issuer, and [is not] an affiliated person of the
issuer, or any subsidiary thereof". The Higgs Report proposes to define as independent those directors that have "no
material business relationship" with the company.

such definition comes from IRRC and is available only for a subset of the transactions, and only for the period between 1996 and 2003. In this subsample there are 4,190,880 observations, corresponding to 22.28% of the original dataset. The data cover 15,645 individual-company-year combinations, 1,739 Firms, 22,336 individuals, and 117,626 trades. Of the 891,600 observations regarding the outsiders, 629,680 (70.62%) satisfy the definition of strict independence.[12] This fraction increases slightly over the period. Compared to the other outsiders, on average the strictly independent directors make smaller transactions, own less of the company stock, have a much shorter tenure (10 versus 15 years), and are more likely to sit on the audit and compensation committees (45.22% chance versus 23.47%, and 43.68% chance versus 19.81%, respectively). Also, the firms in which these individuals trade are bigger and have a higher market to book ratio than those in the original dataset.

Table 3 shows that using this definition of independence does not change substantially our results. The average BHAR associated with officers' purchases is 12.24%, significant at the 1 percent level. The trading performance associated to the strictly independent directors is statistically indistinguishable from the that of the insiders: in purchase transactions (Table 3, Panel A), both insiders and strictly independent directors outperform the market; while in sale transactions both insiders and strictly independent directors earn negative abnormal returns (Table 3, Panel B). Although these differences are not statistically significant, the magnitude of the coefficients indicates that the strictly independent directors underperform the executives by 4.44 percentage points, while the other outsiders do better than the insiders. In the next section we will show that this difference is not always big and negative, but it rather depends on the committees the director sits on. This evidence and that in the next section suggest that independent directors know less than the insiders, but in some cases, depending on which committee they sit, they do have the means to get information about the firm, even when they don't have any material link with the company except their directorship.

In Table 4, we examine the effect of firm size and market to book ratio on the insiders' returns. The more recent insider trading literature has argued whether the abnormal returns obtained by imitating these individuals are robust to controlling for trading strategies that exploit the size and book to market risk factors. Panel E and F of Table 1 confirm that both executives and independent directors trade more in smaller, high book to market firms, which have performed well in the past. In Panel A of Table 4 we re-run the regressions reported in Table 2, controlling for firm size and book to market. Our findings are robust to such controls. Consistent with the findings of Eckbo and Smith (1998), Lakonishok and Lee (2001) and Jenter (2005), accounting for size and book to market decreases the average returns earned by mimicking the company's executives. However, such returns are still positive, and highly statistically significant. From the coefficients in Panel A we can see that

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[12]This number corresponds to 15.03% of all the observations.

in a firm with the average size and book to market ratio the insiders' average (median) abnormal return from purchase transactions is 8.72% (5.12%), significant at the 1 percent level. Also, the difference between independent directors and insiders does not change after controlling for firm size and BM. Panel B reports the results for sales transactions and confirms that on average executives lose money when they sell the company stock, and more so do the independent directors. Consistent with the previous literature, they lose less money when they sell stock in large growth firms. On average though, the return from trading in a firm with the average size and book to market ratio is -7.56%, significant at the 1 percent level.

One other concern is that these individuals make higher returns than the market because they trade in riskier companies. The previous analysis already partly accounts for this concern by analyzing cumulative abnormal returns, and by controlling for the size and book to market risk factors. If executives and directors trade more in companies that have high beta, then the CARs, which control for past β, should pick this effect up. Also, to the extent that firm size and book to market proxy for some systematic risk factors different than the market, the regressions reported in Table 4 show that our findings are robust to accounting for such systematic risk. In Table 5 we further examine this issue from a somewhat different angle, and re-run the analysis on sub-samples that constitute the quartiles of total firm return volatility, measured on the interval going from -360 to -20 trading days before the transaction. This variable captures both systematic and idiosyncratic risk. One caveat about this analysis is that if these individuals have superior information about the company what it appears to be volatility and risk for an uninformed investor is not necessarily so for the insider. Thus, we should intepret the results keeping in mind that past return volatility might not be a proper measure of the perceived and the actual risk these traders are facing.

Panel A of Table 5 reports the results for purchases and shows that the return of the insiders increase with the volatility of stock returns. The difference between the executives and outside directors increases with risk across the subsamples, although not monotonically. It is the lowest in the third volatility quartile, where it is equal to 0.33% and is not statistically significant, and the highest in the fourth quartile, where it is equal to 4.91%, and significant at the 1 percent level. Overall, independent directors do not underperform the executives in most of their trades, except for companies that have experienced a high amount of volatility in the previous year (fourth quartile). For such firms the returns enjoyed by mimicking the executives' trades are quite high, 31.78% on average, and statistically significant. The return of independent directors trading in the same type of firms are significantly lower, although still substantial, 26.87% on average. The returns from sales are reported in Panel B and are not economically different from zero for all the quartiles.

V The Effect of Governance and Institutional Settings

In this section we investigate in more detail the mechanisms through which the independent directors can acquire information. We start by examining the effect of governance quality on trading performance and on the differences between insiders and outsiders. To do so, we employ the index of governance quality proposed in Gompers et al. (2003). Next, we analyze the effect of various internal governance mechanisms on the difference between insiders and outsiders within a given firm. In particular, we check whether the information that independent directors have about the firm depends on the committees they sit on, the presence of institutional investors, and other features of the corporate boards that have been shown by previous studies to matter for monitoring effectiveness, such as board size and directors attendance. The results are reported below.

A Are Independent Directors better informed in better governed firms?

In Table 6 we investigate whether the governance characteristics of the firm impact the ability of insiders and independent board members to make profits on their purchases and sale transactions. To characterize the governance of the company we use the governance index of Gompers et al. (2003) which measures shareholders rights by counting the number of governance provisions a firm has. More governance provisions indicate more restricted shareholder rights. Gompers et al. (2003) provide empirical evidence that cross-sectionally, firm value is higher when shareholder rights are stronger (i.e., when the G Index is lower). Following their approach, we classify companies into 10 groups, or deciles: those with a governance index less or equal than 5, equal to 6, 7, 8, 9, 10, 11, 12, 13 and greater or equal than 14.

In Panel A of Table 6 we run the base regressions controlling for governance decile and find that both insiders and outsiders earn significantly higher returns than the market, for almost all levels of the governance index. At the mean governance index, equal to 9, the insiders' market-adjusted return is 15.20%, significant at the 1 percent level, while in most of the other deciles it is slightly above 10%. Exceptions are the better governed firms, where the executives' returns are low and indistinguishable from zero, and the worse governed firms where they make very high returns. This result is striking because on average firms with worse governance have lower returns than otherwise similar firms (Gompers et al., 2003). Robustness checks that trim or winsorize outliers confirm this finding. One possible interpretation is that in better governed firms both executives and independent directors may feel more restrained from trading on private information. As a consequence, they would make less money compared to the market (Giannetti and Simonov, 2005). Alternatively, our results are also consistent with the hypothesis that firms with better governance structure might have better

mechanisms in place that allow the market to receive more information.

The average difference between outsiders and executives of the firm is 2.33%, the same as in the previous regressions, and it is significant at the 5 percent level. Given that better governed firms are more transparent, and have better developed mechanisms to transmit information to the board, we would expect that, all else equal, independent directors have more information and make higher returns in better governed firms. The interaction term between the bad governance firms and independent directors addresses such question. As expected, this coefficient has the negative sign, as worse governance negatively affects the information an outsider can acquire. However, it is neither economically nor statistically significant, suggesting that outsiders do not have an informational disadvantage in worse governed firms. The result is stronger when we focus on strictly independent directors, who supposedly rely more on board meetings and formalized communication channels to get information about the firm. Consistent with our intuition, we find that strictly independent directors earn, all else equal, higher returns when trading in better governed firms. These results are reported in Panel A2.

In Panel B we repeat the same regression for sale transactions. Confirming our previous findings, all the individuals do worse than the market when selling the company stock, but this difference monotonically decreases as the governance index gets worse, flipping sign at the median governance index (governance index equal to 10). Controlling for whether the outside directors are stricly independent leads to the same results (Panel B2).

To conclude, the quality of the firm's governance doesn't affect our finding that insiders and independent directors make positive abnormal returns when purchasing the company stock. Interestingly, this is more true for firms with worse governance, possibly due to lack of transparency and more possibilities to exploit inside information. Also, outside directors as a group do not do significantly better in better governed firms, but strictly independent directors do.

B   Does Committee Membership Matter for the Acquisition of Information?

In this section we examine how the individuals on the board acquire information about the firm. In particular, we check how much information outside directors obtain through their committee work and attendance to board meetings, as opposed to informal channels and personal contact with the management, or independent research and prior knowledge of similar companies.

We have committee membership data only for a subsample, which is described in Section 2.1. The committees analyzed are the audit committee, the compensation, the nominating, the corporate

governance, and the executive committee. The audit committee nominates the external auditor, and ensures that the financial statements are accurate, complete and reliable. The compensation committee reviews the compensation package of the CEO and the other officers. The nominating committee oversees the size and composition of the board, and proposes the new board members to be elected. The corporate governance committee oversees governance practises and establishes criteria to evaluate the board members and the officers. Finally, the executive committee acts on behalf of the full board outside meeting times, and has responsibilities and powers that vary across firms. Adams (2003) provides a more detailed description of the characteristics of each committee, and indicates that all of them have a monitoring role as their main duty, with the exception of the executive committee that has a strategic role as well.

Panels A and B of Table 7 show the effect of adding committee membership to the base regressions. Our previous findings about the levels and difference in the trading performance of insiders and independent directors are confirmed. Panel A also shows that the people sitting on the compensation and nominating committees have, all else equal, higher returns, although not always statistically significant.[13] Since belonging to the audit committee implies better knowledge of the financial statements of the firm, we would expect that the people sitting on it have a better trading performance than the others, if trading performance reflects information at all. Surprisingly, the market-adjusted return of the members of the audit committee is -0.64% at the 180 days horizon, and statistically indistinguishable from zero. However, the people that should benefit the most from sitting on a committee are the stricltly independent directors, as the insiders get information from working in the company itself, or through informal channels, in virtue of their close relation to the officers. The coefficient on the interaction of audit committee membership and strict independence confirms this conjecture. Strictly independent directors benefit from sitting on the audit committee, and earn an additional return of 3.21%. Such difference and the strictly independent dummy are jointly statistically significant at the 1 percent level. Similarly, strictly independent directors sitting on the governance committee also generate positive market-adjusted returns. On the contrary, the compensation and executive committees are associated with slightly negative returns for strictly independent directors, while the rest of the committees do not display an economically significant difference between insiders and outsiders within the committee.[14]

There are many reasons why certain committees are associated with higher average returns, and, more generally, independent directors earn positive abnormal returns. One reason is that their duties

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[13]As usual, to make sure that any difference in the findings is due to the additional regressors, rather than the different sample, we have re-run the base regressions on this subsample (not reported). We have found that the results are the same as those in Table 2.

[14]Similar regressions that include interactions between committee membership and outsider status (not reported) yield similar, but statistically non significant results.

involve the acquisition of different types and degrees of information, which the directors can then use in their trading. An alternative explanation is that the insiders give trading tips to the indipendent directors to bribe them. Distinguishing between these two conflicting hypotheses is very hard. Nevertheless, if the insiders reward directors by providing them with more/less inside information, we would expect that the best performing independent directors are those sitting on the compensation and nominating committee. On the contrary, if independent director acquire information about the firm irrespective of whether it is good or bad for the insiders, audit committee members, who have a better knowledge of the financial statements, should enjoy higher returns. The evidence in Panel A suggests that, on average, the "informed director" explanation is more likely than the "bribed director" one. Another way to shed light on the issue is to see whether directors that have been on the board longer and are more entrenched with the management earn higher returns. Results available upon request again indicate that this is not the case. The coefficients on tenure and the interaction of tenure and strict independence are economically and statistically indistinguishable from zero.

On a different note, analyzing the trading performance of people on different committees leads to a selection issue. If individuals that are better at trading, or have more information, are more likely to be elected to certain committees, then their superior trading performance is erroneously attributed to taking part to the activities of a given committee, rather than to individual ability. The ideal way to address this issue would be to add individual fixed effects to the regressions, on top of the firm fixed effects. Unfortunately, this proves a very hard task from the econometric point of view, since different individuals within a firm join and leave the firm at different times and move to and from different firms.[15] However, that to the extent that we control for individual status, committee membership, and the interaction of the two, in order to tell the story that independent directors do better when sitting on the audit committee just because they are better at trading we would need that the smartest outsiders and the dumbest insiders be put on the audit committee. In addition, if trading skills were the only reason for the differences we should see that attending the meetings regularly does not have any effect on trading performance. On the contrary, Table 10 shows that outsiders that attend less than 75% of the meetings earn significantly lower returns.

These findings provide suggestive evidence that independent directors possess information about the current and future conditions of their company. Consistent with our intuition, committee membership and attendance are important means of information acquisition for the strictly independent directors, who might have less access to informal communication channels and do not work day by

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[15]The results are heavily dependent on whether the firm or the individual fixed effect is estimated first. See Abowd et al. (1999) for a structural framework that addresses this issue for a special case in the context of firm and individual level heterogeneity in labor markets.

day in the firm.

C Effect of Board Size on Trading Returns

The empirical corporate governance literature stresses the importance of board size for the monitoring abilities of directors and firm performance. Large boards do not function properly because of free riding issues, diseconomies of scales, and lack of decisiveness. Kaplan and Gertner (1996) analyze a sample of reversed LBOs firms, whose boards are expected to be value maximizing, and find that such boards are smaller, own a larger equity stake, and meet less often. Yermack (1996) shows that firms with smaller boards have higher valuations and better financial ratios, and that they provide more performance related incentives to the top officers.

