

Insider Trading and Family Firms

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Abstract: We examine if CEOs who belong to the company's controlling family possess better private information than hired CEOs of family firms and of non-family firms. We find that CEOs of family firms in the S&P 1500 engage in more frequent and larger insider trading than CEOs of non-family firms. The effect is particularly strong for founding CEOs. Importantly, stock trades made by founding CEOs (and to a lower extent those made by founders' descendents) are more profitable than those made by professional CEOs. This finding is particularly true for family firms with a high price volatility. Further, we find that both good corporate transparency and governance reduce the information advantage of founding CEOs. Finally, the presence of a "blackout" period policy is less common in firms that are managed by a founding CEO than in other firms but the presence of such policy mitigates the profitability of the trades made by founding CEOs.

I. Introduction

Insider trading has attracted a lot of attention from policy makers, researchers, and investors because of its potential destabilizing effect on the financial markets. In spite of the restrictions imposed by government regulations and company policies, prior research has found that insider trading generates excess returns (e.g., Seyhun, 1986, 1998; Rozeff and Zaman, 1998; Lakonishok and Lee, 2001). Aside from a few notable exceptions (e.g., Givoly and Palmon, 1985; Aboody and Lev, 2000), the prior research has not thoroughly examined the variations of insider trading patterns across firms. In particular, the effect of organizational structure or CEO types on insider trading has not been extensively investigated. We do so by examining the differences in insider trading behavior between family-controlled business listed in the S&P 1500 index and widely-held public companies.

Family ownership is considered to be the most prevalent form of corporate governance in the world (e.g., Claessens et al., 2000; Morck et al., 2005). Prior research suggests that family control mitigates the classic agency problem that arises from the separation of ownership and management, either by directly appointing a family member as CEO or by monitoring appointed executives more effectively than in non-family firms (e.g., Demsetz and Lehn, 1985; Anderson and Reeb, 2003a). However, holding substantial ownership may enable family members to seek personal benefits at the expense of minority shareholders. For example, family members can engage in related-party transactions (Anderson and Reeb, 2003a), issue special dividends (DeAngelo and DeAngelo, 2000), freeze out small shareholders (Gilson and Gordon, 2003), or entrench the family appointed CEO (Shleifer and Vishny, 1997; Perez-Gonzalez, 2006). Aside

from these venues, controlling shareholders can also accrue personal benefits by earnings excess returns on trades in their own stocks, a possibility that has not been investigated by the prior literature. Founding families typically invest a large portion of their personal wealth in their company and often hold their shares for very long time (e.g., Anderson and Reeb, 2003b). This long-term investment horizon and lengthy tenure give managers who belong to the founding family incentives and means to acquire a more intimate knowledge of the company than professional managers of non-family firms and, of course, than outside investors. Our results are generally consistent with this idea.

First, we find that CEOs of family firms are more active stock traders than CEOs of non family firms. Specifically, trades made by family firm CEOs are larger and more frequent than trades done by non-family firm CEOs. When we refine our analysis, we find that only trades made by founding and descendent CEOs are larger and more frequent than trades made by non-family firm CEOs. In contrast, we do not find CEOs of family firms who are hired from outside the family trade more actively than CEOs of non-family firms.

Second, we find that the trades of family firm CEOs are more profitable than the trades of non-family firm CEOs. This finding is true for both sales and purchases but is more significant for purchases than for sales. We also find that founding CEOs generate larger profits than non-family firm CEOs when they either buy or sell stocks, while descendent CEOs only earn larger profits when they sell. In contrast, we expect that hired professional CEOs of family firms are better monitored by family members and have fewer opportunities to trade on inside information than CEOs working for widely held corporations. Consistent with this view, the profitability of hired CEOs of family

firms is lower than the profitability of trades made by non-family firm CEOs when they sell stocks. Further, we do not find any significant difference in the profitability of stock trades made by non-CEO executives working in family firms and in non family firms, supporting the notion that only family CEOs are able to exploit their information advantage to reap larger insider trading gains

Third, we find that firm characteristics affect the differences in insider trading between family firm and non family firms. Huddart and Ke (2007) argue that some uncertainty regarding the value of the firm is necessary for information asymmetry to exist, which in turn creates opportunities for insiders to trade on private information. As such, we expect that larger gains from stock trading enjoyed by founding CEOs should occur primarily in firms that are price volatile or opaque. Consistent with this view, we find that larger abnormal returns for founding CEO occurs only in volatile and opaque family firms, and we do not observe the same phenomenon in stable and transparent family firms.

Lastly, we expect that a solid corporate governance could mitigate the propensity of founding CEOs to extract profit through their trades. We focus on two specific mechanisms, the presence of institutional ownership and of “blackout” periods. First, Chung et al. (2009) argue that good governance improves financial and operational transparency and thus reduces information asymmetry between insiders and outside investors. Chung and Zhang (2009) show that the fraction of a company’s shares that are held by institutional investors increases with the quality of its governance structure. Putting these two results together, we expect that larger gains from stock trading enjoyed by founding CEOs should occur primarily in firms with low percentage of institutional

ownership. Second, Bettis et al. (2000) and Jeng (1998) document that many firms restrict their insiders to trading during periods following quarterly earnings announcements. Such restrictions prevent insiders from abusing their private information about the earnings news and should attenuate their advantage. For example, Jeng (1998) finds that a portfolio of insider purchases from firms that do not regulate the timing of insiders' trades earns abnormal returns, whereas purchases at firms that regulate timing do not earn abnormal returns. This should also be true for the trades made by founding CEOs. Our results are consistent with our expectations. We find that larger insider trading abnormal profits for founding CEOs occurs only in firms with a low institutional ownership and in firms unlikely to have instituted "blackout" periods and. In contrast, we do not observe the same phenomenon in firms with high institutional ownership or with a high likelihood of having instituted a "blackout" period. In addition, founding CEOs and descendent CEOs realize a disproportionately high fraction of their trade in the 10 trading days prior to earnings announcement and a disproportionately low fraction in the 10 days following quarterly announcement (compared to CEOs of non-family firms). Lastly, we find that that the likelihood that a firm institutes a blackout period policy is lower for family firms whose CEO is a founder or a founder descendent than for non-family firms.

