WHAT DO INDEPENDENT DIRECTORS KNOW? EVIDENCE FROM THEIR TRADING

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<u>ABSTRACT</u>

We compare the trading performance of independent directors and other officers of the firm. We find that independent directors earn positive and substantial abnormal returns when they purchase their company stock, and that the difference with the same firm's officers is relatively small at most horizons. The results are robust to controlling for firm fixed effects and to using a variety of alternative specifications. Executive officers and independent directors make higher returns in firms with weaker governance and the gap between these two groups widens in such firms. Independent directors who sit in audit committees earn higher return than other independent directors at the same firm. Finally, independent directors earn significantly higher returns than the market when they sell the company stock in a window before bad news and around a restatement announcement.

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I Introduction

After recent scandals, policymakers around the world have responded by creating codes to improve ethical standards in business (e.g. Sarbanes-Oxley Act in the U.S., and the Cadbury Report and the Smith Report in the 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 independent director is defined as someone who has never worked at the company, any of its subsidiaries or consultants, is not related to any of the key employees, and does not/did not work for a major supplier or customer.[1]

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, or may have vested interests in some businesses practices.

Some criticize the emphasis on independent board members, based on the claim that while they are independent in their scrutiny they have much less information than insiders. If the firm's executives want to act against the interest of the shareholders, they can simply leave outsiders in the dark. Thus, since they have very limited information, their monitoring could be extremely ineffective.[2]

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 their trading behavior in the company's stock. We measure indirectly the level of inside information independent directors collect while serving on the board by comparing the market-adjusted returns associated with their trades to those associated with the executive officers' trades.

Using a comprehensive sample of reported executives' and directors' transactions in U.S. companies from 1986-2003, we find that executive officers earn higher abnormal returns than the market, and that so do independent directors when they make open market purchases.

We find that the difference between the returns earned by firm's executives and independent directors is relatively small at most of the horizons analyzed. The results are robust to the inclusion of firm fixed effects in the regression, which allows to compare company officers and independent directors within the same firm, and to control for time invariant firm-specific characteristics that might affect returns, as well as individuals' incentives and constraints. These results are robust to using a variety of alternative specifications (e.g. controlling for the size of the transaction and stock

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[1]Indeed, in recent years, the percentage of independent directors in the board has increased dramatically. Spencer Stuart collected data for boards of S&P 500 corporations in 2006 and found that 81% of directors are independent. On 190 boards (39%) today, the CEO is the only insider, compared with 127 boards (27%) in 2001.

[2]For example, Warren Buffet has often argued that "independent" non-executive directors are often kept in the dark by executive counterparts.

holdings in the firm, firm's size and book to market, and past return volatility).

We also study whether performance of executive officers and independent directors differ depending on the governance index of the firm using the classification of Gompers et al. (2003). We find that the performance of executives and independent directors are similar for firms with good governance, while independent directors perform worse than executives in the firms with the weakest governance. This result is consistent with the view that in better governed firms the independent directors are more informed.

We find that independent directors benefit from sitting on the audit committee, and earn an additional return of 3.21% at the longest horizon. We also find that independent directors earn higher returns from open market purchases if they belong to bigger boards, possibly because more independent directors serve on such boards.

Overall these results suggest that independent directors are informed about the firm, at least in good times. Not only independent directors earn significant higher returns than the market when buying their company stock, but also open market purchases by independent directors are pervasive across firms and very frequent: independent directors on average make as many open market purchases as the officers of the firm.

To study whether independent directors are also informed in bad times, we also analyze their trading performance when they make open market sales. Sales are problematic because they may be driven by diversification motives, or by the need to rebalance the portfolio after a grant, rather than by information. In fact, consistent with the insider trading literature, we find that both independent directors and officers do not earn higher returns than the market when they make open market sales.

To overcome this problem, we focus on the return from sales of company's stock in two situations when trading is more likely to be driven by information rather than diversification motives. We study the trading performance of independent directors and executives from selling the stock around bad news - events in which the firm is experiencing a substantial market-adjusted drop in stock price - and around earning restatements. We find that, in both cases, independent directors and executives overperform the market when selling the companies' stocks. These results are consistent with the hypothesis that independent directors are informed ahead of the market in critical situations.

Besides to the literature on insider trading (Jaffe, 1975; Seyhun, 1986, 1992, 1998; Rozeff and Zaman, 1988; Jeng, Metrick and Zeckhauser, 2003), our paper is related to the literature that study the relationship between companies' financial and economic performance and the proportion of independent directors in the board. This literature has found no solid evidence that independent directors improve firms' performance. Hermalin and Weisbach (1991, 1998), Mehran (1995), Klein (1998), and Bhagat and Black (2001) all report insignificant relationships between accounting performance mea-

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sures and the fraction of independent 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 independent directors.[3]

One possible interpretation of these results is that most of the studies 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 the mid-1990s, 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). In fact, Aggarwal and Williamson (2006) find that the fraction of independent directors in the board has a positive impact on firm's Q in the period between 2001 and 2005.

While the approach of analyzing how firms performance correlates with the fraction of independent on the board has the advantage of studying the direct "value added" by independent directors, it is plagued by an endogeneity problem. Firms that choose an higher proportion of independent directors may be different from other companies in many other dimensions, thus, making it difficult to measure whether their different performance is due to the structure of the board, or to some other characteristics. Our approach is trying to address this problem, by comparing the trading performance of independent directors and firm's executives. Using firm fixed effects, we control for firms' specific observable and unobservable characteristics.

The remainder of the paper is organized as follows. In the next section we describe the data and investigate whether our sample of firms and individuals is representative of the larger universe of U.S. firms. We also explore whether the independent directors have enough money at stake to have the incentive to trade optimally, and whether they trade often enough to reveal their degree of information consistently over time. In Section III we discuss our results. Section IV contains various robustness checks. We repeat the analysis 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 V 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, and attendance. In Section VI we investigate whether the independent directors have timely information when the firm performs poorly and their monitoring role is potentially more critical. We focus on trading returns of sales in advance of bad

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[3]On the theoretical side, very few paper address the issue of the optimal board composition. An exception is Harris and Raviv (2005) who model the interaction between inside and independent directors and the optimal allocation of decision-making authority. Hermalin and Weisbach (2003) provide an excellent review of the literature.

news, and around earnings restatements. Section VII concludes.

II Executives and Independent Directors Trades

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, and 5 from 1986 to 2003.[4] The Securities 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 executives 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, (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*), and (iii) non executive directors who own more than 10% of the equity (*outside blockholders*).[5] 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 independent directors because they might have better access to information, or more incentives to trade optimally, given their large stake in the company.[6]

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 analysis. 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.[7]

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[4]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 positions, including stock purchases, sales, option grants, option exercises, and gifts. Form 5 contains the annual statement of change in beneficial ownership, and any exempt transactions not reported on Form 4.

[5]Transactions executed by relatives, and those originating from indirect ownership, are attributed directly to the individual.

[6]Also, to the extent that some large 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.

[7]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.

Since we focus on open market purchases and sales, our results can provide information only on a subset of independent directors - those who trade the company's stock. It is possible that these independent directors sit on boards of a few selected corporations which are not representative of US publicly traded firms. Thus, it is important to document what fraction of firms is contained in our sample relatively to the universe of firms.

By construction our data set can only contain firms whose independent directors own the company's stock, either through compensation or through open market purchases. The literature indicates that a large fraction of companies compensate directors through stocks and stock options. Yermack (2004) 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. Within this group of firms, we only analyze companies where independent directors engage in open market transactions. Based on Thompson Financial Data, excluding financial firms and utilities, during our sample period 18,896 firms filed Forms 3, 4, and 5 with the SEC, and thus had officers and/or directors owning the company stock or being awarded stock options. Of these firms 79.13% had at least one director making open market purchases, corresponding to 14,953 firms (the same firms also had independent directors engaged in open market sales). The average (median) yearly number of purchases is 3.11 (2) for directors and 3.31 (2) for officers.[8] These statistics suggest that a large fraction of directors trade the company stock and that our results are relevant for a very large group of companies.

After dropping the companies that are traded over the counter, we merge these 14,953 companies with CRSP data and keep firms for which at least 200 daily returns are available prior to the transaction date. We are left with 527,999 transactions, involving 94,054 individuals and 10,564 firms. Of these transactions, 305,349 are made by firm executives, 196,211 by independent directors, and 26,439 by large blockholders who are also independent directors.

We also compare the size, book to market, governance decile, and return volatility of our sample firms to those in COMPUSTAT over the period between 1986 and 2003. The average firm size, measured as the natural logarithm of the firm's assets, is 5.5, compared to the COMPUSTAT value of 5.03, while the average book to market value is 0.50 in our sample, compared to 0.60 in COMPUS-TAT.[9] The median governance decile is 9 in both data sets. This evidence suggest that the firms in our sample have similar characteristics to those in COMPUSTAT. Finally, the average firm return

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The sales related to the exercise of an option are 39.71%, 20.02% and 8.38% of the sales transactions made by the executives, the independent directors, and the outside blockholders, respectively.

[8]Officers tend to sell more than independent directors: on average, 6.19 sales per year by officers versus 4.09 sales per year for independent directors.

[9]We also categorize the firms in our data set in 5x5 size and book to market portfolios, constructed using the breakpoints in Fama and French (1992). We find that despite growth firms are over-represented in the sample, the firms are evenly distributed across the other portfolios.

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.