In this section, we investigate whether board size affects the return from mimicking the trades of insiders and independent directors. Panel A of Table 8 reports the results for purchase transactions. The market-adjusted return is regressed on an outsider dummy and a large outside blockholder dummy, the natural logarithm of board size, and interaction terms between board size and the individual's role in the firm. The table shows that in a firm with the average board size, equal to 10 members, the executives' average market-adjusted return is 10.99%, significant at the 5 percent level. In this subsample, the difference between executives and independent directors is quite substantial, 5.8%, and statistically significant. To check whether this is due to controlling for board size, rather than a feature of the subsample itself, we performed the same base regressions as in Table 2 on this subsample and confirmed that the difference between insiders and outsiders is a feature of the sample.[16] Consistent with previous studies, a bigger board is associated with lower returns, even after controlling for firm fixed effects. An increase in one standard deviation in the board size of a given firm generates a drop in returns of 12%. Interestingly, we find that in bigger boards outside directors earn significantly higher returns, that are comparable to the insiders'. There can be many reasons for this finding. It is possible that in a larger board there are more independent directors and that this makes it easier for them to acquire information. Many studies underscore the importance of the fraction of independent directors for monitoring of the management. Hermalin and Weisbach (2001) survey the literature on the role and effects of boards of directors, and document that the fraction of outsiders on the board is not correlated with firm performance, but boards with more outsiders tend to make better decisions in CEO compensation and replacement, and takeovers (see, for example, Weisbach (1988), and Dahya and McConnell (2001)). Morck (2004) and Adams et al. (2005) investigate the effect of board composition on its effectiveness and illustrate how the identity of the members and the balance between insiders and independent directors is an important determinant

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[16]Such difference is 4.28% when no controls for board size are included in the regressions.

of board effectiveness. Given these findings we looked at the proportion of independent directors in firms in different quartiles of board size and found that there are more independent directors in firms with bigger boards. We plan to investigate more about this issue in a future version of the paper.

D Controlling for Alternative Governance Mechanisms: the Presence of Institutional Investors

Shleifer and Vishny (1986) present a model where the presence of one or more large shareholders provides discipline to the management. Many studies have provided empirical support to such view. Firms with large minority shareholders are more likely to replace the management (Kaplan and Minton, (1994), Kang and Shivdasani (1995)), or to facilitate takeovers (Shivdasani (1993)), if the firm performs poorly. A large shareholder can provide a powerful governance mechanism to keep the management in check, and its role can be complementary to that of the board of directors, although its objectives and interests may not be in line with those of the shareholders at large. Recently, some institutional investors have taken a more active role in the companies they invest in, and have in some cases publicly asked for major changes that increase shareholders value (see, for example, CalPERS). This trend can facilitate the job of independent directors in acquiring information and monitoring the management, but can also make it redudant, or create a free rider problem.

In this section we investigate the effect that a large presence of institutional investors in the company has on the information that independent directors are able to acquire. Table 9 shows that, all else equal, insiders earn lower returns in companies where a large fraction of the shares are held by institutional investors. This result, seen in conjuction with the finding of Gompers and Metrick (2001) that institutional ownership is associated with higher future returns, can be interpreted in two ways. One possibility is that the presence of institutional investors makes the executives more reluctant to trade on their superior information. Alternatively, large institutional investors might make it easier for the market to acquire timely information about the company, thus reducing the informational advantage of the firm's officers. The presence of institutional investors does not significantly affect the difference between insiders and independent directors. Independent directors tend to do worse than the insiders, although such difference is not statistically significant. Interestingly, strictly independent directors do on average as well as the insiders, with the exception of firms with high institutional holdings, where they perform 9.37% less than the executives.

In sales transactions, the returns of both executives and directors are not statistically nor economically different than zero.

VI Insider and Outsider Trading and Earning Restatements

One concern about our findings is that independent directors might be overall well informed, but only when the officers want so, and might lack access to information exactly at those times when it is crucial for monitoring purposes to have it. To further investigate this issue we analyze a subsample of firm that between January 1997 and June 2002 restated their earnings due to accounting irregularities. This sample has been collected by the U.S. General Accounting Office (GAO) and is described in detail in Section 2.1.

The insider trading literature documents that insiders are aware of whether the earnings will be restated well in advance of the restatement. Baneish (1999) shows that insiders sales are abnormally higher after earning announcements that end up being restated later in the future. Our question is whether there is any difference in the behavior of officers and independent directors in firms that experience earning restatements.

To address this question, we estimate whether the probability of sale and purchase transactions before and after a restatement differs across category of traders. If an individual is aware that the earnings posted by the company are not accurate she should be more likely than an uninformed trader to sell before rather than after the earning restatement. Table 11 reports the results of such analysis. Column 1 shows that independent directors are more likely than the insiders to sell after an earning restatement has been announced. Such marginal effect is statistically significant, but it is very small. The table also shows that independent directors are slightly more likely than the insiders to purchase before a restatement and slightly less likely to sell before such announcement (columns 3 and 5, respectively). None of the effect is economically nor statistically significant. Despite there are few observations, the results are consistent with the theory that insiders are marginally more informed than outsiders, although the difference is very small. Since not all restatements are equal, in Columns 2, 4 and 6 we repeat the same analysis controlling for whether the restatatement is due to revenue recognition, which has been proven to generate the most negative market reaction (Anderson and Lombardi Yohn (2002)). It also controls for whether the restatement has been prompted by an entity outside the firm (usually the SEC, the FASB, or the auditor), and for interaction terms that check whether these features have a differential impact on the outsiders. The coefficients have the expected sign, but are neither economically nor statistically significant. This lack of significance could be due to the few observations available, or to the fact that the window analyzed, the 80 trading days around the restatement announcement, is relatively short and most of the transactions that exploit such information have been already executed. Thus, we investigate whether the marginally higher information that insiders enjoy is impounded in their trading returns, and whether analyzing

only a window of time around the restatements has an effect. For this purpose, we repeat the base regressions presented in Table 2 on the subsample of transactions made in the 80 trading days window analyzed above (reported in Table 11), and on the subsample of transactions made in these companies irrespective of the date of the transaction (reported in Table 12).

Panel A of Table 11 shows that the independent directors earn significantly higher returns than the insiders when they buy the company stock in the window around a restatement announcement. The insiders make average negative abnormal returns equal to 5.03%, while the outsiders make 7.83% more. Both returns are significantly different than zero. Panel B suggests that such difference is due to restatements associated to revenue recognition: the insiders lose 6.65%, while the outsiders make 6.46% in such cases, as opposed to losing 2.16% and 0.6%, respectively, in the other restatement cases. Panel B also shows that while it does not matter for the insiders' returns whether the restatement has been prompted internally or from an external source, the independent directors make 2.07% less when the prompter is external. This finding is consistent with a story where the independent directors monitor the executives and in the process learn information that leads to the restatement, but also helps them trade well. At the same time, the insiders trade less and at worse terms for fear to be accused of insider trading once the restatement announcement is made. These findings are however only indicative and other stories could be consistent with them. None of the coefficient is by itself statistically significant. To investigate whether this might be due to the high collinearity induced by the interaction terms, we test the joint significance of the outsider dummy, the revenue recognition and the interaction and find that they significantly different than zero at the 99 percent confidence level. Panel C and D show that both insiders and outsiders lose money when they sell the company stock and that this is especially true for the revenue recognition cases.

In Table 12 we repeat the regressions on this subsample to check for all the transactions involving the firms that undergo a restatement, irrespective of when they are executed. The rationale is that there can be a big lag between the time the earnings are announced and the time they are restated. Individuals with superior information about the accuracy of the earning announcement can exploit it at any time between these two events. Panel A shows that the market-adjusted returns associated to the insiders trades are positive and high, and indistinguishable from those associated to the outsiders' trades. The executives returns are higher than the average returns found in the larger sample of firms we analyze. On the contrary, large outside blockholders sitting on the board make huge negative losses when buying stocks in these subset of firms. The results are robust to controlling for the reason and the prompter of the restatement (Panel B). The coefficients for the sales transactions (Panels C and D) tell a similar story.

The evidence reported in Tables 11 and 12 suggests that outsiders are informed about the company,

even when things are not going well and it is not in the interest of the officers to give them information. It also show that insiders trade on longer term information than the outsiders and that they exploit the information about the accuracy of the earnings statements earlier than the outsiders and well in advance of the restatement.

VII   Future Extensions

In future versions of the paper we would like to investigate further some issues we have touched upon in this version.

One of them is the effect of different benchmark returns on our results. In the analyses conducted so far we have used the value weighted market return as the reference point to which we have compared the individuals returns. In the event study we have also accounted for the sensitivity of the stock returns to the market returns by calculating the beta of the stock and the CARs. In addition, the regressions in Table 4 control for the effect of firm size and book to market, which have been shown by the work of Fama and French to affect stock returns, while the regressions in Table 5 account fro idiosyncratic risk as well. The results are not affected by these different way of measuring risk. Nevertheless, we plan to use a characteristics approach similar to that in Daniel and Titman (1997) as a further check on our findings.

Another interesting extension involves a more detailed study of the selection issue and the time in which insiders and outsiders trade. To the extent that people trade only when they have profitable information it is possible that we find sizeable returns for the independent directors even though they don't have information at all times and maybe at those times in which monitoring is more crucial. Dealing with this issue involves checking what is the probability that an outsider trades given that an insides had done so. At the moment, we have some evidence, from Figure I, that the outsiders' trades seem actually more spread across the year than the insiders'. This evidence points to the fact that outsiders as a group seem to have valuable information and trade often. These suggestive findings need to be corroborated by a statistical analysis that examines if this is the case within each firm, or what are the types of firms for which this happens.

Other extensions involve a further analysis of whether the independent directors have information that is helpful for monitoring or receive only the information that the insiders want them to receive. The evidence from the earning restatement analysis suggests that this not the case. The regressions on committee membership provide further support to this view, as the independent directors are shown to have information when sitting on the audit rather than the compensation committee. The analysis of the effect of tenure and whether the director has been elected under the current CEO or

one of her predecessors is a venue of future research.

Last but not least, it would be very interesting to see how things have changed after the introduction of the Sarbanes Oxley Act in August of 2002. As time passes more data become available and it will soon be possible to investigate the effect of the new regulations, the heightened attention paid by the markets to the quality of the corporate governance of the firm, and the change in perception after the scandals of the start of the decade.

VIII   Conclusions

This paper investigates the information available to outsiders on the board of directors in order to shed light on their monitoring ability. By analyzing the open market sales and purchases of a sample of U.S. officers and outside directors we reach preliminary findings indicating that these individuals earn positive market adjusted returns when purchasing the company stock. The results are robust to controlling for the size of the transaction and the stock holdings, and to various proxies of risk, such as firm size, book to market and past return volatility. We also analyzed the effect of governance quality on trading returns and found that both insiders and independent directors make higher returns in firms with the worst governance and that in this case the difference between insiders and outsiders widens. The results on committee membership and attendance indicate that sitting on the audit committee and, attending the meetings regularly, is beneficial for the independent directors. As expected, these variables have no effect on the performance of the officers, since they cquire the information about the company every day on their jobs.

Future extensions involve analyzing the impact of Sarbanes Oxley, and to further investigate the times and conditions when the difference between the independent directors and the executives widens.

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Summary Statistics: transactions and firms characteristics

The data comes from the TFN Insider Filing Data Files. For each insiders that files information with SEC we have the name and various positions the insider holds in the firm (i.e. President, VP, large blockholder). The data reports the date of the transaction, number of shares bought/sold, and price paid/received. We restrict our sample on the trades made by individuals who hold a position in the board and distinguish among three different types: (i) executives of the firm, (ii) non executive directors who are large blockholders (own more than 10% of the company stock), and (iii) directors who are neither employees of the firm, nor large blockholders (outside or independent directors). We exclude utilities and financial companies, which are subject to specific regulations, and also firms for which less than 200 daily returns are available in CRSP prior to the transaction date. Panel A contains sample statistics for the whole sample of transactions. Panel B only contains sample statistics on the sub-sample of transactions made by individuals of firms for which we have information about the size of the board. Panel C contains sample statistics on the subsample of transactions by individuals for whom we have also information on which committee they are appointed. Finally, Panel D contains sample statistics for the sub-sample of transactions made by individuals (executives or directors) of firms that have restated earnings during the sample period.

	Percentages	Mean	Median	Std. Dev.	Observations
Panel A: Whole sample					
Transaction Characteristics					
Purchases					
% purchases:					
Insiders	15.63%				82,503
Outsiders	16.78%				88,617
Large outside blockholders	1.96%				10,353
Value					
Insiders		$72,731	$8,712	$1,133,121	81,862
Outsiders		$184,054	$13,380	$10,300,000	88,050
Large outside blockholders		$223,015	$12,500	$3,657,372	10,262
Sales					
% sales:					
Insiders	42.21%				222,846
Outsiders	20.38%				107,594
Large outside blockholders	3.05%				16,086
Value:					
Insiders		$456,602	$94,200	$5,489,410	222,372
Outsiders		$800,165	$85,500	$10,500,000	107,225
Large outside blockholders		$2,121,411	$121,300	$29,600,000	16,067
Holdings					
\# of shares:					
Insiders		450,236	22,554	4,261,338	94,792
Outsiders		592,377	25,375	4,638,740	52,729
Large outside blockholders		2,984,694	982,704	15,900,000	8,360
Value:					
Insiders		$12,200,000	$360,028	$320,000,000	94,768
Outsiders		$12,000,000	$283,774	$153,000,000	52,710
Large outside blockholders		$71,000,000	$6,407,808	$501,000,000	8,354
Firm Characteristics					
		Mean	Median	Std. Dev.	Observations
Governance Index		8.907	9	2.585	6071680
Size		5.501519	5.434447	2.060054	17211242
Book to Market Value		0.4978097	0.3549539	0.5081673	16632865
Total Return Volatility		0.0399241	0.0348283	0.0229786	21017498

Panel B: Subsample for which we have individual participation to committees					
Individual Characteristics					
	Percentage	Mean	Median	Std. Dev.	Observations
Audit Committee	13.30%				49457
Compensation Committee	12.47%				49488
Nominating Committee	7.82%				49465
Corporate Gov. Committee	3.37%				49483
Executive Committee	6.84%				49483
Former Employee	8.53%				15645
Charity	0.09%				15645
Business Transaction	2.69%				15645
Relative	2.18%				15645
Interlocking directorship	0.92%				15645
Other Affiliation	0.09%				15645
Compensation for Prof. Svcs	6.62%				15645
Truly indep	15.03%				1,143,880
Attendance	1.62%				15645
Designated Director	1.55%				15645
Age		57.505	58.000	9.311222	15645
Year Service Began		1990	1993	8.999853	12413
Year Service Ended		2001	2001	1.572333	12415
Tenure		10.93975	8	8.970655	12399
Institutional Holdings (%)		58.76066	62.1	22.33849	7967