This study makes at least three contributions. First, we document that the family ownership affects insider trading behavior. To the best of our knowledge, this issue has not been investigated by the prior literature.¹ Our findings suggest that it is essential to

¹ Fidrmuc et al. (2006) investigates how director ownership and outside shareholders affect stock market's reaction to the reporting of insider trading in U.K. Their study do not specifically consider family ownership and as argued in their study, insider trading regulations in U.K. differ substantially from those in U.S., so their conclusions may not generalize to U.S.

consider ownership structure and CEO types when evaluating insider trading information. Second, we complement existing literature on family businesses. Although prior studies have argued that strong legal protection in the U.S. reduces the capacity of the controlling shareholders to expropriate minority shareholders (e.g., Burkart et al., 2003), our findings indicate that founding families are able to accrue personal benefits by exploiting their inside information to a greater extent than hired executives of non family firms. Third, our results indicate that corporate governance and transparency mitigate the expropriation of controlling shareholders as family CEOs enjoy excess trading gains only when the information environment is opaque and volatile. Overall, our study identifies a cost born by uninformed shareholders of family firms, but shows that this cost could be reduced through the enhancement of corporate transparency and governance.

The rest of the paper is organized as follows. Section II develops empirical hypotheses, section III describes the sample, and section IV discusses empirical results. Section V concludes the paper.

II. Hypothesis Development

Family firms and the profitability of insider trading

The prior literature (e.g., Anderson and Reeb, 2003a; Villalonga and Amit, 2006) suggests that one of the benefits of family ownership is the mitigation of the classic agency problem that arises from the separation of ownership and management. By construction, there is little divergence of interest between management and shareholders in family firms when family members hold the CEO post. Even when family firms are operated by hired professional managers who are not affiliated with the controlling

family, the classical agency problem should be reduced because family members who hold large and undiversified ownership in their company have strong incentives to scrutinize managers. Consistent with this view, the prior literature has found that family firms have better performance (e.g., Anderson and Reeb, 2003a) and enjoy lower cost of debt (e.g., Anderson et al., 2003) than non-family firms.

However, with these substantial share holdings, controlling family members are also capable of expropriating firm resources at the expense of minority shareholders. This may lead to more severe conflicts between controlling and non-controlling shareholders. For example, the prior literature suggests that family members can extract rents by freezing out small shareholders (e.g., Gilson and Gordon, 2003), issuing special dividends (e.g., DeAngelo and DeAngelo, 2000; Faccio et al, 2001), or holding the CEO position without delivering performance (e.g., Shleifer and Vishny, 1997; Perez-Gonzalez, 2006).

We suggest that there may be an additional channel for wealth expropriation that has not been considered by the prior literature. Prior studies suggest that information asymmetry enables insiders to gain excess returns from stock trading (e.g., Seyhun, 1986, 1998; Aboody and Lev, 2000). Thus, one channel through which family members can expropriate minority shareholders is to exploit their private information to profitably trade in their company stocks. Family members often maintain active involvement with the company and hold their stocks for extended periods of time (Anderson and Reeb, 2003b). Lengthy investment horizons enable family members to obtain a detailed understanding of their company's operations. This may allow family members to possess more inside information than typical managers and outside investors do (e.g., Kwak,

2003; Anderson and Reeb, 2003a). We predict that stock trades made by CEOs of family firms are more profitable than trades made by CEOs of non-family firms.

H1a: Stock transactions made by CEOs of family firms generate larger abnormal returns than those made by CEOs of non-family firms.

Although we expect that trades made by CEOs of family firms should earn abnormally profitable returns on average, we also expect that the profitability of these trades should vary with the type of family firm CEOs. Specifically, we expect that the informational advantage enjoyed by family members should be greater for founding CEOs than for CEOs of family firms who are hired outside the family. For example, the prior literature (e.g., Morck et al, 1988; Fahlenbrach, 2007) suggests that founding CEOs have strong managerial abilities and possess rich business knowledge. These founding CEOs also have the most intimate knowledge of the firm as they are closely involved with the firm's daily operating activities since the beginning of the firm. These founding CEOs may be in good position to transform their knowledge into profitable trades. In contrast, we expect that hired CEOs of family firms are less likely to profit from their stock trades than family managers or even than professional CEOs of non family firms. For example, the prior literature suggests that insider trading has a negative effect on liquidity and on the cost of capital (e.g., Bettis et al., 2000; Jeng, 1998). Given, that a very large portion of the family wealth is tied to their company, we expect that family members monitor hired managers more closely than small investors do in non family firms. This prediction is consistent with the prior literature (Anderson and Reeb, 2003b).

If true, we then expect that hired executives of family firms have a lower capacity to exploit their inside information than founding CEOs of family firms or than CEOs of non family firms:

H1b: Founding CEOs of family firms earn larger abnormal returns when they trade in their own company stock than CEOs of non-family firms, while hired CEOs of family firms earn lower abnormal returns from stock trading than CEOs of non-family firms.

We expect descendent CEOs to be in an intermediate situation between founding and hired CEOs of family firms. Descendent CEOs often start learning about the family business at a young age and gain hands-on experience from the founder (*BusinessWeek*, 2003; Kwak, 2003). Thus, descendent CEOs may also have better understanding of their company than hired CEOs but their skills and company knowledge are likely to be lower than the ones of founding CEOs. This precludes us from forming strong *ex ante* expectations regarding the amount of abnormal profits earned by descendent CEOs but we expect it to be between the amount earned by founding CEOs and by hired CEOs in family firms.

The role of value uncertainty

We then examine if differences in firm characteristics could affect the capacity of family firm CEOs to generate abnormal profits. In particular, Demsetz and Lehn (1985) argue that benefits enjoyed by controlling shareholders are greater when a company's

environment is unstable. Huddart and Ke (2007) suggest that uncertainty regarding firm value is necessary for information asymmetry to exist, in which case it creates opportunities for insiders to trade on private information. Thus, we expect that the larger gains from stock trading enjoyed by founding CEOs, if any, occur primarily in firms with volatile environment.

H2a: Founding CEOs of family firms earn larger abnormal returns from their stock transactions than CEOs of non-family firms only when the company has a large idiosyncratic volatility.

Relatedly, the information advantage of founding CEOs can be mitigated by transparent information environment. For example, Healy and Palepu (2001) and Bushman and Smith (2003) argue that corporate transparency is one of the most effective governance mechanisms to mitigate the agency problems. Consistent with this notion, Anderson et al. (2009) find that opaque family firms have low Tobin's Q, while transparent family firms do not exhibit this low valuation. This suggests that opaque environment enables controlling shareholders to extract firm resources for their personal benefits. Thus, we expect that the larger abnormal profits from stock trading earned by founding CEOs of family firms should occur primarily in firms with an opaque environment.

H2b: Founding CEOs of family firms earn larger abnormal returns from their stock transactions than CEOs of non-family firms only when the company is opaque.