Panel A of Table 1 displays the summary statistics for the whole sample. Consistent with the literature on insider trading, we find that both executives and independent directors are net sellers: sales represent 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 re-balancing after stock grants and option exercises. The average (median) value of the sale transactions is $456,602 ($94,200) for executives, $800,165 ($85,500) for independent directors, and $2,121,411 ($121,300) for large blockholders. The average (median) value of the purchase transactions is $72,731 ($8,712) for executives, $184,054 ($13,380) for the independent directors, and $223,015 ($12,500) for large blockholders. Consistent with the nature of the trade data, the sample is highly skewed, with a 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 the transactions whose size falls 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 firm executives, 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 executives, 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.

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. Panel A of 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 executives, 12 million dollars ($283,774) for independent directors, and 71 million dollars ($6,407,808) for large outside blockholders. One might be surprised that independent directors have such big stock holdings. This is *not* a specific feature of our sample. Yermack (2004) collected information on the independent directors elected to the board of Fortune 500 companies between 1994 and 1996. He shows that stock ownership increases with tenure and that independent directors in their fifth year have average (median) stock holdings of $8,481,000 ($375,000). He also finds that the maximum holdings for independent directors with a tenure of five years is $3.5 billions. 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. The stock ownership of the top five officers in the firm, obtained from EXECUCOMP, is similar in magnitude, although it displays less variation and less skewness. The difference could be due to the fact that our executives category comprises 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 concern for our study is that independent directors might have information and trade only very infrequently. Consequently, good performance relatively to the market does not necessarily imply that they are able to access information consistently over time, nor that they have information at times in which it is crucial for monitoring. To quantify whether this issue is important, in Figure 1 we break down the average numbers of transactions by time of the year for each group of individuals. Figure 1 shows that independent directors 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 executives and independent directors around quarterly announcement dates, but more so for executives. This evidence is consistent with Bettis et al. (2000), who report that the transactions of insiders diminish in early January, April, July, and October. We also find that, within each firm, the officers make on average 2.82 purchases per year, while the independent directors make 2.64.[10] This result indicates that, in the case of the more information-driven purchase transactions, on average the independent directors trade as frequently as the officers of their firm. In Section VI, we present evidence that independent directors have information also when their firms go through hard times and their monitoring role becomes more important.

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 trades from the SEC filings with data on individual demographic characteristics, tenure, and committee memberships from the IRRC data set (1996-2003), board characteristics from Fich (2005) and Fich and Shivdasani (2006), firm characteristics from COMPUSTAT, and the Governance Index constructed by Gompers, Ishii, and Metrick (2003). A breakdown of the firms by governance index indicates

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[10]The data set displays more variation for sales with an average of 11.77 transactions per year for the officers, and 5.20 transactions for the independent directors.

that all the governance deciles are approximately equally represented in the sample, with the exception of the three deciles with the worst governance that constitute only 7, 6 and 4.59 percent of the transactions, respectively. Panel B of Table 1 illustrates the breakdown of individuals into committees, any links between the director and the firm that could impair her independence, and various demographic characteristics. The audit and the compensation committees are the most common, accounting for 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, because they are smaller in size, and also 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 the extent of interlocking with other companies boards (0.92% of the observations), poor attendance, defined as being present at less than 75% of the meetings (1.62% of the observations), being a director designated by a big investor (1.55%), age (on average 57), tenure (11 years), and institutional holdings (58.7%).

Panel C of Table 1 contains summary statistics for the firms for which board size information is available. The board size data have been collected by Fich and Shivdasani (2006) for the Fortune 1000 firms, and are described in detail in their paper. There are 1,350 firms, and 16,314 individuals for which board size information is available, corresponding to 56,481 trades and 10.70% of the whole sample. Consistent with the findings of Fich and Shivdasani (2006), Yermack (1996), and others, the average and median board size is 10, with a standard deviation of 2.625.

Finally, we merge our data with a sample collected by the U.S. General Accounting Office (GAO) on firms that between 1997 and 2002 restated their earnings due to accounting irregularities.[11] Of the 919 restatement cases collected by GAO, 309 involve firms in our data set. Most firms experience one restatement, 14 firms experience two, and 4 firms experience three. Overall, these 309 cases involve 287 firms, 5,703 individuals and 27,850 trades and account for 5.28% of the original data set. For each restatement we have information on the specific reasons of the restatement, whether it was prompted by the company or an external entity (i.e. the SEC/auditor/FASB), and the date it was announced. A large fraction of the firms restated their earning due to revenue recognition, which according to Anderson et al. (2002) yield the most pronounced negative market reaction. Such restatements constitute 41.56% of our sample. 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.

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[11] The GAO data set is the most widely used public source of information on restatements.

To make sure that there are no biases due to the specificity of the sub-sample analyzed, we also reproduced the trading summary statistics (purchases and sales) reported in Panel A for all sub-samples (not reported). Since firms that have committee information are bigger and have slightly higher book to market values than the whole sample, directors and executives in these firms have on average higher stock holdings. The same is true for the sub-sample for which the size of the board is available and for the firms that restated their earnings. As expected, the latter group also has 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 the base regressions on each sub-sample to check whether any difference in the findings is just due to the different samples, rather than to the extra controls.

III   Empirical Results

To investigate the informativeness of the trades of executives, 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. This approach also allows us to compare executives and independent directors within the same firm, through the use of firm fixed effects.

A   Event Study

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 selling one dollar worth of the company stock when she sells.[12] We define an event window around the time of the trade spanning 20 trading 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, and α_i and β_i are the coefficients from the regression of R_{it} on the market return

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

over the 360 trading days preceding the event window.[13] Cumulative abnormal returns (CARs) are obtained by summing the daily abnormal returns, and averages and medians are then computed for each category of traders separately. Raw returns are given by R_{it}, compounded over time, and then averaged within each group of individuals for each of the 200 trading days in the event window. Similarly, market-adjusted buy-and-hold returns (BHARs) are calculated by subtracting the market return from the firm return, $(R_{it} - R_{mt})$, compounding over time, and then averaging within each trader category.[14]

Figure 2 and 3 show the evolution over time of the returns for purchase and sale transactions, respectively. Figure 2 shows that, no matter which measure of returns we focus on, mimicking the purchases of executives 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, 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 independent directors. Nevertheless, independent 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 few very profitable transactions might affect the averages. The level of the median returns is lower, but still positive and substantial in most cases.[15]

The graphs also show that independent directors and executives have excellent *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. The graphs confirm previous findings that these individuals are contrarians, who tend to buy after price declines and sell after price increases (Lakonishok and Lee, 2001; Jenter, 2005).

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[13]An alternative benchmark is the Fama and French (1992) three factor model. Unfortunately, 360 trading days is not a long enough period to get stable values of the coefficients for this case. Therefore we chose to control for size and book to market in the regression analysis.

[14]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.

[15]Note that we don't include transaction costs in our return calculations. This approach is common in the literature and, in this particular case, will not lead to a bias, as both executives and independent directors are likely to face the same transaction costs. Also, note that grants, option exercises, and stocks acquired 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 the degree of information of these individuals 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 an investor mimicking their trades.

Figure 3 plots mean CARs, raw returns, and market-adjusted returns 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.[16] Interestingly, the difference in returns between independent directors and executives is smaller, although still statistically significant, in sales transactions.

Our finding that independent directors and executives 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.[17] 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 control for size and book to market in the regression analysis.

A potential concern is that some independent directors have relative big stakes in their company, and might have different incentives and access to better information than the other directors. To check whether the performance of such individuals drives the results, in Figure 4 we compare the market-adjusted returns earned by mimicking the trades of executives and independent directors to those of large outside blockholders sitting on the board. 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 is not the case, although the results for this group of traders rely on limited data, and are therefore only indicative. Large outside blockholders perform poorly relative to the other two groups of traders. In particular, the median returns for their purchase and sales transactions are significantly lower than for the independent directors. The same is true for average BHARs for sales, although not for purchases, possibly due to the effect of some big transaction.

The relatively good performance of the independent directors also spurs the question of whether these individuals are good on average, but have a less consistent performance than the officers. To check whether this is the case, we compare the cross sectional standard deviations of the independent directors' market-adjusted returns to those of the executives at each horizon (not reported). We find that they are indistinguishable. This result indicates that the independent directors are as consistent

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[16]The reason for this difference is likely to be related to the well-known instability of firm-specific β coefficients used to compute the cumulative abnormal returns.

[17]One exception is the study by Eckbo and Smith (1998), who, using Norwegian data and various conditional performance measures, find evidence of zero or negative abnormal returns.

as the executives in their returns.

For each graph in Figures 2, 3, and 4, we also calculate the t statistics for the null hypothesis that the market-adjusted returns earned by the executives are not significantly different from 0 at the various horizons, and that there is no difference between their returns and those of the independent directors (not reported). 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 (Petersen, 2006). The t-statistics for the first test range from 7 to 23, and indicate that the officers' purchases earn market-adjusted returns that are different from 0 at all horizons.[18] The t-statistics for the difference between the officers and the independent directors' returns range from 3 to 7, and indicate that the returns of the independent directors are also high, but significantly lower than the executives'. For sale transactions we find that both the executives and the independent directors' market-adjusted returns are not statistically different from 0. Finally, in the case of large outside blockholders, there is not enough statistical power to reject the null hypothesis of no difference with the executives' returns. The t-statistics for CARs and raw returns yield similar results.

B   Regression Analysis

The results of the event study support the view of part of the insider trading literature that executives make positive returns when buying the company stock. Most importantly, they provide evidence that 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. First, it is possible that the results are driven by a selection bias. 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. Second, it is possible that stocks more intensively traded by independent directors have higher average returns, irrespective of whom is trading. Finally, Bettis et al. (2000) document that a large fraction of firms restrict trading by insiders (in their sample, more than 90% of firms have some policy restricting insider trades). If the relative fraction of independent directors and executives in the board is correlated with these governance characteristics, it is possible that our results are due to firm-level governance rules. For this reason, in the remaining part of the paper we repeat the same analysis using regressions with firm fixed effects. This approach controls for any time-invariant differences across firms, and will provide a comparison of executives and independent directors belonging to the same firm and facing the same institutional environment.