Panel B (cont.): Subsample for which we have individual participation to committees					
Transaction Characteristics					
	Percentage	Mean	Median	Std. Dev.	Observations
Purchases					
% purchases:					
Insiders	50.68%				13,098
Outsiders	46.55%				12,032
Large outside blockholders	2.77%				717
Value:					
Insiders		$142,136	$19,965	$1,470,859	13,079
Outsiders		$399,837	$26,625	$6,916,806	12,017
Large outside blockholders		$958,232	$76,200	$6,242,051	713
Sales					
% sales:					
Insiders	69.60%				63,879
Outsiders	25.18%				23,112
Large outside blockholders	5.22%				4,788
Value:					
Insiders		$918,021	$229,300	$9,883,600	63,842
Outsiders		$1,664,844	$225,650	$18,600,000	23,100
Large outside blockholders		$5,594,629	$364,325	$53,400,000	4,784
Holdings					
Value:					
Insiders		$19,300,000	$540,000	$489,000,000	38359
Outsiders		$19,300,000	$372,420	$232,000,000	18248
Large outside blockholders		$182,000,000	$38,400,000	$1,020,000,000	1892
Firm Characteristics					
		Mean	Median	Std. Dev.	Observations
Governance Index		8.871	9.000	2.549	3242720
Size (ln Assets)		6.949654	6.798271	1.562911	4445472
Book to Market Value		0.3465644	0.2531666	0.3565734	4364541
Total Return Volatility		0.0361817	0.0321841	0.0177241	4703901

Panel C: Sub-sample of firms for which we have information about the board				
Board Characteristics				
	Mean	Median	Std. Dev.	Observations
Board Size	10.546	10	2.625	2739886
Transaction Characteristics				
	Percentage	Mean	Median	Std. Dev.	Observations
Purchases					
% purchases:					
Insiders	51.42%				297,680
Outsiders	47.27%				273,640
Large outside blockholders	1.31%				7,560
Value:					
Insiders		$129,933	$20,438	$1,221,657	297,480
Outsiders		$263,990	$27,380	$5,615,971	273,360
Large outside blockholders		$1,258,076	$75,000	$11,600,000	7,560
Sales					
% sales:					
Insiders	260.35%				1,507,120
Outsiders	94.41%				546,520
Large outside blockholders	18.55%				107,360
Value:					
Insiders		$857,249	$230,650	$4,951,097	1,506,080
Outsiders		$1,633,742	$230,108	$18,300,000	546,360
Large outside blockholders		$2,526,475	$314,750	$18,700,000	107,320
Holdings					
Value:					
Insiders		$16,600,000	$598,494	$531,000,000	1,041,200
Outsiders		$22,500,000	$461,296	$22,500,000	480,720
Large outside blockholders		$152,000,000	$88,500,000	$286,000,000	49,320
Firm Characteristics					
		Mean	Median	Std. Dev.	Observations
Governance Index		9.112	9	2.509	2468840
Size		7.383592	7.251558	1.459309	2611257
Book to Market Value		0.375795	0.304409	0.3092056	2595166
Total Return Volatility		0.0309633	0.0309633	0.0128887	2739886

Panel D: Sub-sample of firms that restated earnings

Reasons for the Restatement

	Percentage	Mean	Median	Std. Dev.	Observations
Acquisitions and mergers	7.01%				84,080
Cost or expense	13.88%				166,509
IPR&D	6.00%				71,962
Loan-loss	0.12%				1,440
Other	5.76%				69,042
Reclassification	2.38%				28,600
Related-party transactions	1.73%				20,760
Restructuring, assets, or inventory	12.41%				148,887
Revenue recognition	41.56%				498,546
Securities related	4.73%				56,733
Tax related	0.06%				760
Unspecified	4.36%				52,320

Prompter of the Restatement

	Percentage	Mean	Median	Std. Dev.	Observations
Auditor	7.15%				53,320
Company	55.07%				410,896
Company/Auditor	1.25%				9,320
Company/FASB	1.01%				7,507
Company/SEC	1.19%				8,880
External	0.02%				160
FASB	0.76%				5,680
SEC	0.3356				250,429

Panel D (cont.): Sub-sample of firms that restated earnings

Transaction Characteristics

	Percentage	Mean	Median	Std. Dev.	Observations
Purchases					
% purchases:					
Insiders	47.22%				163,169
Outsiders	49.83%				172,209
Large outside blockholders	2.95%				10,182
Value					
Insiders		$106,625	$14,000	$1,378,591	162769
Outsiders		$328,918	$17,750	$7,020,698	171889
Large outside blockholders		$97,699	$16,920	$289,026	10182
Sales					
% sales:					
Insiders	68.02%				580,907
Outsiders	28.81%				246,040
Large outside blockholders	3.17%				27,080
Value					
Insiders		$667,981	$137,250	$3,773,338	580667
Outsiders		$1,022,993	$143,200	$9,768,671	245720
Large outside blockholders		$2,257,117	$109,025	$10,800,000	27040
Holdings					
Value					
Insiders		9,479,081	391,133	79,100,000	266662
Outsiders		9,188,739	327,520	53,300,000	150660
Large outside blockholders		12,300,000	5,004,563	48,000,000	13160

Firm Characteristics

	Mean	Median	Std. Dev.	Observations
Governance Index	9.750714	10	2.615369	560000
Size (ln Assets)	6.353963	6.334149	2.050103	1175313
Book to Market Value	0.4369596	0.3090955	0.4612581	1137372
Total Return Volatility	0.0376328	0.0330861	0.0218189	1196980

		Book to Market Quintile				
Panel E: Purchases						
	1	2	3	4	5	Total
Size Quintile=1:			*Transactions:*			
Insider	8,219	4,554	4,576	5,598	8,977	31,924
Outsider	7,812	4,567	4,254	5,182	8,048	29,863
Large Blockholder	1,460	843	1,094	1,084	1,625	6,106
Total	17,491	9,964	9,924	11,864	18,650	67,893
			Returns:			
Insider	13.28%	16.68%	15.88%	19.30%	25.35%	18.58%
Outsider	7.42%	17.31%	15.41%	13.94%	18.41%	14.17%
Large Blockholder	4.98%	-1.64%	19.18%	10.14%	25.16%	12.77%
Total	9.96%	15.40%	16.04%	16.14%	22.33%	16.12%
Size Quintile=2:			*Transactions:*			
Insider	3,624	2,320	1,852	1,802	2,006	11,604
Outsider	3,620	2,534	1,902	1,893	1,788	11,737
Large Blockholder	419	258	228	244	232	1,381
Total	7,663	5,112	3,982	3,939	4,026	24,722
			Returns:			
Insider	9.14%	15.18%	8.50%	12.85%	31.52%	14.65%
Outsider	4.12%	8.98%	11.66%	6.89%	24.06%	9.84%
Large Blockholder	24.43%	1.99%	-2.17%	9.10%	59.23%	5.66%
Total	5.20%	11.44%	9.41%	9.75%	29.81%	11.88%
Size Quintile=3:			*Transactions:*			
Insider	3,120	1,831	1,412	1,237	911	8,511
Outsider	2,669	1,632	1,283	892	803	7,279
Large Blockholder	250	235	65	59	69	678
Total	6,039	3,698	2,760	2,188	1,783	16,468
			Returns:			
Insider	8.84%	14.03%	3.79%	4.62%	27.86%	10.52%
Outsider	7.12%	6.92%	4.20%	1.06%	25.63%	7.83%
Large Blockholder	6.66%	-16.67%	6.52%	1.06%	26.58%	-4.91%
Total	7.44%	8.92%	4.05%	3.09%	26.81%	8.70%
Size Quintile=4:			*Transactions:*			
Insider	2,577	1,457	921	878	532	6,365
Outsider	2,842	1,676	930	800	541	6,789
Large Blockholder	247	66	54	20	47	434
Total	5,666	3,199	1,905	1,698	1,120	13,588
			Returns:			
Insider	6.17%	3.06%	11.55%	9.87%	19.88%	7.88%
Outsider	4.65%	3.57%	0.60%	3.23%	3.32%	3.56%
Large Blockholder	2.75%	22.80%	-5.77%	3.25%	72.01%	12.26%
Total	5.26%	3.73%	5.71%	6.65%	14.08%	5.86%
Size Quintile=5:			*Transactions:*			
Insider	2,877	1,265	890	555	18,512	24,099
Outsider	5,291	2,285	1,573	919	22,881	32,949
Large Blockholder	239	40	3	2	1,470	1,754

		Panel E: Sales				
		Book to Market Quintile				
	1	2	3	4	5	Total
Size Quintile=1:			*Transactions:*			
Insider	18,652	7,895	6,903	5,392	4,971	43,813
Outsider	12,830	5,299	4,171	3,305	3,459	29,064
Large Blockholder	2,465	990	536	548	628	5,167
Total	33,947	14,184	11,610	9,245	9,058	78,044
			Returns:			
Insider	6.41%	-1.07%	2.04%	0.14%	-4.43%	2.37%
Outsider	2.68%	-0.52%	-2.31%	0.79%	-8.32%	-0.14%
Large Blockholder	2.99%	-0.57%	-5.40%	-2.28%	3.74%	0.96%
Total	4.75%	-0.83%	0.14%	0.23%	-5.34%	1.34%
Size Quintile=2:			*Transactions:*			
Insider	16,751	7,509	4,161	2,537	1,432	32,390
Outsider	8,641	3,929	1,931	1,285	1,003	16,789
Large Blockholder	2,165	477	244	263	93	3,242
Total	27,557	11,915	6,336	4,085	2,528	52,421
			Returns:			
Insider	1.47%	-0.41%	-2.85%	-1.50%	-3.68%	0.02%
Outsider	2.44%	-1.63%	-0.66%	0.71%	-10.73%	0.23%
Large Blockholder	-9.24%	-4.37%	-5.54%	-8.69%	-7.89%	-8.16%
Total	0.93%	-0.97%	-2.29%	-1.27%	-6.60%	-0.42%
Size Quintile=3:			*Transactions:*			
Insider	19,009	6,184	3,806	2,234	1,066	32,299
Outsider	8,398	2,880	1,547	887	582	14,294
Large Blockholder	1,212	362	291	209	34	2,108
Total	28,619	9,426	5,644	3,330	1,682	48,701
			Returns:			
Insider	0.04%	3.17%	1.33%	-2.34%	-1.39%	0.58%
Outsider	-4.68%	1.59%	2.91%	-6.49%	-2.74%	-2.63%
Large Blockholder	-4.77%	0.86%	6.60%	7.82%	-27.53%	-1.34%
Total	-1.55%	2.60%	2.03%	-2.80%	-2.39%	-0.45%
Size Quintile=4:			*Transactions:*			
Insider	21,295	6,394	2,834	1,716	727	32,966
Outsider	7,717	2,430	1,121	739	287	12,294
Large Blockholder	1,395	330	115	107	43	1,990
Total	30,407	9,154	4,070	2,562	1,057	47,250
			Returns:			
Insider	0.75%	-0.44%	-0.57%	-0.69%	-7.12%	0.16%
Outsider	-0.97%	-2.54%	-1.12%	-2.28%	-4.59%	-1.46%
Large Blockholder	-1.43%	-3.95%	3.82%	-25.87%	-2.93%	-2.92%
Total	0.21%	-1.12%	-0.60%	-2.21%	-6.26%	-0.39%
Size Quintile=5:			*Transactions:*			
Insider	32,298	7,529	4,146	1,894	35,511	81,378
Outsider	10,424	2,136	1,156	435	21,002	35,153
Large Blockholder	1,098	77	95	22	2,287	3,579

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Insiders and Outsiders trading:
market-adjusted returns

The dependent variable is the market adjusted return of holding the individual's position for 0, 30, 60, 90, and 180 trading days, respectively (i.e. the returns of investing 1 dollar mimicking the trade in the company stock). Outsider is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large blockholder is a dummy equal to 1 if the individual is a director in the board, is not an officer, and owns more than 10% of the company stock. Transaction measure the size of the transaction (measured in dollar value), while holding is the dollar value of the individual's holdings. Transaction if outsider is an interaction term between the size of the transaction and the outsider dummy; similarly transaction if large blockholder is an interaction term between the transaction size and the large blockholder dummy. In Panel A the regressions include only purchase transactions, while in Panel B the regressions include only sale transactions. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual.