The role of corporate governance

Lastly, we expect that a solid corporate governance should mitigate the propensity of founding CEOs to earn abnormal profit through their trades. We focus on two specific mechanisms, the presence of institutional ownership and of “blackout” periods. Chung et al. (2009) argue that good governance improves financial and operational transparency and thus reduces information asymmetry between insiders and outside investors that is conducive of insider trading profits. Chung and Zhang (2009) show that the fraction of a company’s shares that are held by institutional investors increases with the quality of its governance structure. Thus, we expect that the large abnormal profits from stock trading enjoyed by founding CEOs, if any, should occur primarily in firms with low percentage of institutional ownership.

H3a: Founding CEOs of family firms earn larger abnormal returns from their stock transactions than CEOs of non-family firms only when the company’s institutional ownership is low.

Bettis et al. (2000) and Jeng (1998) document that many firms restrict their insiders to trading during periods following quarterly earnings announcements. These restrictions appear to be successful at preventing insiders from trading based on private

information related to earnings news. Bettis et al. (2000) indicate (p.191) that “blackout” periods successfully suppress trading, both purchases and sales, by insiders.” Jeng (1998) finds that a portfolio of insider purchases from firms that do not regulate the timing of insiders’ trades earns abnormal returns, whereas purchases at firms that regulate timing do not earn abnormal returns. This should also be true for founding CEOs:

H3b: Founding CEOs of family firms earn larger abnormal returns from their stock transactions than CEOs of non-family firms only when the company has not instituted a “blackout” policy.

III. SAMPLE AND DESCRIPTIVE STATISTICS

Our sample consists of firms listed in the S&P 1500 index in year 2002, and the sample period spans from 1997 to 2006. We follow Anderson and Reeb (2003a) to classify corporations as family and non-family firms. For companies in the S&P500 index, we use the approach proposed by *BusinessWeek* (2003). *BusinessWeek* considers a company to be a family firm if the founder or his/her descendents hold the position as CEO, top executive, director on the board, or are the largest shareholder.² Based on this definition, we classify 177 firms (35.4%) in the S&P500 index as family firms and the remaining (323 firms) as non-family firms. For companies in the S&P 400 midcap index and the S&P 600 small cap index, we manually classify firms. The process involves two steps. First, we collect information about a company’s history and its founder through various sources including corporate proxy statements, company’s website, Hoovers, Gale

² This definition of family firm has been used by various academic studies including Anderson and Reeb (2003b), Anderson and Reeb (2004), Anderson et al. (2003), Villalonga and Amit (2006), Wang (2006), Ali et al. (2007), Anderson et al. (2009), Chen et al. (2008), Chen et al. (2008), and Chen et al. (2009).

Business Resources, and internet search. Second, after identifying the founding family for each company, we read through SEC documents to see whether founding family members still maintain presence in the company. The results indicate that 508 firms (50.8%) in the S&P 400 midcap and S&P 600 small cap index are still controlled by their founding families. Overall, we classify 685 firms (45.67%) of S&P1500 firms as family firms. The percentage of family firm in the S&P1500 index is similar to those reported by Chen et al. (2008) and Anderson et al. (2009). We obtain insider trading data from Thomson Reuters, accounting data from Compustat and price data from CRSP.

Table 1 provides descriptive statistics. In Panel A, we separately consider the family and non-family firms. Our results indicate that family firms have a lower market capitalization (*SIZE*), have a higher market to book ratio (*MB*) and a higher return on assets (*ROA*) than non family firms.³ Perhaps not surprisingly, we find that the percentage of CEO ownership (*CEO Ownership*) is four to five times larger in family firms than in non family firms. We then consider the characteristics of the trades done by insiders (*Trade*). Following Aboody and Lev (2000), we focus on open market purchases and sales made by CEOs and other executives as those transactions are more likely to be information-based.⁴ We find that the number of transactions per year done by insiders (*Freq*) is nearly fifty percent larger in family firms than in non family firms. The size of the transactions is also larger in family firms than in non-family firms. This is true irrespective of whether we use the average number of shares per transaction (*MeanShares*)

³ *SIZE* is the natural logarithm of the market value (in millions of dollars) of common equity (Compustat Data#25*Data#199) at the end of the fiscal year. *MB* is the ratio of market value of common equity (Compustat Data#25*Data#199) to book value of common equity (Compustat Data#60) at the end of the fiscal year. *ROA* is the accounting return (Compustat #Data18) on total assets (Compustat#Data6).

⁴ As indicated in Aboody and Lev (2000), open market stock purchases and sales tend to be driven by inside information, while other insider trading activities (e.g., acquisition of stocks through incentive plans or option exercises) may be motivated by other purposes (e.g., liquidity needs).

or the average monetary value (*MeanValue*). The differences in trading activity are all statistically significant. Lastly, we look at the cumulative abnormal returns from the transaction date to one day before the transaction's filing date with SEC (*CAR*) for sales and purchases. We use the traditional market model to compute the abnormal stock returns. Although abnormal returns are higher in family firms than in non family firms, the differences are not statistically significant. These results hold if we use the mean or the median values of the variables.

In Panel B, we partition our sample based on whether the family CEO is the founder, a descendent of the founder or is hired from outside the family. We compare the means and medians of our different variables to the values of non-family firms. Results indicate that CEO ownership is higher for all types of family firm CEOs (compared to non-family firm CEOs), but the result is stronger for founding and descendent CEOs. In addition, founding CEOs trade more often and in larger quantity than CEOs of non-family firms. The effect is also statistically significant. Descendent and hired CEOs of family firms also have higher mean and median trading activity than CEOs of non-family firms but the difference is largely statistically insignificant. Finally, the mean and median abnormal returns are higher for founding CEOs of family firms than for CEOs of non-family firms. In contrast, the abnormal returns are lower for hired CEOs of family firms than for CEOs of non-family firms. These differences are statistically significant at conventional levels. The profitability of the trades made by descendent CEOs is similar to the one of CEOs of non-family firms.