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[18]Without such adjustments the t statistics would be a lot higher due to the many observations available for each firm.

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 stock market booms. Purchases are more information-driven and will therefore be the main focus of the analysis. 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.[19] All the regressions include firm fixed effects and cluster the standard errors at the individual level. The constant measures the market-adjusted return of the company officers. On average, mimicking the executives' buys yields a 12.10% market-adjusted return in 180 days.[20] This effect is highly statistically significant, and confirms that executives earn higher returns than the market, even after accounting for firm fixed effects. 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' trades 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 executives' returns is even lower, although statistically significant.

On average, the independent directors make larger transactions than the executives. If bigger transactions generate an incentive to trade better, then the difference in mean returns between these two groups could be biased downward. To account for this possibility, in the last 5 columns of Panel A we control for transaction size, stock holdings, and the interaction between these variables and the identity of the individual trading. The results do not change. Mimicking the executives' trades generates a statistically significant 15.34% market-adjusted return, while the difference between executives and independent directors is unchanged and equal to 2.5 percent. In general, the size of the transaction 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. 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, the size of the stock holdings significantly reduces returns at all horizons, although this effect is not economically sizeable. 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 larger holdings in the firm do slightly better than independent directors with smaller holdings (0.27% more at the longer horizon).

[19]For comparison, Figures 2 and 3 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.

[20]Rule 16(b) of the Securities and Exchange Act of 1934 requires insiders to surrender any profit made on transactions that are offset within six months. This rule makes the 180 trading horizon particularly interesting.

This result is consistent with a story that executives get information due to their role in the firm, while independent directors 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.

As a further check we also repeat the regressions both after trimming the sample of the trades in the top 1 percent for transaction size and stock holdings in each trader categories, and after winsorizing such variables (not reported). We find that the results are not affected by these changes.

Finally, the coefficient of large outside blockholders indicates that the high returns of independent directors 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 executives and large outside blockholders is bigger than the one between executives and independent directors at most horizon, although not statistically significant possibly due to the few observations available for this group.

In Panel B we run the same regressions for sale transactions. Consistent with the findings of the event study and of the insider trading literature, executives do not earn higher abnormal returns on sales. The difference between executives and independent directors' returns is of the same magnitude and statistical significance as for purchases. When we control for transaction size and stock holdings, we find the same results.[21]

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 not employees of the firm, 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 relationship 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 director-ship with one of the executives, and does not have any other affiliation with the company.[22] The information to implement such definition comes from the IRRC data set and is available only for a

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[21]For both purchases and sales transactions we also re-run all the regressions adding the tenure of the board member and the tenure interacted with the independent director dummy. Neither one is statistically significant.

[22]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 considers independent the broader group of directors who have "no material business relationship" with the company.

subset of the transactions, and only for the period between 1996 and 2003. In this sub-sample there are 4,190,880 observations, corresponding to 22.28% of the whole sample. 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 independent directors, 629,680 (70.62%) satisfy the definition of strict independence.[23] This fraction increases slightly over the period. Compared to the other independent directors, 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% probability versus 23.47%, and 43.68% probability 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 whole sample.

Table 3 shows that using this definition of independence does not change substantially our results. The average market-adjusted return associated with the officers' purchases is 12.42%, significant at the 1 percent level. The trading performance associated to the strictly independent directors is statistically indistinguishable from that of the firm's executives: in purchase transactions, both executives and strictly independent directors outperform the market; while in sales transactions both executives and strictly independent directors earn negative abnormal returns (not reported). Although these differences are not statistically significant, the magnitude of the coefficients indicates that the strictly independent directors underperform the executives by 4.44% when they buy the company stock, while the other independent directors do better than the executives. 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 suggests that independent directors have less information than the executives, but in some cases, depending on which committee they sit on, they do have the means to get information about the firm.

Another angle from which to look at the issue of whether these individuals are truly independent is the analysis of their holdings of the company stock. Section IIA shows that, similarly to the data set of Yermack (2004), some of these individuals have very high stock holdings. One might wonder whether this is the reason for the good performance of this group. Focusing our analysis on independent directors with progressively lower levels of stock holdings, we find that this is not the case. In particular, we replicate the base regressions reported in Table 2 sequentially dropping observations of independent directors' trades with the highest 5 percent holding values, till we reach the bottom 5 percent (not reported). We find that, when we control for transaction size, stock holdings, and their interactions with traders' identity, the market-adjusted returns of the executives are very stable across the sub-samples, ranging between 15% and 16%, and statistically significant

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

at the 1 percent level. The difference between executives and independent directors' returns is less than 3% in samples where we discard independent directors down to the 35th percentile of the holdings distribution (corresponding to $102,900). It is between 3.4% and 3.9%, when we further discard independent directors down to the 15th percentile ($23,260), while it increases to 6.89% and 8.52% in the bottom 10th ($13,716) and 5th percentile ($6,135), respectively.[24] The results for sales transactions also confirm our earlier findings.

In Table 4, we examine the effect of firm size and book to market 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. Both the executives and the independent directors trade more in smaller, high book to market firms, which have historically performed well. In Table 4 we re-run the regressions reported in Panel A of Table 2, controlling for firm size and book to market. Our results 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 the table we can see that in a firm with the average size and book to market ratio the executives' average (median) return from purchase transactions is 8.72% (5.12%) more than the market, significant at the 1 percent level. Also, the difference between independent directors and executives does not change after controlling for firm size and book to market ratio.

One other concern is that these individuals make higher returns than the market because they trade in riskier companies, and such riskiness varies over time and is not captured by the firm fixed effect. The previous analysis already partly accounts for risk by looking at cumulative abnormal returns, and by controlling for the size and book to market risk factors. In Table 5 we further examine this issue and run the regressions on sub-samples formed based on the quartiles of total firm return volatility, measured on the interval between 380 and 20 trading days before the transaction. This variable captures both systematic and idiosyncratic risk. The results should be interpreted keeping in mind 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. Table 5 reports the results for purchases and shows that the return of the executives increases with the volatility of stock returns. The difference between the executives and independent directors increases with risk across the sub-samples, although not monotonically. It is the lowest in the third volatility quartile, where

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[24]The results are even stronger when we do not control for transaction size, stock holdings, and their interactions. The market-adjusted returns of the officers vary between 11.71% and 12.06%, at the 180 trading days horizon, and are statistically significant at the 1 percent level. The difference between executives and independent directors is between 1.82% and 2.010%, and statistically significant at the 1 percent level. This is true even when we restrict our analysis to independent directors in the bottom 5 percent of the holdings distribution.

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, the 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 (not reported) 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 executives and independent directors. Next, we analyze the effect of various internal governance mechanisms. In particular, we check whether the information that independent directors have about the firm depends on the committees they sit on, 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 this section we investigate whether the governance characteristics of the firm impact the ability of executives and independent board members to make profits on their trades. 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 Table 6 we run the base regressions controlling for governance decile and find that both executives and independent directors earn significantly higher returns than the market, for almost all levels of the governance index. At the mean governance index, equal to 9, the executives' 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 best governed firms, where the executives' returns are low and indis-

tinguishable from zero, and the worst 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 (not reported) 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, 2006). Alternatively, our results are also consistent with the hypothesis that firms with better governance might have better mechanisms in place that allow the market to receive more information.

The average difference between independent directors and executives' returns is 2.33%, the same as in the previous regressions, and it is significant at the 5 percent level. If 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 bad governance and independent directors addresses such question. As expected, this coefficient has the negative sign, as worse governance negatively affects the information an independent director can acquire. The independent director dummy and its interaction with the bad governance dummy are jointly statistically significant at the 1 percent level at all horizons but time 0. The result is stronger when we focus on strictly independent directors, who supposedly rely more on board meetings and formal communication channels to get information about the firm.

We also find (not reported) that all the individuals do worse than the market when selling the company stock in well governed firms. However, the negative abnormal return monotonically decreases as the governance index gets worse, flipping sign when the governance index approaches 10. Controlling for whether the directors are strictly independent does not change this result.

To conclude, the quality of the firm's governance doesn't affect our finding that executives 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.

B   Does Committee Membership Matter for the Acquisition of Information?

In this section we check how much information independent 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 sub-sample, which is described in Section IIA. 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.

Table 7 reports the regressions coefficients obtained controlling for committee membership. Our previous findings about the levels and difference in the trading performance of executives and independent directors are confirmed. The executives earn a 11.92% abnormal return, the independent directors earn 0.88% less than the executives, and the strictly independent directors earn 5.73% less than the executives, but neither difference is statistically significant. The results also suggest that the individuals sitting on the compensation and nominating committees have, all else equal, higher returns, although not always statistically significant.[25] Since belonging to the audit committee implies better knowledge of the financial statements of the firm, we would expect that, if trading performance reflects information at all, its members have a better trading performance than the others. 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 strictly independent directors, as the other individuals get information from working in the company, 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 (Panel B reports the p-values of the null hypothesis that the coefficients of the strictly independent dummy, the dummy that trading is done by an audit committee member and the interaction between the two are jointly equal to zero). Similarly, strictly independent directors sitting on the governance committee also generate positive

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[25]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 sub-sample (not reported). The results are the same as those in Panel A of Table 2.