					Panel A: Purchases					
					Market adjusted return of holding the individual position					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	0.0030***	0.0422***	0.0652***	0.0792***	0.1210***	0.0026***	0.0510***	0.0797***	0.0954***	0.1534***
	(0.0002)	(0.0011)	(0.0016)	(0.0023)	(0.0038)	(6.4103)	(29.3408)	(31.7107)	(25.6144)	(29.8552)
Outsider	0.0000	-0.0050***	-0.0096***	-0.0101***	-0.0212***	0.0014**	-0.0046	-0.0108***	-0.0152***	-0.0250***
	(0.0003)	(0.0017)	(0.0026)	(0.0037)	(0.0056)	(2.1472)	(1.5983)	(2.7044)	(2.6029)	(3.1135)
Large Blockholder	-0.0014	-0.0123**	-0.0130	-0.0050	-0.0029	-0.0032*	-0.0189**	-0.0251*	-0.0283	-0.0388
	(0.0010)	(0.0056)	(0.0084)	(0.0118)	(0.0223)	(1.6779)	(2.1874)	(1.9404)	(1.5091)	(1.5012)
Transaction						0.005	0.0473	0.083	0.0058	-0.2882**
						(0.5089)	(0.9749)	(0.7800)	(0.0416)	(2.0266)
Holdings						0.000	-0.0015***	-0.0021***	-0.0020***	-0.0033***
						(0.3587)	(3.4137)	(2.8959)	(2.9947)	(2.7244)
Holdings if outsider						-0.0001	0.0012***	0.0014*	0.0014*	0.0027**
						(0.8250)	(2.6426)	(1.7446)	(1.7276)	(2.0195)
Holdings if large blockholder						0.0008***	0.0014	0.0008	-0.0014	-0.005
						(3.0212)	(1.1806)	(0.4213)	(0.5806)	(1.5906)
Transaction if outsider						-0.014	-0.0848	-0.1585	-0.1519	0.1000
						(1.3676)	(1.6345)	(1.3971)	(1.0301)	(0.6734)
Transaction if large blockholder						0.0217	0.0917	0.0415	0.0642	0.2257
						(1.1989)	(1.2910)	(0.3233)	(0.4205)	(1.2161)
Firm fixed effect	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	181473	181459	180789	179921	176065	55009	55007	54853	54707	54059
R-squared	0.103	0.195	0.222	0.260	0.298	0.1616	0.2214	0.2427	0.2848	0.3408

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Panel B: Sales									

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Market adjusted return of holding the individual position									
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0052***	-0.0018***	0.0022**	0.0072***	0.0160***	-0.0072***	-0.0014	-0.0029**	-0.0035*	-0.0112***
	(0.0001)	(0.0007)	(0.001)	(0.0013)	(0.002)	(28.0063)	(1.3963)	(2.0703)	(1.9074)	(3.6986)
Outsider	0.0010***	-0.0031**	-0.0062***	-0.0112***	-0.0251***	0.0015***	-0.0019	-0.0033	-0.0038	-0.0145**
	(0.0002)	(0.0014)	(0.0021)	(0.0028)	(0.0044)	(2.7127)	(0.7744)	(1.001)	(0.8785)	(2.261)
Large Blockholder	0.0023***	-0.0051	-0.0104*	-0.0046	-0.0288**	0.0020**	-0.0100*	-0.0207***	-0.0183	-0.0219
	(0.0006)	(0.0041)	(0.0056)	(0.0079)	(0.0118)	(2.0375)	(1.7124)	(2.5878)	(1.5202)	(1.3209)
Transaction						-0.0225*	-0.0027	0.0486	0.0349	0.0699
						(1.8395)	(0.101)	(1.061)	(0.6575)	(0.442)
Holdings						0.0000	-0.0001	0.0000	0.0000	0.0001
						(1.1821)	(1.145)	(0.667)	(0.5377)	(0.5933)
Holdings*Outsider						0.0000*	0.0003***	0.0003**	0.0002	0.0004
						(1.813)	(3.0555)	(2.3923)	(1.5933)	(1.2547)
Holdings*Large Blockholder						0.0000***	0.0001***	0.0001***	0.0001*	0.0002
						(3.8804)	(2.9467)	(3.355)	(1.8939)	(1.0855)
Transaction* Outsider						0.0169	-0.0104	-0.0291	-0.0481	-0.0354
						(1.2074)	(0.3581)	(0.5979)	(0.8584)	(0.2225)
Transaction*Large Blockholder						0.0203	0.0131	-0.0255	0.0103	-0.055
						(1.4883)	(0.2443)	(0.3556)	(0.1519)	(0.3411)
Firm fixed effect	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	346526	346469	344663	342845	336759	80598	80597	80539	80456	79827
R-squared	0.180	0.153	0.169	0.188	0.225	0.2959	0.1752	0.201	0.2375	0.2851

Insiders and Outsiders trading:
Strictly Independent Directors

The dependent variable is the market adjusted return of holding the individual's position for 0, 30, 60, 90, and 180 trading days, respectively (i.e. the returns of investing 1 dollar mimicking the trade in the company stock). Outsider is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large blockholder is a dummy equal to 1 if the individual is a director in the board, is not an officer, and owns more than 10% of the company stock. In Panel A the regressions include only purchase transactions, while in Panel B the regressions include only sale transactions. Strictly independent director is an indicator variable if the directors are classified strictly independent according to the criteria of the Higgs report and otherwise equal to zero. According to the Higgs report independent directors are those individuals in the board who are outsiders and not former employees, nor employees of an organization to which the firm gives charity contributions. In addition, for a director to be defined as strictly independent, the Higgs report requires that she or he does not have any business transaction with the company, does not give the company any professional service and is not a relative of any officer. Finally, a strictly independent director does not have interlocking directorship with one of the executives, and does not have any other affiliation with the company. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual.

	Panel A: Purchases				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0011***	0.0367***	0.0727***	0.0735***	0.1242***
	(0.0004)	(0.0019)	(0.0031)	(0.0036)	(0.0061)
Outsider	0.0023	0.0014	-0.0021	-0.0066	0.0145
	(0.0019)	(0.0071)	(0.0136)	(0.0167)	(0.0303)
Large Blockholder	0.0054**	-0.0065	0.0058	0.0315	0.0207
	(0.0026)	(0.0124)	(0.0237)	(0.0344)	(0.0466)
Strictly Independent (dummy)	-0.0019	-0.001	-0.0138	-0.0148	-0.0444
	(0.0018)	(0.0075)	(0.0135)	(0.0170)	(0.0305)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	21791	21791	21770	21737	21495
R-squared	0.121	0.254	0.31	0.365	0.389

	Panel B: Sales				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0059***	-0.0051***	-0.0089***	-0.0111***	-0.0302***
	(0.0001)	(0.0011)	(0.0018)	(0.0025)	(0.0039)
Outsider	-0.0001	0.0047	0.0065	0.005	-0.0045
	(0.0006)	(0.0039)	(0.0055)	(0.0074)	(0.0129)
Large Blockholder	0.0043***	0.0026	-0.0142	-0.0227*	-0.0355*
	(0.0007)	(0.0057)	(0.0091)	(0.0126)	(0.0192)
Strictly Independent (dummy)	0.001	-0.0013	0.0022	0.0036	0.0246
	(0.0007)	(0.0052)	(0.0076)	(0.0101)	(0.0173)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	82981	82977	82811	82699	82136
R-squared	0.051	0.118	0.142	0.161	0.192

Table 4:

Insiders and Outsiders trading: controlling for Market to Book and Size

The dependent variable is the market adjusted return of holding the individual's position for 0, 30, 60, 90, and 180 trading days, respectively (i.e. the returns of investing 1 dollar mimicking the trade in the company stock). Outsider is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large blockholder is a dummy equal to 1 if the individual is a director in the board, is not an officer, and owns more than 10% of the company stock. Size is the natural log of firm's assets. Book to Market is calculated as the sum of the market value of common equity and total assets minus the book value of equity over the book value of equity. In Panel A the regressions include only purchase transactions, while in Panel B the regressions include only sale transactions. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual.

Panel A: Purchases					
Market adjusted return of holding the individual position					
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	0.0136***	0.0728***	0.1290***	0.1958***	0.4574***
	(0.0020)	(0.0095)	(0.0153)	(0.0212)	(0.0406)
Outsider	0.0000	-0.0059***	-0.0115***	-0.0144***	-0.0254***
	(0.0004)	(0.0019)	(0.0029)	(0.0043)	(0.0063)
Large Blockholder	-0.0019*	-0.0125**	-0.0152*	-0.0199	-0.0334
	(0.0011)	(0.0061)	(0.0092)	(0.0129)	(0.0219)
Size	-0.0027***	-0.0119***	-0.0236***	-0.0393***	-0.0960***
	(0.0004)	(0.0019)	(0.0030)	(0.0042)	(0.0076)
Book to Market	0.0041***	0.0449***	0.0859***	0.1255***	0.2260***
	(0.0006)	(0.0027)	(0.0044)	(0.0060)	(0.0146)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	133036	133029	132774	132554	131354
R-squared	0.101	0.199	0.228	0.284	0.309

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	Panel B: Sales				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0060***	-0.0801***	-0.1594***	-0.2335***	-0.5339***
	(0.0008)	(0.0071)	(0.0133)	(0.0218)	(0.0337)
Outsider	0.0010***	-0.0011	-0.0038*	-0.0084***	-0.0203***
	(0.0002)	(0.0015)	(0.0023)	(0.0030)	(0.0048)
Large Blockholder	0.0025***	-0.0027	-0.0091	-0.0027	-0.0206*
	(0.0006)	(0.0044)	(0.0059)	(0.0079)	(0.0119)
Size	0.0001	0.0145***	0.0312***	0.0469***	0.1061***
	(0.0001)	(0.0012)	(0.0022)	(0.0036)	(0.0056)
Book to Market	0.000	-0.0174***	-0.0545***	-0.0865***	-0.1794***
	(0.0005)	(0.0028)	(0.0044)	(0.0061)	(0.0094)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	282039	282030	281900	281696	280135
R-squared	0.193	0.147	0.168	0.194	0.238

Insiders and Outsiders trading:
accounting for return volatility

The dependent variable is the market adjusted return of holding the individual's position for 0, 30, 60, 90, and 180 trading days, respectively (i.e. the returns of investing 1 dollar mimicking the trade in the company stock). Outsider is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large blockholder is a dummy equal to 1 if the individual is a director in the board, is not an officer, and owns more than 10% of the company stock. The observations are split in quartile of total return volatility measured by the variance of returns over the interval (-360,-20) trading days before the transaction, adjusted for the time span over which the return is calculated (0, 20, 60, 90, and 180 trading days). In Panel A the regressions include only purchase transactions, while in Panel B the regressions include only sale transactions. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual.

	Panel A: Purchases				
	Total return volatility: first quartile				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0003	0.0082***	0.0099***	0.0086***	0.0095***
	(1.5349)	(8.2942)	(6.7916)	(4.6266)	(3.2856)
Outsider	-0.0002	-0.0029**	-0.0043**	-0.002	-0.0074*
	(0.4983)	(2.0843)	(2.0712)	(0.7613)	(1.8690)
Large Blockholder	0.0003	0.0016	0.0066	-0.005	0.0025
	(0.2104)	(0.2368)	(0.7618)	(0.4262)	(0.1177)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	45084	45080	44917	44696	43731
R-squared	0.1416	0.2254	0.2718	0.2998	0.3743
	Total return volatility: second quartile				
Constant	-0.0004	0.0275***	0.0405***	0.0450***	0.0601***
	(1.3373)	(21.4512)	(22.0962)	(18.7740)	(15.7250)
Outsider	0.0006	-0.0100***	-0.0157***	-0.0169***	-0.0273***
	(1.3235)	(5.0518)	(5.4202)	(4.2230)	(4.4855)
Large Blockholder	0.0019	-0.0018	0.0061	-0.0096	-0.0368*
	(1.3149)	(0.2634)	(0.6366)	(0.7435)	(1.8475)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	45085	45081	44908	44695	43730
R-squared	0.199	0.3131	0.3852	0.4175	0.4729
	Total return volatility: third quartile				
Constant	0.0012***	0.0374***	0.0631***	0.0700***	0.0955***
	(2.7932)	(21.2051)	(23.1271)	(19.8939)	(17.7428)
Outsider	0.0019***	0.003	-0.0018	0.0002	-0.0033
	(2.7736)	(1.0283)	(0.3775)	(0.0317)	(0.3708)
Large Blockholder	0.001	0.0012	-0.0037	0.0058	0.0016
	(0.6213)	(0.1561)	(0.3280)	(0.4088)	(0.0705)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	45080	45080	44912	44695	43733
R-squared	0.1747	0.314	0.3787	0.4289	0.4662
	Total return volatility: fourth quartile				
Constant	0.0109***	0.0938***	0.1445***	0.1900***	0.3178***
	(16.5958)	(30.4718)	(31.5088)	(27.2291)	(29.0149)
Outsider	-0.0014	-0.0078	-0.0144*	-0.0185	-0.0491***
	(1.2231)	(1.4618)	(1.8375)	(1.5546)	(2.7170)
Large Blockholder	-0.0048**	-0.0401***	-0.0473***	-0.0362	-0.0517
	(2.1610)	(3.3697)	(2.7563)	(1.5031)	(1.3325)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	46224	46218	46052	45835	44871
R-squared	0.1522	0.2793	0.2986	0.3317	0.4066

			Panel B: Sales		
		Total return volatility: first quartile			
Constant	-0.0021***	0.0025***	0.0063***	0.0081***	0.0087***
	(24.9435)	(5.1488)	(8.7380)	(8.8456)	(6.0469)
Outsider	0.0002	-0.0018	-0.0028*	-0.0038*	-0.0041
	(0.9250)	(1.6236)	(1.6965)	(1.7767)	(1.2199)
Large Blockholder	0.0006	-0.0074**	-0.0128**	-0.0028	-0.0154
	(1.0119)	(2.1527)	(2.4088)	(0.3714)	(1.4175)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	86277	86262	85811	85357	83837
R-squared	0.0999	0.1745	0.2159	0.246	0.3279
		Total return volatility: second quartile			
Constant	-0.0041***	-0.0035***	-0.0039***	-0.0005	0.0077***
	(32.5654)	(4.7127)	(3.5079)	(0.3329)	(3.4750)
Outsider	0.0008***	-0.0051***	-0.0088***	-0.0138***	-0.0229***
	(3.0781)	(3.2216)	(3.6618)	(4.4025)	(4.4216)
Large Blockholder	0.0020***	-0.0061	-0.0144**	-0.006	-0.0203*
	(2.9914)	(1.4681)	(2.2625)	(0.7712)	(1.7457)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	86276	86263	85811	85355	83832
R-squared	0.1056	0.2135	0.2633	0.296	0.3459
		Total return volatility: third quartile			
Constant	-0.0061***	-0.0074***	-0.0073***	0.0000	0.0001
	(31.8194)	(6.8194)	(4.3148)	(0.0116)	(0.0470)
Outsider	0.0007*	-0.0015	-0.0036	-0.0046	-0.0165**
	(1.7530)	(0.6426)	(1.0067)	(1.0007)	(2.3691)
Large Blockholder	0.0038***	-0.0145***	-0.0173*	-0.0257**	-0.0319*
	(4.3685)	(2.5851)	(1.8989)	(2.1832)	(1.8864)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	86277	86263	85811	85357	83835
R-squared	0.0988	0.224	0.2653	0.2957	0.3596
		Total return volatility: fourth quartile			
Constant	-0.0086***	-0.0006	0.0106***	0.0176***	0.0388***
	(23.1552)	(0.2760)	(3.2593)	(4.0925)	(6.2629)
Outsider	0.0023***	0.0012	-0.0015	-0.0109	-0.0318**
	(3.1389)	(0.2448)	(0.1945)	(1.1089)	(2.2127)
Large Blockholder	0.0025	0.0052	0.0031	0.0151	-0.0232
	(1.6019)	(0.5296)	(0.2292)	(0.7617)	(0.8346)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	87696	87681	87230	86776	85255
R-squared	0.2394	0.2264	0.2396	0.2624	0.3129

Insiders and Outsiders trading by governance: market-adjusted returns

The dependent variable is the market adjusted return of holding the individual's position for 0, 30, 60, 90, and 180 trading days, respectively (i.e. the returns of investing 1 dollar mimicking the trade in the company stock). Outsider is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large blockholder is a dummy equal to 1 if the individual is a director in the board, is not an officer, and owns more than 10% of the company stock. The governance index is a measure constructed by Gompers, Ishii, and Metrick (2003) by counting the number of governance provisions a firm has. More governance provisions (higher governance index) indicate worst governance. Following Gompers et al. (2003) we classify companies with a governance index less or equal than 5, equal to 6, 7, 8, 9, 10, 11, 12, 13 and greater or equal than 14. Bad governance if outsider is an interaction term between companies with a governance index greater or equal to 10 and outsider trading the stock. Bad governance if large blockholder is an interaction term between companies with a governance index greater or equal to 10 and a large blockholder trading the stock. In Panel A the regressions include only purchase transactions, while in Panel B the regressions include only sale transactions. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual.