IV. EMPIRICAL ANALYSIS

Family firms, frequency and size of insider trading

Before testing our first hypothesis, we explore the trading pattern of insiders in family firms. To this end, we estimate two related models. In the first model, we regress different characteristics of the trading activity on the family firm status and different control variables:

$$Trade = \alpha + \beta_1 FAMILYFIRM + \beta_2 SIZE + \beta_3 MB + \beta_4 ROA + \varepsilon \quad (1a)$$

Trade represents different characteristics of the trades done by insiders (*Freq*, *MeanShares*, *MeanValue*) that we defined in Section III. *FAMILYFIRM* is an indicator variable equal to one if the company is a family firm, and zero otherwise. We also include three previously defined firm characteristics (*SIZE*, *MB* and *ROA*). The *t*-statistics are based on the Huber-White sandwich estimate of variances and are simultaneously adjusted for clustering of observations by firm and calendar month (Cameron, Gelbach and Miller, 2009). We also estimate a second related model:

$$Trade = \alpha + \beta_1 FOUNDER + \beta_2 DESCENDENT + \beta_3 HIRED + \beta_4 SIZE + \beta_5 MB + \beta_6 ROA + \varepsilon \quad (1b)$$

FOUNDER is an indicator variable equal to one if the company is a family firm and the CEO is the founder of the firm, and zero otherwise. *DESCENDENT* is an indicator variable equal to one if the company is a family firm and the CEO is a

descendent of the firm founder, and zero otherwise. *HIRED* is an indicator variable equal to one if the company is a family firm and the CEO is hired from outside the family, and zero otherwise.

We report the results for model (1a) in Panel A of Table 2. They indicate that CEOs of family firms engage in more frequent and larger transactions than CEOs of non-family firms. The effect is economically significant. For example, setting *FAMILYFIRM* to one increases *MeanValue* by 20% of its average value.⁵ The effect is also statistically significant with the t-statistics ranging from 3.49 to 7.97. CEOs of firms with large market capitalization, high market to book ratio and high ROA also tend to engage in more frequent and larger transactions. We report the results for model (1b) in Panel B of Table 2. They indicate that founding CEOs engage in more frequent and larger transactions than CEOs from non family firms. The effects are economically significant. For example, setting *FOUNDER* to one increases the value of *MeanValue* by 40% of its mean value. The effect is also statistically significant with the t-statistics ranging from 5.15 to 12.13 for founding CEOs. We find a similar effect for descendent CEOs but both the economic and the statistical significance are lower. For example, the t-statistics range from 1.99 to 2.73. In contrast, we do not observe any significant difference in trading frequency or size between hired CEOs of family and non-family firms.

Family firms and the profitability of insider trading

We then examine if CEOs of family firms generate larger abnormal returns from trading in the shares of their company. Following the prior literature (i.e., Mitchell and Stafford, 2000; Fama, 1998), we form monthly calendar-time portfolios based on CEO

⁵ The average value of *Freq*, *MeanShares* and *MeanValue* are 8.9, 0.05 and 1.72, respectively.

type and CEO's stock transactions. First, for each stock purchase, we calculate raw returns from the transaction date to one day before the transaction's filing date with SEC (as in Aboody and Lev (2000)). We consider a company a "net purchaser" ("net seller") if its CEO purchased more (less) stocks than he or she sold. Then, we compute a firm-specific transaction-to-filing date return as the average of all insider transactions occurred in the given month. Next, we calculate the returns of the equally weighted portfolio. We repeat the procedure for purchases made by insiders of non-family firms and we form a hedge portfolio that goes long in the family firm portfolio and short in the non-family firm portfolio. We regress the monthly hedge portfolio returns on the Fama and French (1993) three-factor together with the momentum factor of Carhart (1997):

$$Hedge_{pt} = \alpha_p + \beta_{1p}(Rm_t - Rf_t) + \beta_{2p} SMB_t + \beta_{3p} HML_t + \beta_{4p} MOM_t + \varepsilon \quad (2)$$

The dependent variable is the hedge portfolio monthly return (*Hedge*). RM_t is the return on the value-weighted market index in time t . RF_t is the three-month Treasury bill yield in time t . SMB_t is the return on small firms minus the return on large firms in time t . HML_t is the return on high book-to-market stocks minus the return on low book-to-market stocks in time t . MOM_t is the momentum factor as in Carhart (1997). We obtain the data for the different factors from Ken French's website.⁶ We correct the standard errors for heteroskedasticity using the White (1980) procedure and for serial correlation using the Newey-West (1987) procedure. The intercept, α , measures the abnormal returns associated with the insider trades in family firms relative to the abnormal returns obtained by insiders in non-family firms. We then repeat the procedure by constructing

⁶ <http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/>

the following three hedge portfolios for each calendar month in our sample period. In the first hedge portfolio, we go long in a portfolio of family firms for which the CEO is a net stock purchaser in a given month and is a founding CEO. In the second hedge portfolio, we go long in a portfolio of family firms for which the CEO is net stock purchaser in a given month and is a descendent CEO. In the third portfolio, we go long in a portfolio of family firms for which the CEO is a net stock purchaser in a given month and is a hired CEO of a family firm. In all cases, we go short in a portfolio of non-family firms for which the CEO is a net stock purchaser in a given month. We then also form four similar hedge portfolio based on the returns of firms for which the CEO is a net stock seller in a given month. Results of this portfolio analysis are reported in Panel A of Table 3.

For insider purchases, the result in column (1) of Panel A indicates that CEOs of family firms generate larger gains from their stock purchases than CEOs of non-family firms. The intercept (α) is significantly positive, both economically (2.4 percent per month) and statistically (t -statistic equals 2.38). Given that in our sample, there are on average 14 days from CEO's stock trading to SEC's filing date, the return from the hedge-portfolio test is economically meaningful. These results are consistent with our hypothesis H1a. Columns (2) to (4) of Panel A present the results for subsamples of family firms. Consistent with our hypothesis H1b, the results suggest that the larger gains from stock purchases of family firms are driven by founding CEOs. The estimated intercept is significantly positive (3.1%, t -statistic equals 2.29) in column (2), whereas it is insignificant in columns (3) and (4) where we report the results for the descendent and hired CEOs.

The results for CEO's stock sales are also consistent with our hypotheses H1a and H1b. The intercept in column (1) is significantly negative (-0.012 with a t-statistic of -1.84), suggesting that stock sales made by CEOs of family firms are associated with more negative returns than sales made by CEOs of non-family firms. Again, results for subsamples of family firms are presented in column (2) to (4). The estimated intercept is significantly negative in both column (2) for founding CEOs (-1.5% with a t-statistic of -2.16) and (3) for descendent CEOs (1.5% with a t-statistic of -2.22). In contrast, the intercept is significantly positive (1.2% with a t-statistic of 2.24) in column (4), suggesting that stock sales made by hired CEOs of family firms are less profitable than sales made by CEOs of non-family firms. This suggests these trades are less likely to be motivated by inside information and are more likely to be motivated by needs for liquidity or portfolio rebalancing than trades made by founding CEOs or even than trades made by CEOs of non family firms.