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 any economically significant difference between executives and independent directors within the committee.[26]

There may be different reasons why certain committees are associated with higher average returns, and, more generally, why independent directors earn positive abnormal returns. One reason may be 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 executives provide information to the independent directors in exchange for less monitoring activity. Distinguishing between these two conflicting hypotheses is very hard. Nevertheless, if the executives reward directors by providing them with more inside information, it is more likely that independent directors sitting on the compensation and nominating committee earn higher returns, as the executives may have higher incentives to bribe those independent directors. On the contrary, if the independent directors acquire information in the course of their duties as board members, it is more likely that directors on the audit committee, who are exposed to financial information, earn higher returns. The results in Table 7 provide some tentative evidence consistent with the "informed director" explanation rather than with the "bribed director" one.

Our finding that the independent directors sitting on the audit committee are more likely to make money when making open market purchases of the stock of the company is consistent with the hypothesis that the independent directors acquire information on the job. However, there are a least two alternative interpretations of this result. First, it is possible that the better trading performance is due to a selection effect. If individuals that are better at trading are more likely to be selected to sit on 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 very hard 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.[27] While this is a possibility, our results indicate that, on average, being on the audit committee is associated with below average returns. The returns are higher only for strictly independent directors who are on the audit committee. Thus, if the trading returns are due to ability and not information, the implication would be that the average officer on the audit committee has lower abilities than the

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[26]Similar regressions that include interactions between committee membership and independent, as opposed to strictly independent status (not reported) yield similar, but statistically non significant results.

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

rest of the individual trading in our sample, while the average independent director sitting on the audit committee has better trading abilities than anybody else. 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, we find (not reported) that independent directors that attend less than 75% of the meetings earn significantly lower returns, albeit this is not statistically significant at all horizons.

Another possibility is that audit committee membership is highly correlated with tenure on the board, and this variable proxies for a tenure effect. While not in contradiction with our interpretation, this possibility raises the issue that information is acquired through time, rather than through participation in specific committees. To study this hypothesis, we re-run the basic regressions adding tenure and the interaction of tenure and trader identity. Our basic results do not change and the coefficient on tenure is not significant.

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 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 supposed 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 returns from mimicking the trades of executives and independent directors. The market-adjusted return is regressed on an independent director indicator variable and a large outside blockholder indicator variable, the natural logarithm of board size, and interaction terms between board size and the individual's role in the firm. Table 8 reports the results for purchase transactions. 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 sub-sample, 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 sub-sample itself, we performed the same base regressions as in Table 2 on this sub-sample and found that the difference between executives and independent directors is a feature of the sample.[28]

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 independent directors sitting in larger boards earn significantly higher returns, comparable in magnitude to the executives'. One explanation consistent with this finding is 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 independent directors on the board is not correlated with firm performance, but boards with more independent directors tend to make better decisions in CEO compensation and replacement, and takeovers (see, for example, Weisbach, 1988; Dahya and McConnell, 2005). 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 executives and independent directors is an important determinant of board effectiveness. Summary statistics on our sample confirm that firms with bigger boards have on average more independent directors.

VI   Are the Independent Directors Informed in Times when the Firm does Badly?

In our analysis, so far, we have focused on purchases by independent directors and executives, because these transactions are generally more likely to be information-driven, while sales might reflect portfolio rebalancing and diversification. However, one concern about our findings is that the independent directors might be informed only when things are going well, and the officers want them to be informed, while they might lack access to information exactly at those times when it is crucial for monitoring purposes. For this reason, it is important to check whether the independent directors have timely information when the firm is doing badly.

Unfortunately, figuring out whether directors are informed when making sales transactions is very difficult, as they may trade for other reasons than information (e.g. diversification and rebalancing

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

motives), and may be reluctant to trade on negative information for fear of legal consequences. Table 3, and the findings of the insider trading literature, confirm that officers and independent directors earn on average negative market-adjusted returns when selling the company stock.

To overcome this problem, we focus on two instances in which sales are more likely to be information-driven: (1) periods before significant drops in the stock price (adjusted for market-wide movements in prices), which we label as "bad news", and (2) periods around earnings restatements due to accounting irregularities. The first test aims at identifying negative events for the company and study whether independent directors sold the stock before such event became public and enjoyed high returns. The advantage of such an approach is that it lets the market judge the gravity of the event, instead of searching for firm-specific bad news with the risk of omitting some. Also, it is a conservative test to the extent that the directors might be informed about the bad news and still be unable to trade due to an upcoming earning announcement, a blackout period, or fear of violating insider trading regulations. However, the drawback of this approach is that some of the price drops might have been caused by the fact itself that the officers and the directors traded and the market interpreted it as a bad signal about the firm prospects. This concern is partially mitigated by the finding that the market doesn't react to trading by officers and directors (Lakonishok and Lee, 2001), but it cannot be eliminated.

Using earning restatements as the "bad news" does not suffer from this reverse causality problem. Although this test involves a much smaller sample of firms, it complements the evidence from the first test.

A   Bad News

We define "bad news", for each firm in the data set, the top 10% drops in the stock price, adjusted for market-wide price movements. This corresponds to an average -7.34% daily market-adjusted return, and indicates that such price drops are substantial.[29] For each piece of "bad news" we then check whether any independent director or officer traded in the 120 trading days preceding it, the average number of trades officers and directors made before each piece of bad news, and the average and median market-adjusted return associated with such trades.

Panel A of Table 9 shows that there are almost 2.3 million cases of market-adjusted price drops that meet our criterium. Of these, roughly half, 1,126,325, are preceded by a trade: 266,034 are preceded by both officers and independent directors' trades, 351,716 are preceded only by officers' trades, and 242,541 are preceded by only independent directors' trades.[30] On average, the independent directors

[29]The median daily market-adjusted return is -6.01%.
[30]Since it is likely that the officers of the firm are informed about its prospect at all times, the fact that we observe

make 3.14 trades for each bad news on which they trade alone and 4.17 trades for each bad news on which they trade at the same time as the officers. The average and median market-adjusted returns of the independent directors indicate that they are informed about bad news concerning the firm in advance of the market: at the 180 trading days horizon, the independent directors make on average 4.0522% above the market return when they trade at the same time as the officers, and they make 3.3102% when they trade alone. For comparison, the officers make 3.4165% when they trade at the same time as the independent directors, and 5.1278% when they trade alone. The median returns confirm these results and are even higher. Moreover, these returns are not associated to small transactions: the average transaction size for the independent directors is $947,322 when they trade at the same time as the officers, and $448,547 when they trade independently, compared to the average size of $800,165 for all sales transactions, reported in Panel A of Table 1.

The results also indicate that there are several cases in which both directors and officers trade on the same piece of news, but as many cases in which only the independent directors trade and make money while making open market sales. This result is at odds with the interpretation that independent directors earn high returns by simply imitating officers' trades. The evidence about sales around bad news is that in 47.69% of the cases, independent directors trade alone and earn on average 3.3102% at the 180 trading day horizon, while in the remaining 52.31% of the cases they trade at the same time as the officers and earn on average 4.0522%.

B Earning Restatements

In this section, we investigate whether the independent directors knew about earning restatement in advance of the market.

For this purpose, we analyze a sub-sample of firms 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 (G.A.O.) and is described in detail in Section IIA.

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.

Panel B of Table 9 shows that the independent directors earn significantly higher returns than the

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trades only in half of the cases is consistent with the idea that these individuals may not be able to trade during certain times, irrespective of whether they have information or not. Despite we cannot exclude that the independent directors are not informed in this case, a comparison of the bad news that are accompanied by trades and those that are not indicate that the average and median price drops are of similar magnitude, and so is their standard deviation.

market when they sell the company stock in a window of (-40, +40) trading days around the earnings restatements, even higher than the returns earned by executives. The independent directors earned on average 4.87% more than the market, while the officers earned 4.06% more than the market. Both returns are significantly different from zero. We also control for whether the restatement has been prompted by an entity outside the firm (usually the SEC, the FASB, or the auditor), and whether these features have a differential impact on the trading of independent directors and officers, and find that this is not the case.

One drawback of the data set is that it does not report the size nor the direction of the restatement. However, we know that the majority of earning restatement led to a negative stock market reaction, consistent with a negative adjustment to earnings; furthermore, when the restatement is due to revenue recognition it generates the most negative market reaction (Anderson and Lombardi Yohn, 2002). The results in Table 9 are consistent with these findings and show that the return associated with such type of restatements is negative, although not statistically different from zero.

In not reported regressions, we also estimate whether the probability of making a sales transaction before 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 the earning restatement. We find that the independent directors are slightly more likely than the executives to sell before such announcement, but that this effect is neither economically nor statistically significant.

VII   Conclusions

This paper investigates the information available to the independent directors sitting on the board of U.S. corporations, in order to shed light on their monitoring ability. By analyzing the open market trades of a sample of U.S. officers and independent directors we find that the independent directors earn positive and substantial abnormal returns when they purchase their company stock, and that the difference with the same firm's officers is relatively small at most horizons. The results are robust to controlling for the size of the transaction and the stock holdings, and for various proxies of risk, such as firm size, book to market, and past return volatility. We also analyze the effect of governance quality on trading returns and find that our results hold for most of the firms, with the exception of those with the weakest governance, where both the executives and the independent directors make higher returns when buying their company's stocks. Also, in such firms the difference between the abnormal returns of the executives and the independent directors widens: executives earn substantial higher market-adjusted returns than independent directors, suggesting that in such firms independent

directors acquire less information than the insiders.

To better understand whether directors acquire information about the firm through their committee work, or through informal channels and personal contact with the management, we also analyze how the returns of independent directors and officers vary depending on their participation to committees and attendance at board meetings. We find that when the independent directors sit on the audit committee, they earn higher abnormal returns than otherwise. Moreover, independent directors who attend the meetings regularly earn higher returns than those who do not, although the difference is not always statistically significant. As expected, the executives who sit on the audit committee and attend board meetings regularly do not earn higher returns than other executives, since they acquire the information about the company every day on their jobs. We also find that independent directors in bigger boards earn higher abnormal returns when buying their company's stock, possibly because more independent directors serve on such boards and it is easier for them to acquire information.