	Panel A: Purchases				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	0.0013	0.0059	0.0167	0.0249	0.0224
	(0.0019)	(0.0097)	(0.0182)	(0.0202)	(0.0327)
Outsider	0.0009	-0.0029	-0.0179***	-0.0177***	-0.0233**
	(0.0006)	(0.0032)	(0.0048)	(0.0059)	(0.0107)
Large Blockholder	0.0028	-0.0071	-0.0098	0.0125	-0.0063
	(0.0022)	(0.0127)	(0.022)	(0.029)	(0.0403)
Governance=6	-0.0038*	0.0079	-0.0033	0.0193	0.0376
	(0.002)	(0.0097)	(0.0232)	(0.0238)	(0.0346)
Governance=7	-0.0044**	0.0072	0.0056	0.0364*	0.1007***
	(0.002)	(0.0104)	(0.0191)	(0.0212)	(0.0359)
Governance=8	-0.0025	0.0331***	0.0578***	0.0583**	0.1013**
	(0.0021)	(0.0115)	(0.0203)	(0.0233)	(0.0397)
Governance=9	-0.0009	0.0302**	0.0616***	0.0678***	0.1520***
	(0.0023)	(0.0124)	(0.0216)	(0.025)	(0.0402)
Governance=10	-0.0034	0.0136	0.0374*	0.0367	0.1037**
	(0.0024)	(0.0125)	(0.0216)	(0.0253)	(0.0411)
Governance=11	-0.0019	0.0404***	0.0727***	0.0647**	0.1037**
	(0.0025)	(0.0128)	(0.0225)	(0.0264)	(0.0432)
Governance=12	-0.0012	0.0585***	0.0897***	0.0781***	0.1125**
	(0.0027)	(0.0141)	(0.0237)	(0.028)	(0.0466)
Governance=13	-0.0015	0.0506***	0.0853***	0.0547*	0.1126**
	(0.0028)	(0.0148)	(0.0247)	(0.0289)	(0.0483)
Governance geq 14	-0.0002	0.0735***	0.1181***	0.0918***	0.1921***
	(0.0031)	(0.0159)	(0.0259)	(0.0306)	(0.0496)
Bad Governance if outsider	-0.0012	-0.0132**	-0.0062	-0.01	-0.0171
	(0.001)	(0.0055)	(0.0081)	(0.0099)	(0.017)
Bad Governance if large blockholder	0.0004	0.0255	-0.0386	-0.0893	0.0358
	(0.0056)	(0.0212)	(0.056)	(0.0581)	(0.0673)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	37263	37263	37203	37119	36566
R-squared	0.121	0.208	0.266	0.272	0.346

	Panel B: Sales				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0054***	-0.0229***	-0.0435***	-0.0545***	-0.1104***
	(0.0007)	(0.0046)	(0.0078)	(0.012)	(0.0328)
Outsider	0.0011***	-0.0048**	-0.0109***	-0.0170***	-0.0241***
	(0.0003)	(0.0021)	(0.0034)	(0.0043)	(0.0064)
Large Blockholder	0.0040***	-0.0032	-0.0132*	-0.0082	-0.0094
	(0.0007)	(0.0042)	(0.0068)	(0.0087)	(0.0134)
Governance=6	0.0002	0.0110**	0.0176**	0.0225**	0.0809***
	(0.0007)	(0.0048)	(0.0075)	(0.0107)	(0.028)
Governance=7	0.0012	0.0135***	0.0260***	0.0301**	0.0669
	(0.0008)	(0.0049)	(0.0087)	(0.0148)	(0.0469)
Governance=8	0.0007	0.0188***	0.0377***	0.0472***	0.0986**
	(0.0008)	(0.0056)	(0.0095)	(0.0144)	(0.0386)
Governance=9	0.0003	0.0243***	0.0513***	0.0723***	0.1093***
	(0.0009)	(0.0061)	(0.0108)	(0.0163)	(0.0396)
Governance=10	0.0014	0.0434***	0.0717***	0.0940***	0.1529***
	(0.0009)	(0.0063)	(0.0108)	(0.0161)	(0.0393)
Governance=11	0.0004	0.0324***	0.0516***	0.0649***	0.1151***
	(0.0009)	(0.0065)	(0.0108)	(0.0159)	(0.0395)
Governance=12	0.0001	0.0331***	0.0517***	0.0723***	0.1354***
	(0.001)	(0.007)	(0.0116)	(0.0167)	(0.0399)
Governance=13	0.0012	0.0343***	0.0667***	0.0751***	0.1345***
	(0.0011)	(0.0071)	(0.012)	(0.0172)	(0.0405)
Governance geq 14	0.0002	0.0380***	0.0763***	0.0923***	0.1557***
	(0.0013)	(0.0085)	(0.0145)	(0.0197)	(0.0424)
Bad Governance if outsider	-0.0002	0.0042	0.0023	0.004	-0.0062
	(0.0005)	(0.0037)	(0.0057)	(0.0067)	(0.0111)
Bad Governance if large blockholder	-0.0015	-0.0341**	-0.0356	-0.0662**	-0.0938
	(0.0021)	(0.0174)	(0.0224)	(0.0336)	(0.067)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	114529	114517	114004	113543	112224
R-squared	0.057	0.138	0.159	0.175	0.205

	Panel C: Purchases				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	0.0061	0.0056	0.0067	0.0173	-0.0064
	(0.0053)	(0.0226)	(0.0453)	(0.0452)	(0.0673)
Outsider	0.0005	0.0163*	0.0235*	0.0355**	0.0458
	(0.0028)	(0.0084)	(0.0133)	(0.0180)	(0.0310)
Large Blockholder	0.0055	0.0034	0.0529*	0.081	0.0208
	(0.0048)	(0.0212)	(0.0310)	(0.0505)	(0.0580)
Transaction	-0.0144	-0.0124	0.1133	0.1849*	0.4119
	(0.0165)	(0.0654)	(0.0892)	(0.0960)	(0.3043)
Holdings	0.0000	-0.0008***	-0.0010**	-0.0009**	-0.0017***
	0.0000	(0.0003)	(0.0004)	(0.0004)	(0.0006)
Strictly Independent (dummy)	0.001	-0.0128	-0.0284**	-0.0394**	-0.0666**
	(0.0028)	(0.0088)	(0.0136)	(0.0183)	(0.0311)
Governance=6	-0.0032	-0.0052	-0.0494	-0.0311	-0.0457
	(0.0060)	(0.0211)	(0.0565)	(0.0552)	(0.0747)
Governance=7	-0.0063	-0.0334	-0.0673	-0.0551	-0.0838
	(0.0058)	(0.0247)	(0.0486)	(0.0495)	(0.0811)
Governance=8	-0.0132**	-0.0101	-0.0113	-0.008	-0.0075
	(0.0060)	(0.0251)	(0.0488)	(0.0500)	(0.0747)
Governance=9	-0.0091	0.0197	0.0609	0.075	0.2065**
	(0.0063)	(0.0288)	(0.0522)	(0.0526)	(0.0818)
Governance=10	-0.0139**	0.0263	0.0552	0.0471	0.1778**
	(0.0066)	(0.0291)	(0.0527)	(0.0537)	(0.0867)
Governance=11	-0.0085	0.0513*	0.0966*	0.0604	0.1881**
	(0.0067)	(0.0298)	(0.0531)	(0.0553)	(0.0865)
Governance=12	-0.0077	0.0888***	0.1575***	0.1069*	0.1895**
	(0.0070)	(0.0315)	(0.0552)	(0.0585)	(0.0898)
Governance=13	-0.0069	0.0778**	0.1534***	0.0929	0.2175**
	(0.0070)	(0.0318)	(0.0558)	(0.0598)	(0.0905)
Governance geq 14	0.001	0.1388***	0.2480***	0.1695**	0.3733***
	(0.0079)	(0.0375)	(0.0617)	(0.0710)	(0.1056)
Bad Governance * Strictly Independent	-0.0031	-0.0266***	-0.0256**	-0.0313**	-0.0112
	(0.0019)	(0.0084)	(0.0129)	(0.0156)	(0.0232)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	11916	11916	11910	11905	11840
R-squared	0.158	0.234	0.271	0.285	0.391

	Panel D: Sales				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0106***	-0.0179*	-0.0422***	-0.0319	-0.0745**
	(0.0019)	(0.0095)	(0.0143)	(0.0194)	(0.0331)
Outsider	-0.0002	-0.0035	-0.0045	-0.0116	-0.0199
	(0.0008)	(0.0040)	(0.0056)	(0.0075)	(0.0123)
Large Blockholder	0.0041***	-0.0153**	-0.0267***	-0.0104	-0.0005
	(0.0014)	(0.0066)	(0.0097)	(0.0124)	(0.0168)
Transaction	0.0056	-0.0115	0.0158	0.011	-0.1076**
	(0.0059)	(0.0235)	(0.0420)	(0.0332)	(0.0490)
Holdings	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.0001)
Strictly Independent (dummy)	0.0016	-0.0047	-0.0019	-0.0006	0.0058
	(0.0010)	(0.0050)	(0.0075)	(0.0098)	(0.0159)
Governance=6	0.0036*	0.0201**	0.0304**	0.0153	0.0979***
	(0.0020)	(0.0098)	(0.0134)	(0.0177)	(0.0301)
Governance=7	0.0081***	0.0126	0.0218	-0.0057	0.005
	(0.0022)	(0.0110)	(0.0157)	(0.0213)	(0.0372)
Governance=8	0.0053**	0.0204*	0.0573***	0.0380*	0.0799**
	(0.0022)	(0.0109)	(0.0168)	(0.0225)	(0.0406)
Governance=9	0.0050**	0.0304**	0.0606***	0.0595**	0.0930**
	(0.0023)	(0.0121)	(0.0194)	(0.0275)	(0.0465)
Governance=10	0.0053**	0.0488***	0.0795***	0.0846***	0.1199***
	(0.0025)	(0.0137)	(0.0200)	(0.0280)	(0.0458)
Governance=11	0.0037	0.0369***	0.0579***	0.0402	0.0721
	(0.0027)	(0.0136)	(0.0200)	(0.0275)	(0.0454)
Governance=12	0.0018	0.0231	0.0371*	0.0248	0.0239
	(0.0028)	(0.0144)	(0.0219)	(0.0297)	(0.0474)
Governance=13	0.0047	0.0236	0.037	0.0129	-0.0368
	(0.0031)	(0.0156)	(0.0238)	(0.0314)	(0.0494)
Governance geq 14	0.0072**	0.0129	0.0373	0.0567	0.0479
	(0.0035)	(0.0192)	(0.0285)	(0.0392)	(0.0554)
Bad Governance * Strictly Independent	-0.0001	0.0038	0.0032	0.0084	0.0157
	(0.0016)	(0.0074)	(0.0113)	(0.0132)	(0.0210)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	25983	25983	25979	25970	25860
R-squared	0.105	0.143	0.171	0.184	0.225

Insiders and Outsiders trading:
Committees

In this table the sample is limited to observations for which we have committees information. The dependent variable is the market adjusted return of holding the individual's position for 0, 30, 60, 90, and 180 trading days, respectively (i.e. the returns of investing 1 dollar mimicking the trade in the company stock). Outsider is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large blockholder is a dummy equal to 1 if the individual is a director in the board, is not an officer, and owns more than 10% of the company stock. The committees variables (e.g. audit committee, governance committee, etc..) are indicator variable equal to one if the individual trading belongs to a committee and zero otherwise. The interaction terms (e.g. outsider in audit committee, Outsider in governance committee) are indicator variables equal to one if the individual trading belongs to a committee and it is also an independent director (but not a large blockholder). In Panel A the regressions include only purchase transactions, while in Panel B the regressions include only sale transactions. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual.