In Panels B of Table 3, we reproduce the results from Panels A but we further partition our sample between family firms with high family ownership and low ownership. We recalculate the monthly returns of our different hedge portfolios for both categories and re-estimate our portfolio regressions. To conserve space, we only tabulate the estimated intercepts and their corresponding t-statistics but we include our different control variables in the specifications. A firm with high family ownership is defined as one if the family firm's founding family ownership is above the sample median, and the remaining family firms are considered as having low family ownership. We report the results in Panel B Table 3. Results are consistent with those reported in Panel A. For family firms with high family ownership, the intercept is significant in the sample of

CEOs of family firms and of founding CEOs who are net purchasers. The intercepts are significantly positive in all four samples of net sellers (positive for CEOs of family firms, of founding CEOs and descendent CEOs and negative in sample of hired CEOs). In contrast, the intercepts are statistically insignificant for family firms with low family ownership. The only exception is the portfolio of insider purchase of founding CEOs. In this case, the intercept is marginally significant (the t-statistic equals 1.83) in the sample of low family ownership.

Before moving to the test our next hypothesis, we perform three robustness tests to confirm the results in Table 3. First, we reproduce our analysis but, instead of using a portfolio approach, we use regressions in which we treat each trade as an observation. Specifically, we estimate the following models:

$$CAR = \alpha + \beta_1 FAMILYFIRM + \beta_2 SIZE + \beta_3 MB + \beta_4 ROA + \varepsilon \tag{3a}$$

$$CAR = \alpha + \beta_1 FOUNDER + \beta_2 DESCENDENT + \beta_3 HIRED + \beta_4 SIZE + \beta_5 MB + \beta_6 ROA + \varepsilon \tag{3b}$$

Where *CAR*, *FAMILYFIRM*, *FOUNDER*, *DESCENDENT*, *HIRED*, *SIZE*, *MB* and *ROA* are our previously defined variables. The t-statistics are based on the Huber-White sandwich estimate of variances and are simultaneously adjusted for clustering of observations by firm and calendar month (Cameron, Gelbach and Miller, 2009). Our results (untabulated) are consistent with the ones reported in Table 3. Essentially, family

firms are associated with larger insider trading gains, and the results are driven by family firms with family CEOs.

Second, we consider the trades done by the non-CEOs executives (such as CFO and COO) who are not affiliated with the company's founding family. Some family firms have founding family members serving as non-CEO executives. We delete those firms to make sure this test is restricted to non-affiliated executives only.⁷ We re-estimate the different specifications reported in Panel A of Table 3 but we only consider trades made by non-CEOs executives of family and non-family firms. The results (untabulated) indicate that the intercepts are all statistically insignificant in the purchase regressions. For stock sales, we find that the intercepts for family firms with founder and hired CEOs are significantly positive, suggesting that non-CEO executives of family firms earn lower returns from their stock sales than non-CEO executives of non-family firms. Overall, these results suggest that only family CEOs are able to earn larger abnormal returns than CEOs or executives of non-family firms.

Third, Aboody and Lev (2000) document that insider trading gains are larger in R&D intensive firms. We examine if our results are driven by difference in R&D intensity between family and non-family firms. To do so, we re-estimate the portfolio regressions for non-R&D family and non-RD non-family firms. We consider a firm as R&D intensive firms if its reported R&D expense scaled by sales revenue is above the sample median, otherwise it is considered as non-R&D firms. Untabulated results indicate that even in non-R&D firms, family CEOs, founding CEOs in particular, are able to earn excess gains from stock trading (α equals 0.022 with a t-statistic of 2.24 for stock purchase; α equals -0.014 with a t-statistic of -1.99 for stock sales), suggesting that that

⁷ Totally, we have 27 family firms which have founding family members serve as non-CEO executives.

our results are not driven by difference in R&D intensity between family and non-family firms. The intercepts in the hedge portfolios formed with descendent CEOs of family firms become insignificant (t-statistic equals -1.43 for stock sales) but this may reflect the relatively low number of observations in this portfolio ($n = 41$).

The impact of corporate transparency on CEO's stock trading gains

We then consider our second hypothesis. Hypothesis H2 predicts that founding CEOs of family firms gain excess abnormal returns over CEOs of non-family firms only when the company's value is uncertain. To test this hypothesis, we use a model similar to (3b) and we split our overall sample based on whether the firm value is difficult to ascertain or not. We use two variables to proxy for this difficulty.

First, we separate our sample firms into two groups: high-volatility and low-volatility firms. We follow Demsetz and Lehn (1985) and we measure firm-specific volatility (*VOLATILITY*) as the standard deviation of the firm's monthly stock returns over our entire sample period. We classify a company as highly volatile if its firm-specific risk is above the median of the sample distribution; otherwise we classify it as a low-volatility firm.⁸ The correlation between *VOLATILITY* and *FOUNDER* within each sub-group is totally insignificant (with p-values of 0.64 and 0.58, respectively).⁹ Results in the first two columns of Table 4 indicate that founding CEOs in the sample of firms with high volatility earn greater abnormal returns than CEOs of non-family firms. The t-statistics associated with *FOUNDER* are 2.18 and -2.56, respectively. We report the

⁸ To verify the robustness of the results, we also calculate firm-specific risks as the standard error of the fitted value from the market model in which firm's monthly return is regressed on market return over our sample period. The results are essentially unchanged.

⁹ The correlation between *VOLATILITY* and *FAMILY* within each sub-group is also insignificant (with p-values of 0.83 and 0.41, respectively)

results for the sample of firms with low volatility in the third and fourth columns of Table 4. The magnitude of the coefficients is 6 to 7 times smaller than in the first two columns. In addition, the t-statistics are only 0.35 and 0.31 in the sample of low volatility firms. These results support our hypothesis H2a. They are consistent the notion that volatility is necessary but not sufficient for managers to profit from their information advantage (Huddart and Ke, 2007). *DESCENDENT* and *HIRED* are generally insignificant. The two exceptions are *DESCENDENT* in the second column and *HIRED* in the first column.