Our results on open market purchases suggest that independent directors have information about the firm, at least to the extent that it allows them to trade profitably. However, this evidence only suggest that independent directors have information about their company in good times, but they may be kept in the dark at times in which the company is performing poorly.

To analyze how much independent directors are informed in good times, we study sales transaction. Unfortunately, trading returns from sales are noisy measures, as independent directors may trade for diversification reasons or rebalancing motives. In fact, consistently with the literature on insider trading, we find that executive officers and independent directors, on average, do not earn higher returns than the market, when they make open market sales.

By focusing on a subsample of sales transactions that are likely to be information-driven, we can distinguish whether independent directors are timely informed when the firm is performing poorly and their monitoring role is potentially more crucial. We identify, for each firm, the 10 percent worst price drops, adjusted for market-wide movements, and we compare the trading behavior of independent directors and officers in a 120 trading days window before the price drop, we find that the number of trades made by the two groups of traders is similar, and that their returns are positive and of similar magnitude. By examining the time pattern of such trades, we also find evidence refuting the possibility that the positive returns of independent directors are due to them simply mimicking the officers' trades. Further evidence on trading activity of independent directors in firms that restated their earnings due to accounting irregularities also provides support to the conclusion that independent directors are on average timely informed not only when their firm does well, but also when performs poorly.

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Table 1:

Summary Statistics: Transactions and Firms Characteristics

The data comes from the TFN Insider Filing Data Files. For each insider that files information with the SEC we have the name and the various positions she holds in the firm (i.e. President, VP, large blockholder). The data also report the date of the transaction, the number of shares bought/sold, and the price paid/received. We restrict our sample to the trades made by the following individuals: (i) executives of the firm, (ii) directors who are neither employees of the firm, nor large blockholders (independent directors), and (iii) non-executive directors who are large blockholders (own more than 10% of the company stock). 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. The Governance Index is from Gompers et al. (2003) who measure shareholders rights by counting the number of governance provisions a firm has. More governance provisions indicate more restricted shareholder rights. Following Gompers et al. (2003), 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. Size is the natural logarithm of the firm's assets. Book to Market is constructed from COMPUSTAT as ((data199lagged*data25)+data6-data60)/data6. Total Return Volatility is the volatility of firm's returns on the interval between 380 and 20 trading days before the transaction date. Panel B contains sample statistics for the subset of transactions made in firms for which we have information about the size of the board. Such data come from Fich (2005) and Fich and Shivdasani (2006). Panel C contains sample statistics for the subset of transactions made by individuals for whom we also have information on committee membership. Finally, Panel D contains sample statistics for the subset of firms that have restated their earnings due to accounting irregularities between January 1997 and June 2002. This information has been collected by the U.S. General Accounting Office (G.A.O.).

Panel A: Whole sample					
Transaction Characteristics					
	Percentages	Mean	Median	Std. Dev.	Nr. of Transactions
Purchases					
% purchases:					
Executive Officers	15.63%				82,503
Independent Directors	16.78%				88,617
Large Outside Blockholders	1.96%				10,353
Value					
Executive Officers		$72,731	$8,712	$1,133,121	81,862
Independent Directors		$184,054	$13,380	$10,300,000	88,050
Large Outside Blockholders		$223,015	$12,500	$3,657,372	10,262
Sales					
% sales:					
Executive Officers	42.21%				222,846
Independent Directors	20.38%				107,594
Large Outside Blockholders	3.05%				16,086
Value:					
Executive Officers		$456,602	$94,200	$5,489,410	222,372
Independent Directors		$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:					
Executive Officers		450,236	22,554	4,261,338	94,792
Independent Directors		592,377	25,375	4,638,740	52,729
Large Outside Blockholders		2,984,694	982,704	15,900,000	8,360
Value:					
Executive Officers		$12,200,000	$360,028	$320,000,000	94,768
Independent Directors		$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.	Person-Firm-Year
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. Services	6.62%				15645
Strictly independent	41.69%				13424
Bad 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
Firm Characteristics					
		Mean	Median	Std. Dev.	Observations
Governance Index		8.871	9.000	2.549	3242720
Size (ln Assets)		6.949654	6.79827	1.562911	4445472
Book to Market Value		0.346564	0.25317	0.356573	4364541
Total Return Volatility		0.036182	0.03218	0.017724	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

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
Firm Characteristics					
		Mean	Median	Std. Dev.	Observations
Governance Index		9.751	10	2.615369	560000
Size (ln Assets)		6.354	6.33415	2.050103	1175313
Book to Market Value		0.437	0.3091	0.461258	1137372
Total Return Volatility		0.038	0.03309	0.021819	1196980

Table 2:

Executive Officers and Independent Directors Trades:
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 return of investing 1 dollar mimicking the trade in the company stock minus the return of taking the opposite position in the value-weighted market index). Independent director is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large outside blockholder is a dummy equal to 1 if the individual is a director on the board, is not an officer, and owns more than 10% of the company stock. Transaction measures the size of the transaction as a fraction of market capitalization (measured in $00,000), while holding is the dollar value of the individual's holdings, scaled by $10M. Transaction if independent director is an interaction term between the size of the transaction and the independent director indicator variable; 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)	(0.0004)	(0.0017)	(0.0025)	(0.0037)	(0.0051)
Independent Director	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)	(0.0006)	(0.0029)	(0.0040)	(0.0059)	(0.0080)
Large Outside 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)	(0.0019)	(0.0086)	(0.0129)	(0.0188)	(0.0259)
Transaction						0.0050	0.0473	0.0830	0.0058	-0.2882**
						(0.0099)	(0.0485)	(0.1065)	(0.1403)	(0.1422)
Holdings						0.0000	-0.0015***	-0.0021***	-0.0020***	-0.0033***
						(0.0001)	(0.0004)	(0.0007)	(0.0007)	(0.0012)
Holdings*Independent Director						-0.0001	0.0012***	0.0014*	0.0014*	0.0027**
						(0.0001)	(0.0005)	(0.0008)	(0.0008)	(0.0013)
Holdings*Large Outside Blockholder						0.0008***	0.0014	0.0008	-0.0014	-0.0050
						(0.0003)	(0.0012)	(0.0020)	(0.0024)	(0.0031)
Transaction* Independent Director						-0.0140	-0.0848	-0.1585	-0.1519	0.1000
						(0.0102)	(0.0519)	(0.1134)	(0.1474)	(0.1485)
Transaction*Large Outside Blockholder						0.0217	0.0917	0.0415	0.0642	0.2257
						(0.0181)	(0.0710)	(0.1282)	(0.1526)	(0.1856)
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						
				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)	(0.0003)	(0.0010)	(0.0014)	(0.0018)	(0.0030)
Independent Director	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)	(0.0006)	(0.0025)	(0.0033)	(0.0043)	(0.0064)
Large Outside 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)	(0.0010)	(0.0058)	(0.0080)	(0.0121)	(0.0166)
Transaction						-0.0225*	-0.0027	0.0486	0.0349	0.0699
						(0.0122)	(0.0263)	(0.0458)	(0.0531)	(0.1581)
Holdings						-0.0000	-0.0001	-0.0000	0.0000	0.0001
						(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)
Holdings*Independent Director						0.0000*	0.0003***	0.0003**	0.0002	0.0004
						(0.0000)	(0.0001)	(0.0001)	(0.0001)	(0.0003)
Holdings*Large Outside Blockholder						0.0000***	0.0001***	0.0001***	0.0001*	0.0002
						(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0001)
Transaction* Independent Director						0.0169	-0.0104	-0.0291	-0.0481	-0.0354
						(0.0140)	(0.0290)	(0.0487)	(0.0560)	(0.1590)
Transaction*Large Outside Blockholder						0.0203	0.0131	-0.0255	0.0103	-0.0550
						(0.0136)	(0.0538)	(0.0718)	(0.0680)	(0.1613)
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	0.2010	0.2375	0.2851

Table 3:

Executive Officers and Independent Directors Trades:
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 return of investing 1 dollar mimicking the trade in the company stock minus the return of taking the opposite position in the value-weighted market index). Independent director is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large outside blockholder is a dummy equal to 1 if the individual is a director on the board, is not an officer, and owns more than 10% of the company stock. The reported regressions include only purchase transactions. The regressions including only sale transactions are available upon request. Strictly independent director is a dummy equal to 1 if the director is classified as strictly independent according to the criteria of the Higgs report. The Higgs report defines as independent those directors who are not employees 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.

	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)
Independent Director	0.0023	0.0014	-0.0021	-0.0066	0.0145
	(0.0019)	(0.0071)	(0.0136)	(0.0167)	(0.0303)
Large Outside Blockholder	0.0054**	-0.0065	0.0058	0.0315	0.0207
	(0.0026)	(0.0124)	(0.0237)	(0.0344)	(0.0466)
Strictly Independent	-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

Table 4:

Executive Officers and Independent Directors Trades:

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 return of investing 1 dollar mimicking the trade in the company stock minus the return of taking the opposite position in the value-weighted market index). Independent director is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large outside blockholder is a dummy equal to 1 if the individual is a director on the board, is not an officer, and owns more than 10% of the company stock. Size is the natural logarithm of the 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. The reported regressions include only purchase transactions. The regressions including only sale transactions are available upon request. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual.