	Panel A: Purchases				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0016***	0.0360***	0.0633***	0.0652***	0.1192***
	(0.0006)	(0.0022)	(0.0032)	(0.0040)	(0.0064)
Outsider	0.0019	0.0187**	-0.0084	-0.0141	-0.0088
	(0.0032)	(0.0095)	(0.0240)	(0.0246)	(0.0337)
Large Blockholder	0.0104**	0.0269	0.0383	0.0603	-0.0085
	(0.0047)	(0.0176)	(0.0267)	(0.0388)	(0.0461)
Transaction	-0.0121	-0.033	0.1082	0.1488	0.3605
	(0.0179)	(0.0739)	(0.0866)	(0.0968)	(0.2697)
Holdings	0.0001	-0.0007**	-0.0008**	-0.0008**	-0.0021***
	(0.0001)	(0.0003)	(0.0004)	(0.0004)	(0.0007)
Strictly Independent (dummy)	-0.0017	-0.0226**	-0.0088	-0.0199	-0.0573
	(0.0033)	(0.0109)	(0.0254)	(0.0268)	(0.0366)
Audit Committee	0.0005	-0.0044	0.0525	0.0461	-0.0064
	(0.0039)	(0.0129)	(0.0332)	(0.0360)	(0.0512)
Compensation Committee	0.0025	0.0031	0.035	0.0421	0.0929*
	(0.0033)	(0.0114)	(0.0284)	(0.0329)	(0.0560)
Nominating Committee	-0.0017	-0.0182	-0.0232	-0.0078	0.0295
	(0.0028)	(0.0118)	(0.0165)	(0.0207)	(0.0393)
Corporate Gov. Committee	0.0026	0.0138	0.0028	0.0105	-0.045
	(0.0051)	(0.0163)	(0.0230)	(0.0252)	(0.0446)
Executive Committee	-0.0015	0.0048	0.0165	-0.004	0.0095
	(0.0020)	(0.0081)	(0.0124)	(0.0148)	(0.0249)
Str. Indep in audit committee	-0.0002	0.0054	-0.0408	-0.0296	0.0321
	(0.0041)	(0.0142)	(0.0350)	(0.0380)	(0.0542)
Str. Indep in compensation committee	-0.0034	-0.0054	-0.0325	-0.029	-0.0704
	(0.0036)	(0.0129)	(0.0303)	(0.0349)	(0.0587)
Str. Indep in nominating committee	-0.0003	0.0178	0.0221	0.014	0.0034
	(0.0032)	(0.0137)	(0.0193)	(0.0240)	(0.0426)
Str. Indep in corporate gov. committee	-0.0006	0.0033	0.0147	0.012	0.049
	(0.0053)	(0.0185)	(0.0263)	(0.0285)	(0.0485)
Str. Indep in executive committee	0.0044	-0.0095	-0.0264	-0.0079	-0.0123
	(0.0029)	(0.0121)	(0.0187)	(0.0209)	(0.0322)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	14009	14009	14003	13998	13929
R-squared	0.154	0.237	0.277	0.336	0.402

	Panel B: Sales				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0071***	-0.0016	-0.0075***	-0.0126***	-0.0425***
	(0.0002)	(0.0011)	(0.0016)	(0.0021)	(0.0035)
Outsider	-0.0009	0.0037	0.002	0.0003	-0.0009
	(0.0009)	(0.0054)	(0.0074)	(0.0097)	(0.0168)
Large Blockholder	0.0027**	-0.0096	-0.0267***	-0.0107	-0.0338
	(0.0012)	(0.0061)	(0.0099)	(0.0129)	(0.0225)
Transaction	0.002	-0.0126	0.0182	-0.0173	-0.1022
	(0.0055)	(0.0248)	(0.0412)	(0.0498)	(0.0826)
Holdings	0	0	0	0	0.0001
	0.0000	0.0000	0.0000	0.0000	(0.0001)
Strictly Independent (dummy)	0.002	-0.004	0.0180*	0.0126	0.0329
	(0.0014)	(0.0081)	(0.0108)	(0.0145)	(0.0244)
Audit Committee	-0.0015	-0.005	0.0019	0.0068	0.0295
	(0.0015)	(0.0078)	(0.0110)	(0.0146)	(0.0244)
Compensation Committee	0.0015	0.0086	0	0.0046	0.009
	(0.0015)	(0.0082)	(0.0109)	(0.0151)	(0.0256)
Nominating Committee	-0.001	0.0013	-0.004	0.0015	-0.0145
	(0.0014)	(0.0079)	(0.0114)	(0.0162)	(0.0251)
Corporate Gov. Committee	0.0047**	-0.0043	0.0121	-0.0023	0.0293
	(0.0019)	(0.0099)	(0.0139)	(0.0187)	(0.0310)
Executive Committee	0.0015*	0.0054	0.0163***	0.0052	0.0182
	(0.0008)	(0.0040)	(0.0057)	(0.0070)	(0.0118)
Str. Indep in audit committee	0.0036*	0.0129	-0.0012	0.0054	-0.0242
	(0.0019)	(0.0101)	(0.0141)	(0.0184)	(0.0314)
Str. Indep in compensation committee	-0.0007	0.0019	0.0014	0.0053	0.0003
	(0.0019)	(0.0104)	(0.0142)	(0.0187)	(0.0331)
Str. Indep in nominating committee	-0.0017	-0.0089	-0.0122	-0.0104	0.0374
	(0.0021)	(0.0110)	(0.0152)	(0.0213)	(0.0346)
Str. Indep in corporate gov. committee	-0.0038	-0.0044	-0.031	-0.0079	-0.0756*
	(0.0028)	(0.0139)	(0.0196)	(0.0251)	(0.0410)
Str. Indep in executive committee	-0.0009	-0.0149*	-0.0276**	-0.0197	-0.0487**
	(0.0017)	(0.0087)	(0.0120)	(0.0153)	(0.0236)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	34082	34082	34078	34069	33950
R-squared	0.085	0.123	0.147	0.168	0.197

Table 8:

Insiders and Outsiders trading: Size of the Board

The dependent variable is the market adjusted return of holding the individual's position for 0, 30, 60, 90, and 180 trading days, respectively (i.e. the returns of investing 1 dollar mimicking the trade in the company stock). Outsider is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large blockholder is a dummy equal to 1 if the individual is a director in the board, is not an officer, and owns more than 10% of the company stock. Board size is the size of the board from Fich and Shivdasani (2005). Big board if outsider and big board if large blockholder are indicator variables if the board is large (above the median) and the individual trading is a independent director (but not a large blockholder) and a large blockholder. Panel A the regressions include only purchase transactions, while in Panel B the regressions include only sale transactions. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual.

	Panel A: Purchases				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	0.0017	0.084	0.0417	0.1242	0.4164**
	(0.0104)	(0.0534)	(0.0939)	(0.1107)	(0.1639)
Outsider	0.001	-0.0086*	-0.0396***	-0.0429***	-0.0580***
	(0.0009)	(0.0048)	(0.0084)	(0.0094)	(0.0143)
Large Blockholder	0.0066*	-0.0185	0.031	0.1397*	0.1565
	(0.0035)	(0.0208)	(0.0349)	(0.0825)	(0.1095)
Board size	-0.0018	-0.0208	0.0153	-0.0203	-0.1301*
	(0.0044)	(0.0226)	(0.0400)	(0.0469)	(0.0693)
Big board if outsiders	0.0009	0.0096	0.0263**	0.0357**	0.0603***
	(0.0015)	(0.0077)	(0.0112)	(0.0141)	(0.0215)
Big board if large blockholders	-0.0175**	-0.0413	-0.0183	-0.2185**	-0.192
	(0.0084)	(0.0324)	(0.0628)	(0.0963)	(0.1447)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	14472	14472	14462	14435	14202
R-squared	0.123	0.239	0.291	0.312	0.376

	Panel B: Sales				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0097***	-0.0872***	-0.1335**	-0.1199*	-0.1333
	(0.0033)	(0.0332)	(0.0530)	(0.0695)	(0.1412)
Outsider	0.0003	-0.0064	-0.0168**	-0.0302***	-0.0480***
	(0.0004)	(0.0047)	(0.0078)	(0.0100)	(0.0149)
Large Blockholder	0.0033***	0.0079	-0.0076	-0.0192*	-0.0309*
	(0.0009)	(0.0089)	(0.0097)	(0.0112)	(0.0176)
Board size	0.0021	0.0371***	0.0551**	0.0484	0.0492
	(0.0014)	(0.0142)	(0.0227)	(0.0297)	(0.0603)
Big board if outsiders	0.0005	0.0048	0.0190**	0.0336***	0.0587***
	(0.0006)	(0.0058)	(0.0095)	(0.0126)	(0.0219)
Big board if large blockholders	-0.0025	-0.0390***	-0.0400**	0.0008	-0.0194
	(0.0018)	(0.0127)	(0.0165)	(0.0201)	(0.0323)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	54025	54021	53933	53819	53238
R-squared	0.056	0.122	0.144	0.175	0.211

Table 9:

Insiders and Outsiders trading: controlling for the presence of institutional investors

The dependent variable is the market adjusted return of holding the individual's position for 0, 30, 60, 90, and 180 trading days, respectively (i.e. the returns of investing 1 dollar mimicking the trade in the company stock). Outsider is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large blockholder is a dummy equal to 1 if the individual is a director in the board, is not an officer, and owns more than 10% of the company stock. High fraction of institutional investor is an indicator variable equal to one if the percentage of company's outstanding common shares held by institutions is larger than 30%. Designated director is a dummy variable if the director is a designee under a documented agreement between the company and a group of shareholders or a significant shareholder. In Panel A the regressions include only purchase transactions, while in Panel B the regressions include only sale transactions. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual.

	Panel A: Purchases				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0019	0.0484***	0.1088***	0.1156***	0.1938***
	(0.0014)	(0.0076)	(0.0106)	(0.0123)	(0.0227)
Outsider	0.0022	-0.0039	-0.0171	-0.0273*	-0.0338
	(0.0020)	(0.0076)	(0.0125)	(0.0160)	(0.0283)
Large Blockholder	0.0097**	-0.0107	-0.0187	-0.0491	-0.0989
	(0.0044)	(0.0180)	(0.0304)	(0.0496)	(0.0742)
High fraction of institutional investors	0.001	-0.0134	-0.0420***	-0.0485***	-0.0777***
	(0.0015)	(0.0083)	(0.0115)	(0.0134)	(0.0246)
High fraction of institutional investors if str. Independent	0.0016	-0.0219**	-0.0390***	-0.0520***	-0.0937***
	(0.0019)	(0.0099)	(0.0145)	(0.0171)	(0.0298)
High fraction of institutional investors if large blockholder	-0.0041	0.0176	0.0496	0.0951	0.1257
	(0.0043)	(0.0203)	(0.0403)	(0.0637)	(0.0857)
Strictly Independent (dummy)	-0.0024	0.0106	0.0063	0.0162	0.0237
	(0.0024)	(0.0101)	(0.0153)	(0.0213)	(0.0378)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	21051	21051	21032	21002	20768
R-squared	0.128	0.255	0.317	0.374	0.4

		Market adjusted return of holding the individual position			
Panel B: Sales					
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0055***	-0.0076*	-0.0053	-0.0044	-0.0069
	(0.0005)	(0.0046)	(0.0071)	(0.0116)	(0.0208)
Outsider	-0.0004	0.0036	0.0029	-0.0007	-0.0122
	(0.0006)	(0.0041)	(0.0061)	(0.0085)	(0.0147)
Large Blockholder	0.0043***	0.0165	-0.0075	0.0045	-0.0101
	(0.0013)	(0.0214)	(0.0255)	(0.0298)	(0.0542)
High fraction of institutional investors	-0.0005	0.0017	-0.0057	-0.0098	-0.0288
	(0.0005)	(0.0049)	(0.0077)	(0.0125)	(0.0220)
High fraction of institutional investors if str. Independent	0.0023**	-0.0074	0.0068	0.023	0.0332
	(0.0010)	(0.0089)	(0.0141)	(0.0186)	(0.0279)
High fraction of institutional investors if large blockholder	0.0001	-0.0147	-0.006	-0.0365	-0.0415
	(0.0013)	(0.0255)	(0.0312)	(0.0364)	(0.0708)
Strictly Independent (dummy)	0.0023**	-0.0074	0.0068	0.023	0.0332
	(0.0010)	(0.0089)	(0.0141)	(0.0186)	(0.0279)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	80591	80587	80426	80317	79820
R-squared	0.052	0.119	0.143	0.161	0.187

Table 10:

Insiders and Outsiders trading: Does Attendance Matter?

The dependent variable is the market adjusted return of holding the individual's position for 0, 30, 60, 90, and 180 trading days, respectively (i.e. the returns of investing 1 dollar mimicking the trade in the company stock). Outsider is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large blockholder is a dummy equal to 1 if the individual is a director in the board, is not an officer, and owns more than 10% of the company stock. Attendance is an indicator variable that is equal to one if the director attended less than 75% of the meetings. In Panel A the regressions include only purchase transactions, while in Panel B the regressions include only sale transactions. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual.