Second, we repeat the estimation of equation (3b) for transparent and opaque firms separately. To proxy for firm transparency, we follow Anderson et al. (2009) and we develop an index (*TRANSPARENCY*) using the following four variables: *AnalystFollowing*, *ForecastError*, *Bid-ask Spread*, and *TradeVolume*. *AnalystFollowing* is the number of analysts providing earnings per share (EPS) estimates 9 months prior to the end of the fiscal year-end. *ForecastError* is the absolute value of difference between the mean analysts' earnings forecast (9 months prior to the end of the forecast) and the actual firm earnings, scaled by the beginning of the year price. *Bid-ask Spread* is the ask price minus bid price divided by the average of the bid and ask prices. Bid-ask spreads are computed by averaging all trades for each firm from the third Wednesday of each month and then average across these 12 observations. *TradeVolume* is the firm's average daily trading volume. We rank our sample firms into ten deciles based on *AnalystFollowing*, *ForecastError*, *Bid-ask Spread* and *TradeVolume* with the most transparent firms taking a value of 10 and the least transparent firms taking a value of 1. The four ranks are then summed. We split the overall sample using the median value of

TRANSPARENCY. We present the results in Table 5.¹⁰ The correlation between *TRANSPARENCY* and *FOUNDER* within each sub-group is insignificant (with p-values of 0.21 and 0.33, respectively). The first two columns of Table 5 report the results for transparent firms; the last two columns present results for the opaque firms. *FOUNDER* is significant in the sample of opaque firms with t-statistics equal to 2.31 and -1.81 in the purchase and sale regressions. In contrast, *FOUNDER* is insignificant in the sample of transparent firms. These results support our hypothesis H2b. *DESCENDENT* is only significantly negative in the fourth column (net sellers in opaque firms) with t-statistic of -2.89. *HIRED* is significant in the first two columns.

Insider trading and corporate governance

Next, we test our hypothesis H3a and we examine if the advantage that founding CEOs of family firms have over CEOs of non-family firms is mitigated when the firm corporate governance is good. We do so by estimating our model (3b) in a sample of high and low corporate governance firms. We operationalize this partition by considering the percentage of institutional ownership (*INSTIT*). We classify firms as having a good corporate governance if their institutional ownership is greater than the median level in our overall sample, and as having a low corporate governance. The correlation between *INSTIT* and *FOUNDER* within each sub-group is totally insignificant (with p-values of 0.53 and 0.82, respectively).¹¹ We present the results in Table 6. They support our hypothesis H3a. We find that *FOUNDER* is only significant in the sample of low

¹⁰ The correlation between *TRANSPARENCY* and *FAMILY* is negative in the subsample of high transparency firms but this relation is only marginally significant (with a p-value of 0.09). The correlation is totally insignificant in the sub-sample of low transparency firms (with a p-value of 0.64).

¹¹ The correlation between *INSTIT* and *FAMILY* within each sub-group is insignificant (with p-values of 0.41 and 0.83, respectively).

institutional ownership (the t-statistic is 1.98 in Column 3 in which we consider net buyers and -3.22 in the fourth column in which we consider net sellers). In contrast, both coefficients are insignificant in the sample of high institutional ownership. These results support our hypothesis H3a. Results also indicate that *DESCENDENT* is insignificant in all four columns, while *HIRED* is only significant in the first two columns.

Insider trading restrictions

Many companies in U.S. regulate insider trading by instituting their own policies (Bettis et al., 2000). In particular, these policies explicitly specify certain periods when insiders can trade their stocks and certain “blackout” periods during which insiders cannot trade. Typically, these policies indicate that insiders are not allowed to trade right before quarterly earnings announcements and are only allowed to trade for around 12 days after earnings announcements (Bettis et al., 2000).

Before exploring our hypothesis H3b, we consider the trading pattern of CEOs of family firms. We compute the fraction of CEO’s stock trades that happens before and after quarterly earnings announcements. We present descriptive statistics in Panel A of Table 7. We find that, founding and descendent CEOs of family firms are more likely to trade (either to buy or to sell) their stocks right before earnings announcements, suggesting that family firms are less likely to have blackout periods than CEOs of non-family firms. We also find that founding and descendent CEOs are less likely to trade stocks in the post-earnings period. In contrast, we do not find any significant effects when the CEOs of family firms are hired outside the family. These results suggest that

family firms run by founding or descendent CEOs are less likely to have trading regulations.

To further investigate this possibility, we estimate the following model:

$$\begin{aligned}
 RESTRICT = & \alpha + \beta_1 FOUNDER + \beta_2 DESCENDENT + \beta_3 HIRED + \beta_4 INSTITUTION \\
 & + \beta_5 INS_TRADE + \beta_6 TRANSPARENT + \beta_7 VOLALITY + \beta_8 SIZE + \beta_9 MB \\
 & + \beta_{10} OA + \varepsilon
 \end{aligned}
 \tag{4}$$

RESTRICT is an indicator variable that takes the value of one if the firm has insider trading restrictions, zero otherwise. Following Roulstone (2003), we classify a firm as having insider trading restrictions if 75% of its insider trades happened within 20 trading days following an earnings announcement. *INS_TRADE* is ratio of total insider trading over the sample period to total shares outstanding. *FOUNDER*, *DESCENDENT*, *HIRED*, *TRANSPARENT*, *VOLALITY*, *SIZE*, *MB*, and *ROA* are the previously defined variables. We use a Probit specification to estimate model 4, and the results are presented in Panel B of Table 7. The z-statistics are based on the Huber-White sandwich estimate of variances and are adjusted for the clustering of observations by firm and calendar year. Consistent with the notion that firms managed by a founding CEO are less likely to have a blackout period, the coefficient associated with *FOUNDER* is extremely negatively significant with a t-statistic of -18.00 (marginal probability equals 10%). In contrast, *HIRED* is positive with a t-statistic of 3.46 (marginal probability equals 4%). *DESCENDENT* is insignificantly different from zero. The different control variables are statistically insignificant, except *MB* and *ROA* which are marginally positive. The results in Panel B confirms that as compared to non-family firms, founding CEOs are less likely,

whereas hired CEOs of family firms are more likely to face firm-level insider trading regulations.

Finally, we investigate our last hypothesis, H3b. We re-estimate equation (3b) but we split our sample based the value of *RESTRICT*. We present the estimation results in Table 8. We find that *FOUNDER* is significant in the sample of firms that do not have an insider trading policy. The t-statistics are 1.83 and -3.13 in the third and fourth column, respectively. In contrast, *FOUNDER* is statistically insignificant in the sample of firms that have enacted an insider trading policy (the t-statistics are -0.28 and -1.17, respectively). These results are consistent with our hypothesis H3b that family CEOs are able to earn larger abnormal profits from insider trading only in firms without insider-trading restrictions.