	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)
Independent Director	0	-0.0059***	-0.0115***	-0.0144***	-0.0254***
	(0.0004)	(0.0019)	(0.0029)	(0.0043)	(0.0063)
Large Outside 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

Table 5:

Executive Officers and Independent Directors Trades:

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 return of investing 1 dollar mimicking the trade in the company stock minus the return of taking the opposite position in the value-weighted market index). Independent director is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large outside blockholder is a dummy equal to 1 if the individual is a director on the board, is not an officer, and owns more than 10% of the company stock. The observations are split in quartiles of total return volatility, measured by the variance of returns over the interval (-380,-20) trading days before the transaction, adjusted for the time span over which the return is calculated (0, 30, 60, 90, and 180 trading days). The reported regressions include only purchase transactions. The regressions including only sale transactions are available upon request. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual.

			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***
	(0.0002)	(0.0010)	(0.0015)	(0.0019)	(0.0029)
Independent Director	-0.0002	-0.0029**	-0.0043**	-0.0020	-0.0074*
	(0.0003)	(0.0014)	(0.0021)	(0.0026)	(0.0039)
Large Outside Blockholder	0.0003	0.0016	0.0066	-0.0050	0.0025
	(0.0013)	(0.0067)	(0.0087)	(0.0117)	(0.0215)
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***
	(0.0003)	(0.0013)	(0.0018)	(0.0024)	(0.0038)
Independent Director	0.0006	-0.0100***	-0.0157***	-0.0169***	-0.0273***
	(0.0005)	(0.0020)	(0.0029)	(0.0040)	(0.0061)
Large Outside Blockholder	0.0019	-0.0018	0.0061	-0.0096	-0.0368*
	(0.0015)	(0.0069)	(0.0095)	(0.0129)	(0.0199)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	45085	45081	44908	44695	43730
R-squared	0.1990	0.3131	0.3852	0.4175	0.4729
Total return volatility: third quartile					
Constant	0.0012***	0.0374***	0.0631***	0.0700***	0.0955***
	(0.0004)	(0.0018)	(0.0027)	(0.0035)	(0.0054)
Independent Director	0.0019***	0.0030	-0.0018	0.0002	-0.0033
	(0.0007)	(0.0029)	(0.0049)	(0.0060)	(0.0090)
Large Outside Blockholder	0.0010	0.0012	-0.0037	0.0058	0.0016
	(0.0017)	(0.0078)	(0.0114)	(0.0143)	(0.0224)
Firm fixed effect	YES	YES	YES	YES	YES
Observations	45080	45080	44912	44695	43733
R-squared	0.1747	0.3140	0.3787	0.4289	0.4662
Total return volatility: fourth quartile					
Constant	0.0109***	0.0938***	0.1445***	0.1900***	0.3178***
	(0.0007)	(0.0031)	(0.0046)	(0.0070)	(0.0110)
Independent Director	-0.0014	-0.0078	-0.0144*	-0.0185	-0.0491***
	(0.0011)	(0.0053)	(0.0078)	(0.0119)	(0.0181)
Large Outside Blockholder	-0.0048**	-0.0401***	-0.0473***	-0.0362	-0.0517
	(0.0022)	(0.0119)	(0.0172)	(0.0241)	(0.0388)
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

Table 6:

Executive Officers and Independent Directors Trades 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 return of investing 1 dollar mimicking the trade in the company stock minus the return of taking the opposite position in the value-weighted market index). Independent director is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large outside blockholder is a dummy equal to 1 if the individual is a director on the board, is not an officer, and owns more than 10% of the company stock. Strictly independent director is a dummy equal to 1 if the director is classified as strictly independent according to the criteria of the Higgs report. The Higgs report defines as independent those directors who are not employees 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. 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 Independent Director is an interaction term between companies with a governance index greater or equal than 11 (corresponding to the 75th percentile) and independent directors trading the stock. Bad governance if large blockholder is an interaction term between companies with a governance index greater or equal than 11 and a large blockholder trading the stock. The reported regressions include only purchase transactions. The regressions for sales transactions and those for purchases and sales controlling for whether the director is strictly independent are available upon request. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual. At the bottom of the Table we report p-values of the null hypothesis that the coefficients indicated in each row are jointly equal to zero.

	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)
Independent Director	0.0009	-0.0029	-0.0179***	-0.0177***	-0.0233**
	(0.0006)	(0.0032)	(0.0048)	(0.0059)	(0.0107)
Large Outside 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 ≥ 14	-0.0002	0.0735***	0.1181***	0.0918***	0.1921***
	(0.0031)	(0.0159)	(0.0259)	(0.0306)	(0.0496)
Bad Governance * Independent Director	-0.0012	-0.0132**	-0.0062	-0.01	-0.0171
	(0.001)	(0.0055)	(0.0081)	(0.0099)	(0.017)
Bad Governance*Large Outside Blockholders	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
	Joint statistical significance				
Indep Director,					
Indep Director *Bad Governance	0.2963	0.0010	0.0000	0.0000	0.0014
Indep Director, Indep Director *BadGov,					
Governance Dummies (decile 8, 9, and10)	0.5230	0.0000	0.0000	0.0000	0.0000

Executive Officers and Independent Directors Trading:
Committees

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 return of investing 1 dollar mimicking the trade in the company stock minus the return of taking the opposite position in the value-weighted market index). Independent director is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large outside blockholder is a dummy equal to 1 if the individual is a director on the board, is not an officer, and owns more than 10% of the company stock. Strictly independent director is a dummy equal to 1 if the director is classified as strictly independent according to the criteria of the Higgs report. The Higgs report defines as independent those directors who are not employees 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. The committees variables (e.g. audit committee, governance committee, etc..) are indicator variables equal to one if the individual belongs to a given committee, and zero otherwise. The interaction terms (e.g. Strictly Independent Director in audit committee, Strictly Independent Director in governance committee) are indicator variables equal to one if the individual belongs to a committee and it is also a strictly independent director. The reported regressions include only purchase transactions. The regressions including only sale transactions are available upon request. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual. In Panel B we report p-values of the null hypothesis that the 3 coefficients indicated in each row are jointly equal to zero.

	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)
Independent Director	0.0019	0.0187**	-0.0084	-0.0141	-0.0088
	(0.0032)	(0.0095)	(0.0240)	(0.0246)	(0.0337)
Large Outside 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	-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

	(1)	(2)	(3)	(4)	(5)
Panel B: Joint statistical significance					
	RET(t)	RET(t+30)	RET(t+60)	RET(t+90)	RET(t+180)
Str Indep, Audit Committee, Interaction	0.9620	0.3049	0.0582	0.0459	0.0066
Str Indep, compensation Committee, Interaction	0.7259	0.1675	0.1539	0.0524	0.0013
Str Indep, Nominating Committee, Interaction	0.7788	0.1860	0.1940	0.0986	0.0052
Str Indep, Corporate Governance Committee, Interaction	0.8460	0.0691	0.2329	0.0476	0.0049
Str Indep, executive Committee, Interaction	0.5622	0.2636	0.1187	0.0557	0.0041

Table 8:

Executive Officers and Independent Directors 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 return of investing 1 dollar mimicking the trade in the company stock minus the return of taking the opposite position in the value-weighted market index). Independent director is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large outside blockholder is a dummy equal to 1 if the individual is a director on the board, is not an officer, and owns more than 10% of the company stock. Board size is the natural logarithm of the size of the board, and is available from Fich (2005) and Fich and Shivdasani (2006). Large board if independent director and large board if large blockholder are indicator variables if the board is large (above the 75th percentile) and the individual trading is an independent director (but not a large blockholder), and a large blockholder, respectively. The reported regressions include only purchase transactions. The regressions including only sale transactions are available upon request. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual.

	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)
Independent Director	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)
Large board if Independent Director	0.0009	0.0096	0.0263**	0.0357**	0.0603***
	(0.0015)	(0.0077)	(0.0112)	(0.0141)	(0.0215)
Large 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 effects	YES	YES	YES	YES	YES
Observations	14472	14472	14462	14435	14202
R-squared	0.123	0.239	0.291	0.312	0.376

Table 9:

Executive Officers and Independent Directors Sales: Earning Restatements

In Panel A, we identify for each firm the largest 10 percent price drops (which we call "bad news"), and keep the sales transactions that occurred between 0 and 120 trading says before the price drop. The average and median market-adjusted returns are the returns of holding the individual's position for 0, 30, 60, 90, and 180 trading days, respectively (i.e. the returns of selling 1 dollar worth of the company stock minus the return of taking the opposite position in the value-weighted market index). Transaction size is the dollar value of the transaction. In Panel B the sample is reduced a sub-sample of firms that were subject to an earning restatement due to accounting irregularities. We use a data set collected by the U.S. General Accounting Office that includes companies the restated earnings between Jan 1 1997 and June 30 2002. We analyze the sales 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 return of selling 1 dollar worth of the company stock minus the return of taking the opposite position in the value-weighted market index). Independent director is a dummy equal to 1 if the individual is an independent director, but not a large blockholder; large outside blockholder is a dummy equal to 1 if the individual is a director on the board, is not an officer, and owns more than 10% of the company stock. Revenue Recognition is a dummy variable equal to 1 if the reason for the restatement was revenue recognition. External prompter is dummy variable equal to 1 if the entity that started the restatement is outside the firm (auditor, FASB, or SEC). RevRec*IndepDir is the interaction between the Independent Director dummy and the Revenue Recognition dummy. Similarly, ExtPr*IndepDir is the interaction between the Independent Director dummy and the External Prompter dummy. All the regressions include firm-fixed effects. The standard errors are corrected for the non-independence of the observations within the same individual.