	Panel A: Purchases				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0018*	0.0266***	0.0565***	0.0451***	0.0656***
	(0.0010)	(0.0047)	(0.0090)	(0.0094)	(0.0147)
Outsider	0.0009	0.0061	-0.0065	-0.0036	0.0101
	(0.0013)	(0.0060)	(0.0112)	(0.0119)	(0.0186)
Large Blockholder	0.0039	-0.0051	0.0637**	0.1104*	0.1484*
	(0.0047)	(0.0173)	(0.0319)	(0.0571)	(0.0855)
Attendance	0.0211	-0.1315***	0.1119	0.0896*	0.1867
	(0.0289)	(0.0472)	(0.1163)	(0.0536)	(0.2186)
Attendance if outsider	-0.0221	0.1378***	-0.133	-0.1361**	-0.2583
	(0.0290)	(0.0499)	(0.1186)	(0.0593)	(0.2213)
Attendance if large blockholder	-0.0281	0.1889***	-0.1035	-0.0324	-0.0351
	(0.0290)	(0.0582)	(0.1235)	(0.0833)	(0.2308)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	11195	11195	11183	11167	11052
R-squared	0.164	0.329	0.362	0.389	0.417

	Panel B: Purchases				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0028***	0.0068**	0.0133***	0.0198***	0.0161*
	(0.0003)	(0.0031)	(0.0045)	(0.0058)	(0.0089)
Outsider	-0.0021***	-0.0072	-0.0129*	-0.0211**	-0.0316**
	(0.0005)	(0.0054)	(0.0076)	(0.0101)	(0.0157)
Large Blockholder	0.0019*	-0.0115	-0.0367***	-0.0344**	-0.0349
	(0.0011)	(0.0085)	(0.0121)	(0.0144)	(0.0217)
Attendance	0.0037	0.0299	0.014	-0.0255	-0.0616
	(0.0037)	(0.0331)	(0.0472)	(0.0437)	(0.0681)
Attendance if outsider	0.0011	-0.0456	-0.0323	0.0212	0.0197
	(0.0044)	(0.0369)	(0.0539)	(0.0559)	(0.0809)
Attendance if large blockholder	-0.0024	0.0253	0.1085	0.0426	0.0112
	(0.0065)	(0.0567)	(0.1209)	(0.0778)	(0.1802)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	29490	29490	29455	29432	29217
R-squared	0.075	0.185	0.225	0.271	0.337

Insiders and Outsider Trading and Earning Restatements

The sample is reduced a subsample of firms that were subject to a restatement due to accounting irregularities. We use a dataset collected by Gao (2002) that includes companies from Jan 1 1997 to June 30 2002 and contains 919 restatements resulting from accounting irregularities. In Panel A, columns (1) and (2) the left hand side is a dummy variable if the individual has sold his/her of stocks between 0 and 40 trading days after the restatement of earnings and zero otherwise. In columns (3) and (4) of Panel A the left hand side is a dummy variable if the individual has sold his/her stock between -400 and 0 trading days before the restatement of earnings and zero otherwise. In column (5) and (6) the left hand side is a dummy variable if the individual has purchased company's stocks between 0 and 40 trading days before the restatement of earnings and zero otherwise. All the columns report the marginal effect in probit regression. Outsider is a dummy equal to 1 if the individual is an outside director. Revenue recognition is an indicator variable equal to one if the restatement was due to an improperly recognized revenues, or any other mistakes or improprieties were made that led to misreported revenue. Revenue recognition if outsider (large blockholder) is revenue recognition interacted with an indicator variable on whether the individual trading is an independent director (large blockholder). External prompter is an indicator variable equal to 1 if the prompter of the restatement is outside the firm, and equal to zero otherwise. External prompter if outsider (large blockholder) is our external prompter variable interacted with an indicator variable on whether the individual trading is an independent director (large blockholder). The standard errors are corrected for the non-independence of the observations within the same individual??. In Panel B and C, the sample is restricted to the trades (Purchases in panel B and Sales in Panel C) that took place within (-40,+40) trading days around the restatement announcement. The dependent variable is the market adjusted return of holding the individual's position for 0, 30, 60, 90, and 180 trading days, respectively (i.e. the returns of investing 1 dollar mimicking the trade in the company stock). Outsider is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large blockholder is a dummy equal to 1 if the individual is a director in the board, is not an officer, and owns more than 10% of the company stock. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual.

Panel A: Probit Regressions - Marginal Effects						
	(1)	(2)	(3)	(4)	(5)	(6)
Outsider	0.0018**	0.0021*	-0.002	-0.0005	0.0001	0.0008
	(0.0009)	(0.0012)	(0.0014)	(0.0023)	(0.0005)	(0.0007)
Revenue Recognition		0.0012		0.0014		0.0012**
		(0.0011)		(0.0013)		(0.0006)
External Prompter		-0.0022		-0.0019		0.0002
		(0.0014)		(0.0016)		(0.0006)
Revenue Recognition if Outsider		-0.0015		-0.0019		-0.0006
		(0.0017)		(0.0029)		(0.0009)
External Prompter if Outsider		0.0018		-0.0049		-0.0017
		(0.0020)		(0.0035)		(0.0012)
Observations	29994	29994	29994	29482	29062	29062

Panel B: Purchases

	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0325***	-0.0228	0.0098	-0.0696***	-0.0503***
	(0.0078)	(0.0145)	(0.0122)	(0.0155)	(0.0177)
Outsider	0.0586***	0.0167	0.0181	0.0544*	0.0783**
	(0.0162)	(0.0248)	(0.0229)	(0.0313)	(0.0377)
Large Blockholder	0.0238	0.0692	0.0118	0.0339	-0.2077
	(0.0165)	(0.0575)	(0.0189)	(0.0208)	(0.1375)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	175	175	175	175	168
R-squared	0.518	0.736	0.927	0.952	0.977

	Panel C: Sales				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0052***	0.0430***	0.0640***	0.0612***	-0.0282***
	(0.0018)	(0.0053)	(0.0068)	(0.0067)	(0.0060)
Outsider	0.0033	0.0379***	-0.0022	-0.0089	-0.0105
	(0.0039)	(0.0113)	(0.0118)	(0.0171)	(0.0144)
Large Blockholder	0.0442***	-0.2504***	-0.0942**	-0.1200***	-0.2503***
	(0.0062)	(0.0653)	(0.0440)	(0.0251)	(0.0021)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	339	339	339	339	337
R-squared	0.42	0.886	0.881	0.92	0.945

	Panel D: Purchases				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0607***	0.0404**	-0.1724***	-0.0870***	-0.0216
	(0.0146)	(0.0200)	(0.0530)	(0.0192)	(0.0428)
Outsider	0.0517**	-0.0025	0.0402	0.1159*	0.0156
	(0.0215)	(0.0392)	(0.0249)	(0.0643)	(0.0801)
Large Blockholder	0.0258	0.0633	0.0168	0.0486	-0.2136
	(0.0202)	(0.0585)	(0.0209)	(0.0300)	(0.1333)
Revenue Recognition	0.000	0.000	0.3613***	0.000	-0.0449
	(0.000)	(0.000)	(0.0967)	(0.000)	(0.0791)
External Prompter	0.1453***	-0.3084***	0.000	0.0786	0.000
	(0.0518)	(0.0827)	(0.000)	(0.0981)	(0.000)
RevRecOUT (Interaction)	0.0309	0.0066	-0.0203	-0.0509	0.1155
	(0.0304)	(0.0484)	(0.0380)	(0.0663)	(0.0875)
ExtPrOUT (Interaction)	-0.0588**	0.0846	-0.0576	-0.1780*	-0.0207
	(0.0250)	(0.0690)	(0.0711)	(0.0940)	(0.0788)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	175	175	175	175	168
R-squared	0.531	0.741	0.933	0.954	0.978

	Panel E: Sales				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0070***	0.0526***	0.0838***	0.0387***	0.0406***
	(0.0017)	(0.0051)	(0.0067)	(0.0069)	(0.0061)
Outsider	-0.0087	0.0604***	0.0188**	0.0098	-0.0081
	(0.0071)	(0.0181)	(0.0093)	(0.0082)	(0.0301)
Large Blockholder	0.0442***	-0.2504***	-0.0942**	-0.1200***	-0.2503***
	(0.0063)	(0.0656)	(0.0442)	(0.0252)	(0.0021)
Revenue Recognition	0.000	0.000	0.000	0.000	-0.1412
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
External Prompter	0.0125	-0.0549***	-0.1146***	0.1296***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
RevRecOUT (Interaction)	0.0118	-0.0396*	-0.0370*	-0.0197	-0.0043
	(0.0080)	(0.0213)	(0.0192)	(0.0321)	(0.0357)
ExtPrOUT (Interaction)	0.0404***	-0.0096	-0.0084	-0.0587***	-0.0005
	(0.0123)	(0.0530)	(0.0490)	(0.0205)	(0.0374)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	339	339	339	339	337
R-squared	0.426	0.886	0.882	0.92	0.945

Insiders and Outsiders trading:
Sub-sample of Firms that Restated Earnings

The sample is reduced a subsample of firms that were subject to a restatement due to accounting irregularities. We use a dataset collected by Gao (2002) that includes companies from Jan 1 1997 to June 30 2002 and contains 919 restatements resulting from accounting irregularities. The dependent variable is the market adjusted return of holding the individual's position for 0, 30, 60, 90, and 180 trading days, respectively (i.e. the returns of investing 1 dollar mimicking the trade in the company stock). Outsider is a dummy equal to 1 if the individual is an outside director; outside block-holders is a dummy equal to 1 if the individual is not an officer, but owns more than 10% of the company stock. Revenue recognition is an indicator variable equal to one if the restatement was due to an improperly recognized revenues, or any other mistakes or improprieties were made that led to misreported revenue. Revenue recognition if outsider (large blockholder) is revenue recognition interacted with an indicator variable on whether the individual trading is an independent director (large blockholder). External prompter is an indicator variable equal to 1 if the prompter of the restatement is outside the firm, and equal to zero otherwise. External prompter if outsider (large blockholder) is our external prompter variable interacted with an indicator variable on whether the individual trading is an independent director (large blockholder). In Panel A and B the regressions include only purchase transactions, while in Panel C and D the regressions include only sale transactions. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual.

Panel A: Purchases					
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	0.0004	0.0431***	0.0660***	0.0879***	0.1468***
	(0.0010)	(0.0043)	(0.0066)	(0.0093)	(0.0145)
Outsider	0.0017	0.0002	0.0012	-0.0128	-0.0111
	(0.0017)	(0.0066)	(0.0100)	(0.0136)	(0.0208)
Large Blockholder	-0.0001	-0.0016	-0.049	-0.0569	-0.2024**
	(0.0041)	(0.0304)	(0.0352)	(0.0586)	(0.0957)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	8642	8641	8633	8628	8578
R-squared	0.077	0.2	0.159	0.162	0.225

	Panel B: Purchases				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	0.0032**	0.0447***	0.0688***	0.0902***	0.1497***
	(0.0014)	(0.0055)	(0.0081)	(0.0111)	(0.0170)
Outsider	-0.0039*	-0.002	-0.005	-0.016	-0.0146
	(0.0023)	(0.0092)	(0.0134)	(0.0169)	(0.0272)
Large Blockholder	-0.0049	-0.0344	-0.0465	-0.0782	-0.2253
	(0.0061)	(0.0377)	(0.0482)	(0.0861)	(0.1447)
Revenue Recognition	-0.0054***	-0.0044	-0.0101	-0.0155	-0.0334
	(0.0019)	(0.0072)	(0.0112)	(0.0149)	(0.0234)
External Prompter	-0.0028	0.002	0.0047	0.0186	0.0477
	(0.0030)	(0.0095)	(0.0164)	(0.0230)	(0.0299)
Revenue Recognition if outsider	0.0105***	0.0066	0.018	0.0234	0.0496
	(0.0038)	(0.0137)	(0.0217)	(0.0276)	(0.0410)
External Prompter if Outsider	0.0106	0.083	-0.0661	0.0101	-0.0844
	(0.0080)	(0.0740)	(0.0706)	(0.1208)	(0.1770)
Revenue Recognition if large blockholder	0.0069	-0.0024	-0.0047	-0.0281	-0.0736
	(0.0056)	(0.0176)	(0.0304)	(0.0414)	(0.0517)
External Prompter if large blockholder	0.0006	-0.0068	0.1365**	0.0985	0.3154**
	(0.0091)	(0.0639)	(0.0616)	(0.1016)	(0.1503)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	8642	8641	8633	8628	8578
R-squared	0.079	0.201	0.16	0.162	0.226

	Panel C: Sales				
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0063***	-0.0064***	-0.0111***	-0.0064	-0.0061
	(0.0004)	(0.0024)	(0.0040)	(0.0054)	(0.0076)
Outsider	0.0019**	-0.0013	-0.0053	-0.0198*	-0.0297*
	(0.0008)	(0.0048)	(0.0079)	(0.0109)	(0.0160)
Large Blockholder	-0.0011	-0.0099	0.0097	-0.0344	-0.0576
	(0.0056)	(0.0203)	(0.0281)	(0.0377)	(0.0419)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	21352	21352	21350	21313	21233
R-squared	0.065	0.097	0.104	0.132	0.159

			Panel D: Sales		
	Market adjusted return of holding the individual position				
	(1)	(2)	(3)	(4)	(5)
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Constant	-0.0061***	-0.0054**	-0.0114***	-0.0056	-0.0061
	(0.0005)	(0.0027)	(0.0042)	(0.0058)	(0.0085)
Outsider	0.0009	-0.008	-0.0068	-0.0255	-0.0267
	(0.0012)	(0.0076)	(0.0121)	(0.0177)	(0.0256)
Large Blockholder	-0.0073	0.0108	0.1140***	0.0556	-0.0849
	(0.0076)	(0.0314)	(0.0435)	(0.0512)	(0.0753)
Revenue Recognition	0.0001	-0.0022	-0.0033	-0.0075	-0.0048
	(0.0004)	(0.0025)	(0.0041)	(0.0056)	(0.0082)
External Prompter	-0.0007	-0.0004	0.004	0.0071	0.0077
	(0.0005)	(0.0028)	(0.0046)	(0.0061)	(0.0093)
Revenue Recognition if outsider	0.0003	0.0104	0.0108	0.0237	0.0093
	(0.0016)	(0.0090)	(0.0149)	(0.0212)	(0.0308)
External Prompter if Outsider	0.0226*	-0.0137	-0.1154**	-0.0557	0.0909
	(0.0126)	(0.0420)	(0.0508)	(0.0643)	(0.0902)
Revenue Recognition if Large blockholder	0.0029	0.0069	-0.011	-0.0179	-0.0274
	(0.0018)	(0.0114)	(0.0182)	(0.0250)	(0.0377)
External Prompter if Large Blockholder	-0.0257	-0.0435	-0.1214*	-0.1949*	-0.0922
	(0.0167)	(0.0546)	(0.0691)	(0.1056)	(0.0937)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	21352	21352	21350	21313	21233
R-squared	0.067	0.098	0.106	0.134	0.159

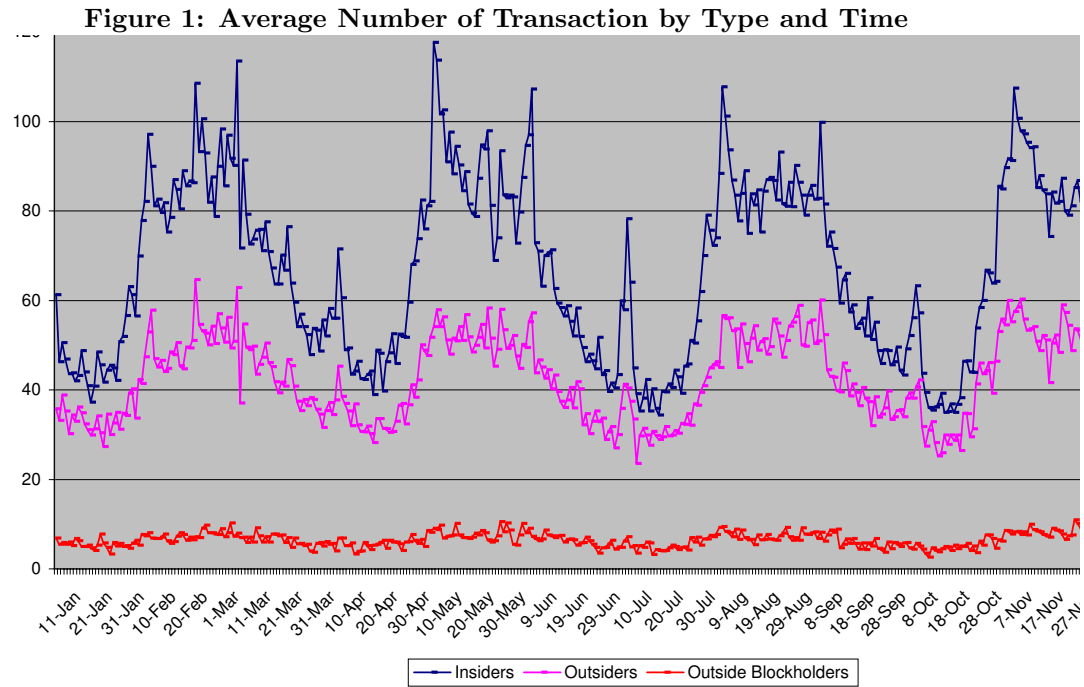**Figure 1: Average Number of Transaction by Type and Time**

Figure 1: Average number of transactions for three different types of individuals: (i) executives of the firm, (ii) non executive directors who are large blockholders (own more than 10% of the company stock), and (iii) directors who are neither employees of the firm, nor large blockholders (outside or independent directors).