V. Conclusion

We examine how insider trading differs across family and non-family firms. We posit that long-term involvement with their company enables controlling family CEOs to obtain better inside information. With such information advantage, CEOs of family firms, founding CEOs in particular, should be able to gain excess returns from stock trading. Our results are generally consistent with this intuition.

First, CEOs of family firms are more active stock traders than CEOs of non family firms. Trades done by family firms CEOs are larger and more frequent than trades done by CEOs of non-family firms. When we refine our analysis, we find that only trades made by founding and descendent CEOs are larger and more frequent than trades made by CEOs of non-family firms. In contrast, we do not find similar patterns for trades

made by CEOs of family firms who are hired from outside the family. Second, the trades of CEOs in family firms are more profitable than the trades from CEOs in non-family firm. This finding is true for both sales and purchases but is more significant for purchases than for sales. We also find that founding CEOs generate larger abnormal returns than CEOs working for non-family firms when they either buy or sell stocks, while descendent CEOs only earn larger gains than non-family firm CEOs when they sell stocks. In contrast, the profitability of sales made by hired CEOs of family firms is lower than the profitability of sales made by insiders of non-family firms.

Third, firm characteristics affect the differences in insider trading between family firm and non-family firms. Specifically, larger insider trading gains for founding CEO occur only in volatile and opaque family firms, and we do not observe the same phenomenon in stable and transparent family firms. Fourth, a solid corporate governance mitigates the propensity of founding CEOs to extract profit through their trades. Larger insider trading gains for founding CEO occurs only in firms with a low institutional ownership and in firms unlikely to have instituted “blackout” periods and. In addition, founding CEOs and descendent CEOs realize a disproportionately high fraction of their trades in the 10 trading days prior to earnings announcement and a disproportionately low fraction in the 10 days following quarterly announcement (compared to CEOs of non family firms). Lastly, the likelihood that a firm issues a blackout period policy is lower for firms whose CEO is a founder or a descendent of founder than for non-family firms.

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Table 1

Descriptive statistics for firm attributes. The sample includes S&P 1500 firms from years 1997 to 2006. Panel A presents means, median tests, and standard deviation for S&P 1500 family and non-family firms attributes. Panel B presents mean (median) firm attributes for S&P 1500 family firms with founder CEOs, descendent CEOs, and hired CEOs, and non-family firm. Founder CEOs family firms are firms in which the founder is the CEO of the firm. Descendent CEOs family firms are firms in which the heir of the founder is the CEO of the firm. Hired CEOs family firms are firms in which the CEO is hired outside the family. *SIZE* is the natural logarithm of the market value (in millions of dollars) of common equity (Compustat Data#25*Data#199) at the end of the fiscal year. *MB* is the ratio of market value of common equity (Compustat Data#25*Data#199) to book value of common equity (Compustat Data#60) at the end of the fiscal year. *ROA* is the accounting return (Compustat Data#18) on total assets (Compustat Data#6). *CEO ownership (%)* is the percentage of CEO ownership of shares to total shares outstanding of the firm. *CAR_{transaction to filing}* is the cumulative abnormal returns from the transaction date to one day before the transaction's filing date with SEC. We use traditional market model to compute the abnormal stock returns. *Freq* measure how many times a CEO trade his stocks during the year (including open market purchases and sales). *MeanShares* measures number of shares traded per stock transaction. *MeanValue* measures the monetary value per stock transaction. *** indicates significance at the 0.01 level, ** indicates significance at the 0.05 level, and * indicates significance at the 0.10 level.

Panel A: Summary statistics and difference of means and medians tests for S&P 1500 family and non-family firms

	(1) Mean			(2) Median			(3) Standard deviation	
	Family firm	Non-family firm	Difference t-stat.	Family firm	Non-family firm	Difference z-stat.	Family firm	Non-family firm
<i>SIZE</i>	7.207	7.664	-16.36***	7.059	7.553	-16.02***	1.536	1.681
<i>MB</i>	3.482	3.243	4.21***	2.455	2.273	5.50***	3.342	3.248
<i>ROA</i>	0.050	0.044	4.88***	0.051	0.041	8.68***	0.082	0.080
<i>CEO ownership (%)</i>	3.364	0.612	31.72***	0.383	0.115	31.37***	7.376	2.617
<i>CAR_{transaction to filing} Purchase</i>	0.050	0.046	0.45	0.026	0.039	-1.10	0.154	0.139
<i>CAR_{transaction to filing} Sale</i>	-0.023	-0.024	0.33	-0.020	-0.018	-0.27	0.146	0.131
<i>Freq</i>	10.927	7.263	2.77***	2.962	2.095	3.44***	31.139	18.176
<i>MeanShares</i>	0.066	0.035	5.15***	0.020	0.016	4.24***	0.146	0.076
<i>MeanValue</i>	2.134	1.379	3.57***	0.645	0.500	3.21***	4.651	3.107
N	6,039	7,541		6,039	7,541			

Panel B: Summary statistics and difference of means and medians tests for S&P 1500 family and non-family firms

	Mean				Median			
	Founder CEO	Descendent CEO	Hired CEO	Non-Family firms	Founder CEO	Descendent CEO	Hired CEO	Non-Family firms
<i>SIZE</i>	6.986 (-18.50)***	7.170 (-8.75)***	7.478 (-4.76)***	7.664	6.868 (-18.03)***	7.082 (-8.58)***	7.263 (-5.20)***	7.553
<i>MB</i>	3.752 (6.80)***	2.531 (6.58)***	3.553 (4.01)***	3.243	2.545 (6.50)***	2.017 (-6.84)***	2.603 (7.25)***	2.273
<i>ROA</i>	0.050 (3.22)***	0.048 (1.75)*	0.052 (4.60)***	0.044	0.050 (5.90)***	0.048 (3.11)***	0.054 (7.97)***	0.041
<i>CEO ownership (%)</i>	6.049 (45.37)***	3.069 (23.34)***	0.758 (2.89)***	0.612	1.493 (37.57)***	0.677 (22.04)***	0.151 (4.85)***	0.115
<i>CAR_{transaction to filing Purchase}</i>	0.073 (4.06)***	0.054 (0.48)	0.020 (-5.35)***	0.046	0.065 (3.51)***	0.037 (-0.42)	0.015 (-5.02)***	0.039
<i>CAR_{transaction to filing Sale}</i>	-0.029 (-1.98)**	-0.026 (-1.96)**	-0.014 (3.00)***	-0.024	-0.027 (-2.16)**	-0.021 (-1.69)*	-0.012 (2.86)***	-0.018
<i>Freq</i>	12.468 (3.37)***	12.768 (2.62)***	7.293 (0.02)	7.263	3.900 (4.79)***	2.613 (0.89)	2.183 (0.66)	2.095
<i>MeanShares</i>	0.087*** (6.98)	0.048* (1.71)	0.052** (2.59)	0.035	0.028*** (6.86)	0.018 (1.42)	0.018 (1.31)	0.016
<i>MeanValue</i>	2.592*** (4.71)	1.513 (0.42)	1.790 (1.73)	1.379	0.829*** (5.13)	0.530 (0.31)	0.565 (1.27)	0.500
N	2,728	967	2,344	7,541	2,728	967	2,344	7,541