		Both independent directors		Only Officers	Only Independent	
	No Trade	and officers traded		traded	Directors traded	Total
		Officers	Independent Directors	Officers	Independent Directors	
Number of Bad News	1,172,556	266,034	266,034	351,716	242,541	2,298,881
Number of trades (total)		913,755	651,327	1,004,948	416,357	2,986,387
Number of trades (average by piece of bad news)		5.854439	4.17306	3.459469	3.142625	
Number of trades (median by piece of bad news)		3	2	2	2	
Average Mkt Adj. Return on the day of the bad news	-7.8182%	-6.2677%	-6.2677%	-6.8062%	-6.8661%	-7.3352%
Median Mkt Adj. Return on the day of the bad news	-6.4358%	-5.1875%	-5.1875%	-5.5746%	-5.6648%	-6.0083%
Std Dev of Mkt Adj. Return on the day of the bad news	5.6810%	4.3499%	4.3499%	4.8091%	4.8947%	5.3202%
Average Mkt. Adjusted Return (at the 0 trading days horizon)		-0.7396%	-0.5994%	-0.3585%	-0.1173%	
Average Mkt. Adjusted Return (at the 30 trading days horizon)		-0.5523%	-0.0578%	2.1475%	1.7405%	
Average Mkt. Adjusted Return (at the 60 trading days horizon)		0.8954%	2.1268%	4.6426%	3.6500%	
Average Mkt. Adjusted Return (at the 90 trading days horizon)		2.9985%	4.3819%	5.7185%	4.6684%	
Average Mkt. Adjusted Return (at the 180 trading days horizon)		3.4165%	4.0522%	5.1278%	3.3102%	
Median Mkt. Adjusted Return (at the 0 trading days horizon)		-0.2601%	-0.1802%	-0.0685%	0.0966%	
Median Mkt. Adjusted Return (at the 30 trading days horizon)		0.9759%	1.3387%	2.5697%	3.6265%	
Median Mkt. Adjusted Return (at the 60 trading days horizon)		3.6278%	4.2836%	5.7776%	6.3069%	
Median Mkt. Adjusted Return (at the 90 trading days horizon)		6.1698%	7.2717%	8.0752%	8.5384%	
Median Mkt. Adjusted Return (at the 180 trading days horizon)		10.9194%	10.6305%	10.3139%	10.5878%	
Average Transaction Size		$625,429.40	$947,322.80	$380,495.00	$448,547.10	
Median Transaction Size		$142,627.00	$140,000.00	$66,250.00	$38,100.00	

	Panel B: Sales Transactions Around Earning Restatements				
	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)
Independent Director	-0.0087	0.0604***	0.0188**	0.0098	-0.0081
	(0.0071)	(0.0181)	(0.0093)	(0.0082)	(0.0301)
Large Outside 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)
RevRec*IndepDir	0.0118	-0.0396*	-0.0370*	-0.0197	-0.0043
	(0.0080)	(0.0213)	(0.0192)	(0.0321)	(0.0357)
ExtPr*IndepDir	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

Figure 1: Average Number of Transactions by Type and Time of the Year

Officers ——◆—— Independent Directors ······· Large Outside Blockholders ———
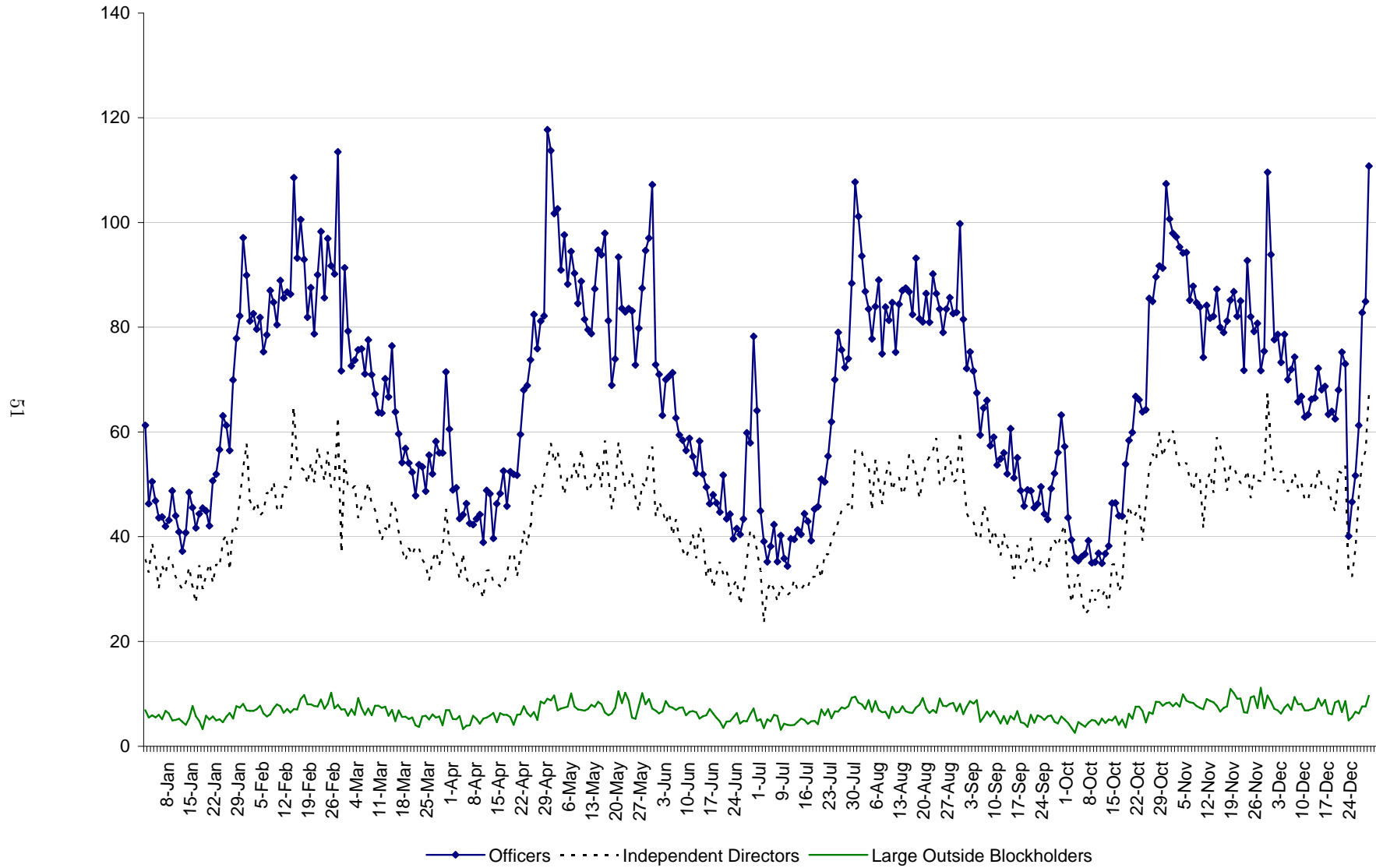
Average number of transactions by time of the year: (i) executives of the firm, (ii) non-executive directors who are not large blockholders (independent directors), and (iii) directors who are not employees of the firm, but own more than 10% of the company stock (large outside blockholders).

Figure 2: Returns from Executives and Independent Directors Trades - Purchase Transactions
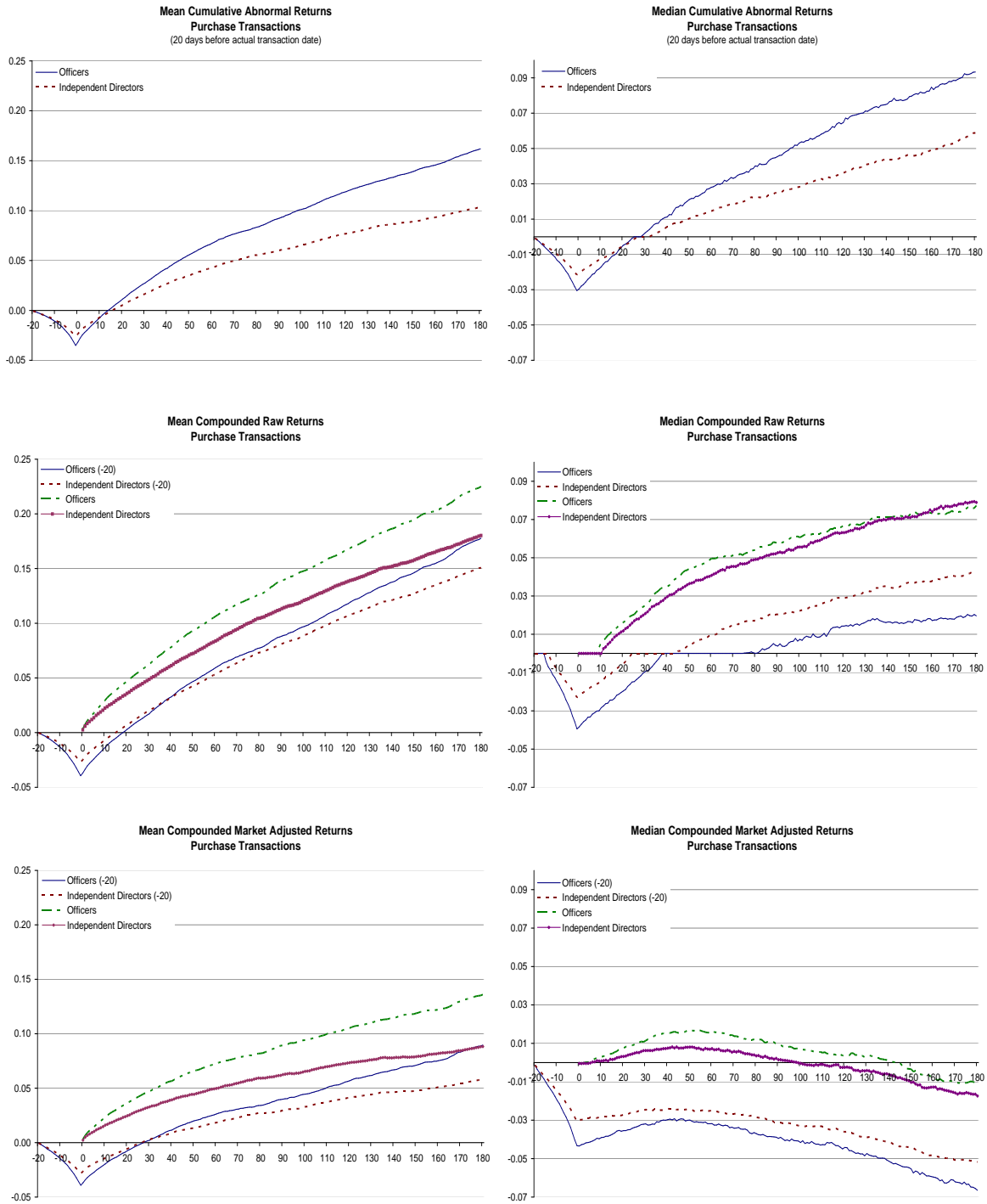
Mean Cumulative Abnormal Returns
Purchase Transactions
(20 days before actual transaction date)