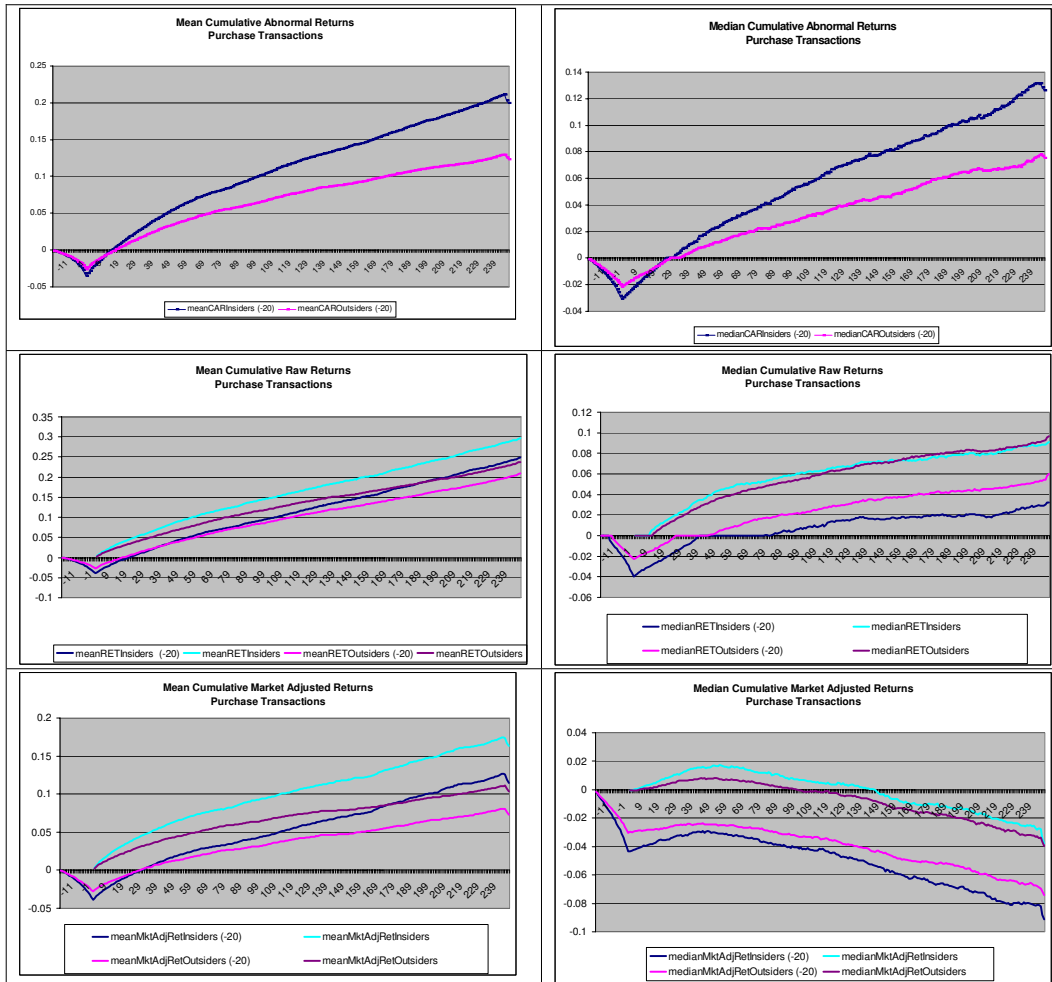# Figure 2: Returns from Insider and Outsider Trading - Purchase Transactions
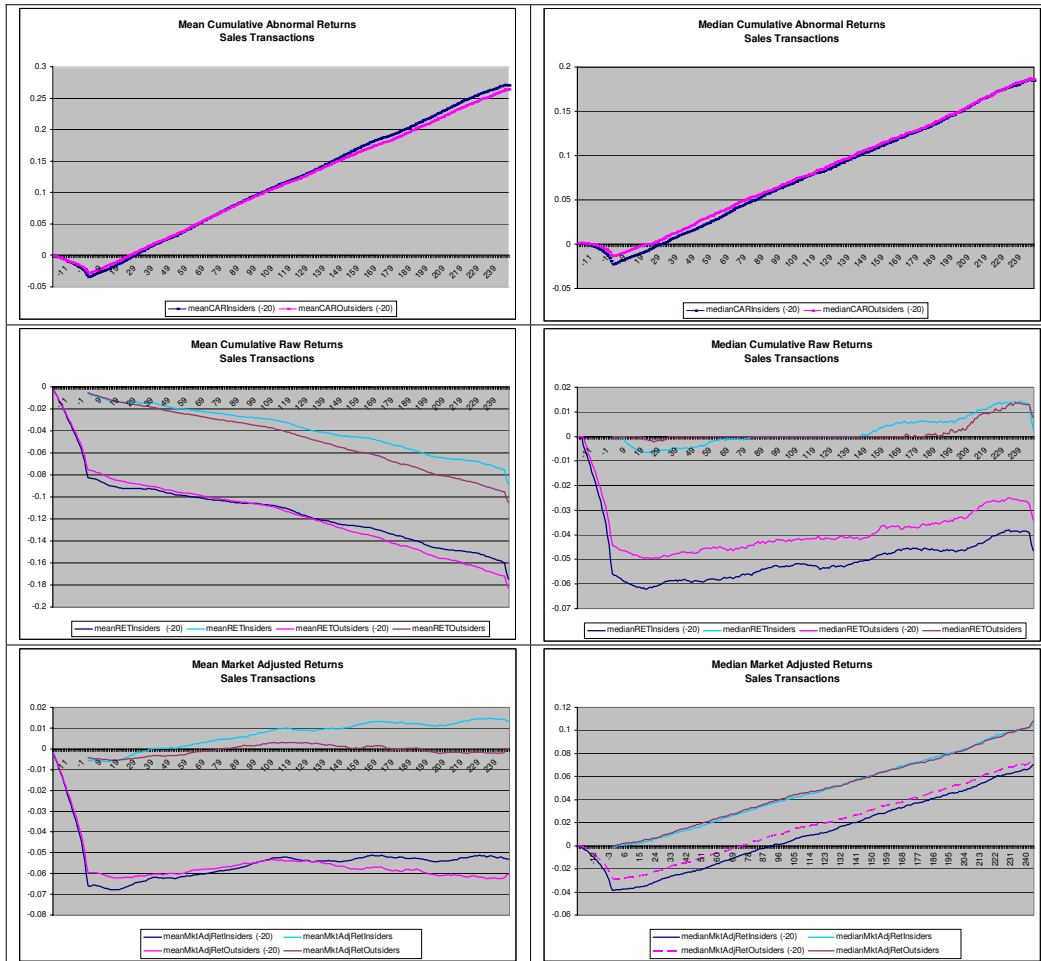

Figure 2: Returns (mean and median CARs, Raw Returns, and Market Adjusted Returns) over the time horizon, for purchase transactions correspond to the returns of investing 1 dollar mimicking the trade in the company stock for the (i) executives of the firm, and (ii) directors who are neither employees of the firm, nor large blockholders (outside or independent directors).

Figure 3: Returns from Insider and Outsider Trading - Sales Transactions

Figure 3: Returns (mean and median CARs, Raw Returns, and Market Adjusted Returns) over the time horizon, for sales transactions correspond to the returns of investing 1 dollar mimicking the trade in the company stock for the (i) executives of the firm, and (ii) directors who are neither employees of the firm, nor large blockholders (outside or independent directors).

Figure 4: Comparison of Insider and Outsider Returns with Outside Blockholders' Returns
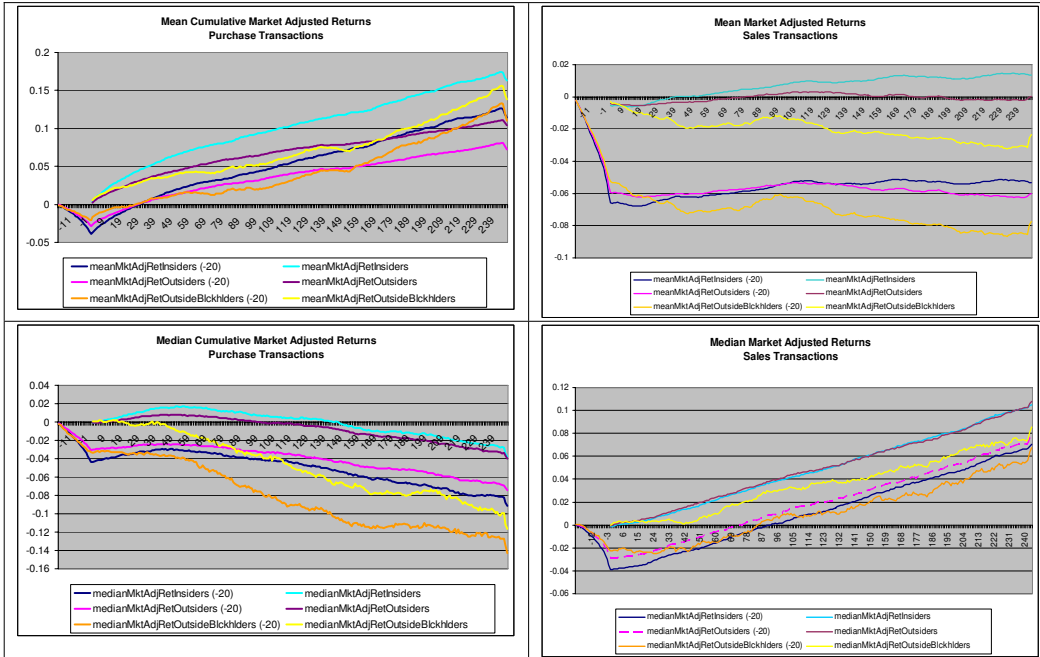

Figure 4: Market Adjusted Returns over the time horizon, for purchases and sales transactions correspond for the (i) executives of the firm, (ii) directors who are neither employees of the firm, nor large blockholders (outside or independent directors), and (iii) large outside blockholders.
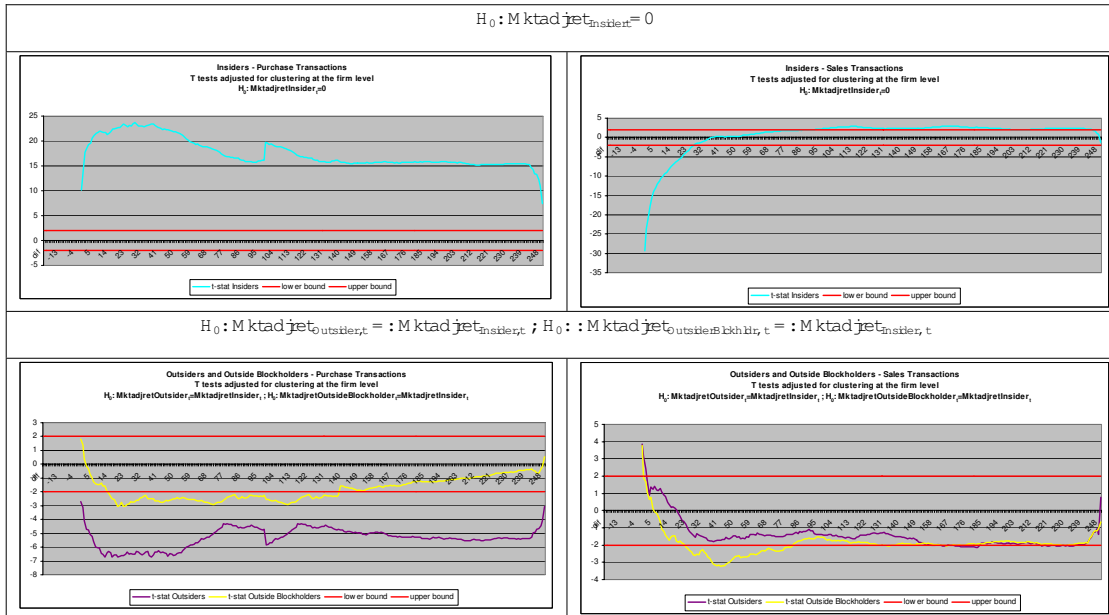
Figure 5: T tests

Figure 5: The figure shows the t-tests (adjusted for clustering of the returns at the firm level) for Purchases and Sales transactions respectively, at different horizons

Figure 6: Standard Deviation of Cumulative Market Adjusted Returns

Figure 6: The figure reports the second moment of the cross section of cumulative market adjusted returns for Purchases and Sales transactions respectively, at different horizons