Median Cumulative Abnormal Returns
Purchase Transactions
(20 days before actual transaction date)

Mean Compounded Raw Returns
Purchase Transactions

Median Compounded Raw Returns
Purchase Transactions

Mean Compounded Market Adjusted Returns
Purchase Transactions

Median Compounded Market Adjusted Returns
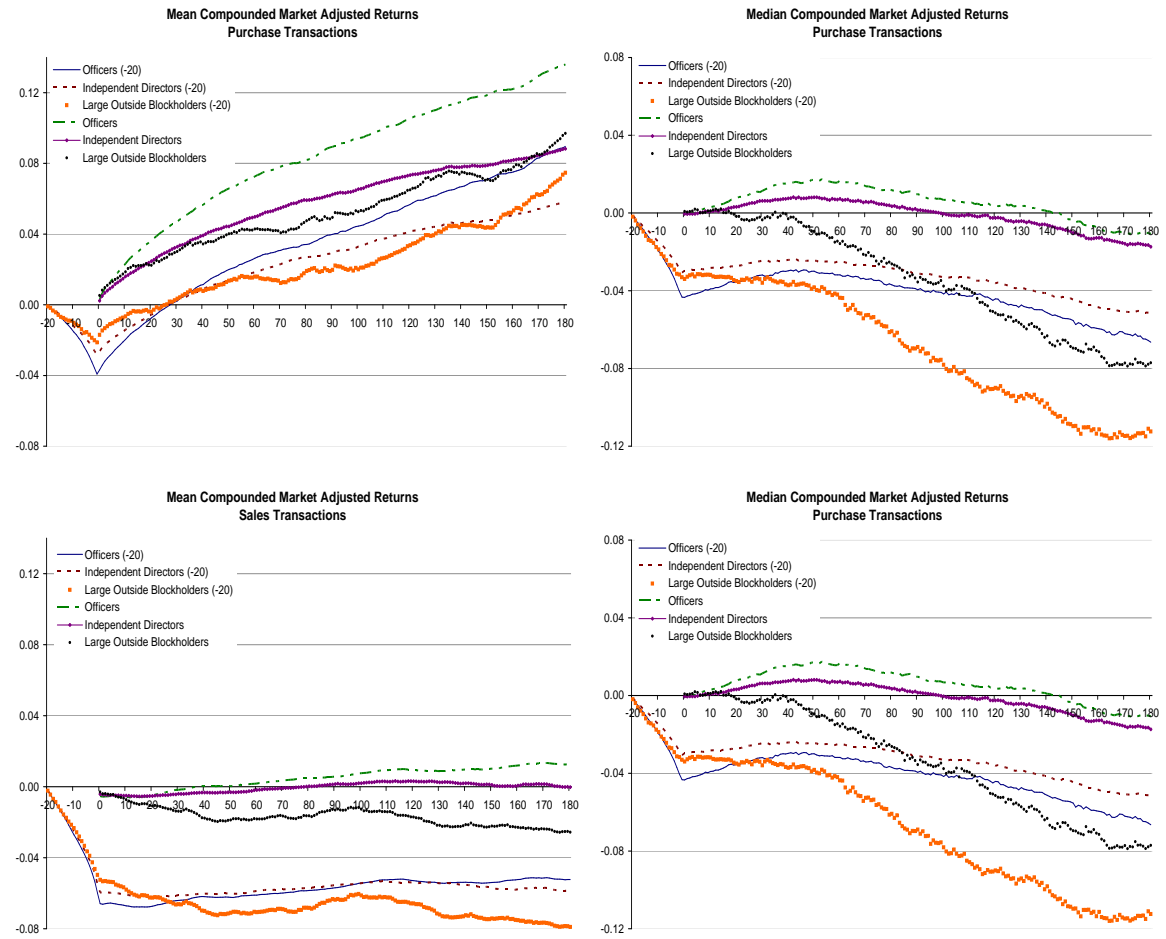**Purchase Transactions**

Mean and median returns (CARs, raw returns, and market-adjusted returns) over the time horizon, for Purchase transactions. where The returns are computed in the way described in Section IIIA.

Figure 3: Returns from Executives and Independent Directors Trades - Sales Transactions
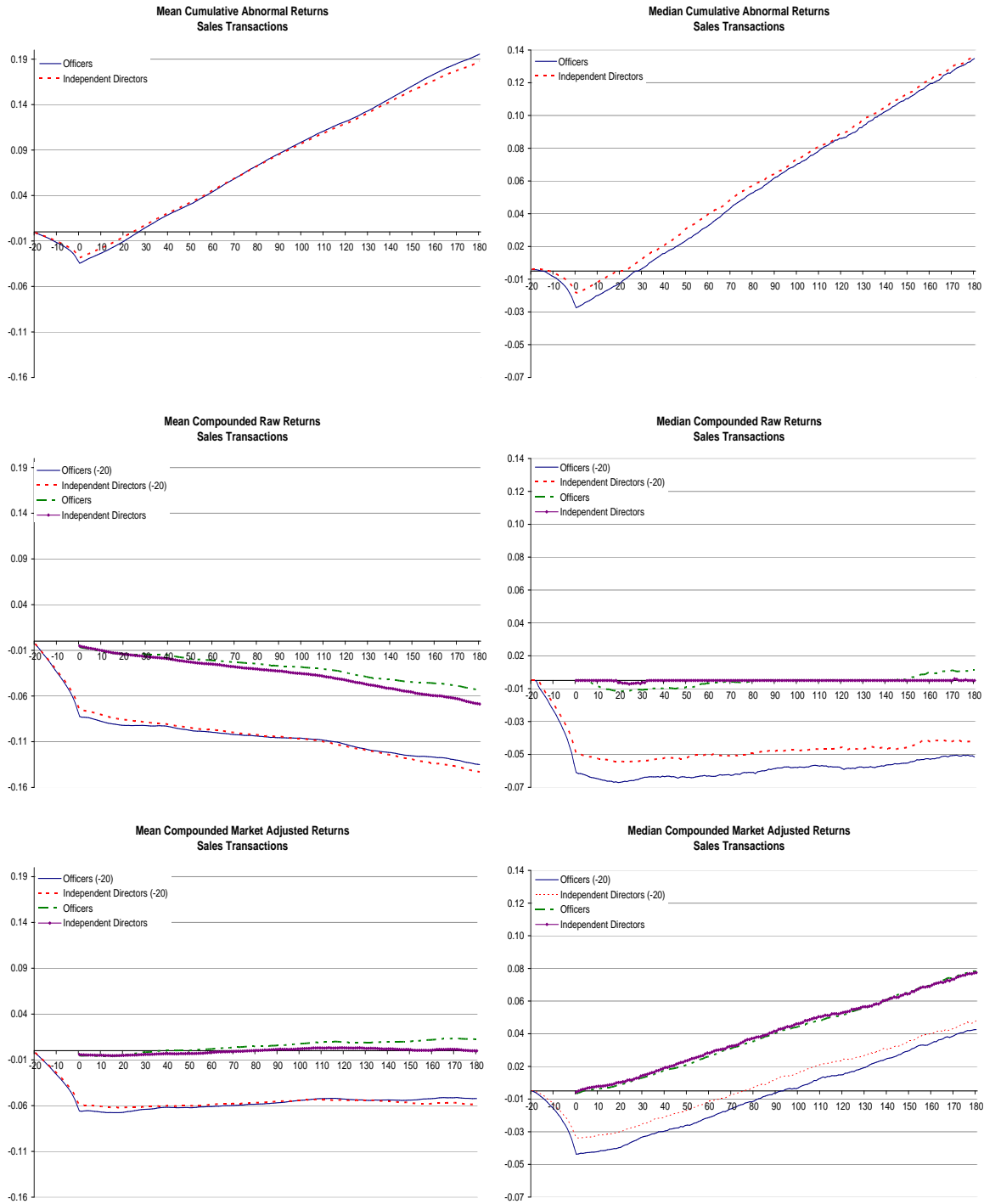
Mean and median returns (CARs, raw returns, and market-adjusted returns) over the time horizon, for Sales transactions. The returns are computed in the way described in Section IIIA.

Figure 4: Comparison of Executives' and Independent Directors' Returns with Outside Blockholders' Returns

Mean and median market-adjusted returns over the time horizon, for purchases and sales transactions for the (i) executives of the firm, (ii) independent directors, and (iii) large outside blockholders. The returns are computed in the way described in Section IIIA.