Table 2

Family firms and insider trading frequency and size. Panel A reports the regression estimate for the association between family firm and the frequency of CEO's stock trading, and the size of CEO's stock transactions. For transaction size, we consider the natural log of average shares per transaction and natural log of monetary value per transaction. In Panel B, we repeat the same estimation while replace *FAMILYFIRM* dummy by the following three dummy variables: *FOUNDER*, *DESCENDENT*, and *HIRED*. *FAMILYFIRM* equals one if the company is a family firm, and zero otherwise. *FOUNDER* equals one if the family firm's CEO is its founder, and zero otherwise. *DESCENDENT* equals one if the family firm's CEO is the descendent of its founder, and zero otherwise. *HIRED* equals one if the family firm's CEO is not related to the firm's founding family, and zero otherwise. *Freq* measure how many times a CEO trade his stocks during the year (including open market purchases and sales). *MeanShares* measures number of shares traded per stock transaction. *MeanValue* measures the monetary value per stock transaction. *SIZE* is the natural logarithm of the market value (in millions of dollars) of common equity (Compustat Data#25*Data#199) at the end of the fiscal year. *MB* is the ratio of market value of common equity (Compustat Data#25*Data#199) to book value of common equity (Compustat Data#60) at the end of the fiscal year. *ROA* is the accounting return (Compustat Data#18) on total assets (Compustat Data#6). The *t*-statistics are based on the Huber-White sandwich estimate of variances and are adjusted by clustering by firm and year. The *t*-statistics and *Z*-statistics are in parentheses and *** indicates significance at the 0.01 level, ** indicates significance at the 0.05 level, and * indicates significance at the 0.10 level.

Panel A: Regression estimate

	<i>Freq</i>	<i>MeanShares</i>	<i>MeanValue</i>
<i>Intercept</i>	-1.920 (-0.83)	-5.846 (-6.79)***	4.217 (-8.98)***
<i>FAMILY</i>	3.506 (3.49)***	0.327 (7.51)***	0.365 (7.97)***
<i>SIZE</i>	0.689 (2.53)**	0.122 (10.03)***	0.309 (4.27)***
<i>MB</i>	0.640 (4.17)***	0.068 (10.70)***	0.115 (7.27)***
<i>ROA</i>	3.572 (5.85)***	0.630 (2.38)	3.505 (3.58)***
<i>N</i>	13,467	6,005	6,005
<i>Adjusted R²</i>	0.022	0.042	0.101

Panel B: Regression estimate

	<i>Freq</i>	<i>MeanShares</i>	<i>MeanValue</i>
<i>Intercept</i>	-2.747 (-1.18)	-5.928 (-7.89)***	-4.294 (-9.82)***
<i>FOUNDER</i>	6.702 (5.15)***	0.663 (12.16)***	0.674 (11.74)***
<i>DESCEDENT</i>	5.040 (2.56)***	0.107 (1.99)*	0.256 (2.73)***
<i>HIRED</i>	-0.625 (-0.46)	0.013 (0.23)	0.043 (0.71)
<i>SIZE</i>	0.792 (2.90)***	0.133 (11.04)***	0.320 (5.15)***
<i>MB</i>	0.639 (4.15)***	0.064 (10.15)***	0.112 (6.88)***
<i>ROA</i>	3.010 (5.92)***	0.708 (2.69)***	3.577 (2.92)***
<i>N</i>	13,467	6,843	6,843
<i>Adjusted R²</i>	0.027	0.058	0.110

Table 3

Portfolio returns from going long on CEO's stock trading of family firms and short on CEO's stock trading of non-family firms. The table reports time-series regression coefficients from Fama-French Three-Factor model with Momentum (Carhart 1997) factor in equation (1). The dependent variable is the portfolio returns of family firms where CEOs were net stock purchaser (seller) minus the portfolio returns of non-family firms where CEOs were net stock purchaser (seller) in a given month. The portfolio returns are calculated as follows. For each individual firm, we calculate the mean raw returns from the stock transaction date to one day prior to the SEC filing date for all CEO's stock transactions during the month. Then we calculate the mean returns separately for the four portfolios: family firms where CEO is net stock purchaser, family firms where CEO is net stock seller, non-family firms where CEO is net stock purchaser, and non-family firms where CEO is net stock seller. RM_t is the return on the value-weighted market index in time t . RF_t is the three-month T bills yield in time t . SMB_t is the return on small firms minus the return on large firms in time t . HML_t is the return on high book-to-market stocks minus the return on low book-to-market stocks in time t . MOM_t is the momentum factor in Carhart (1997). The t -statistics are corrected for heteroskedasticity by White (1980) and the Newey-West procedure. *** indicates significance at the 0.01 level, ** indicates significance at 0.05 level, and * indicates significance at the 0.10 level.

Panel A: Portfolio returns from going long on CEO's stock trading of family firms and short on CEO's stock trading of non-family firms

	<i>Dep var: Raw return from transaction date to one day before filing date</i>			
	<i>Insider purchases</i>			
	Family firm	Founder CEO	Descendent CEO	Hired CEO
<i>Intercept</i>	0.024 (2.38)**	0.031 (2.29)**	-0.004 (-0.21)	0.007 (1.19)
$RM_t - RF_t$	-0.138 (-0.65)	-0.481 (-1.43)	0.493 (0.93)	-0.511 (-2.34)**
SMB_t	-0.197 (-0.67)	0.012 (0.06)	-0.422 (-1.28)	-0.399 (-1.67)*
HML_t	-0.311 (-1.04)	-0.039 (-0.75)	-0.582 (-0.91)	-0.581 (-2.38)**
MOM_t	-0.174 (-0.54)	-0.113 (-0.42)	-0.238 (-0.54)	-0.185 (-1.29)
N	120	108	51	112
<i>Adjusted R²</i>	0.022	0.016	0.039	0.070
	<i>Insider sales</i>			
	Family firm	Founder CEO	Descendent CEO	Hired CEO
<i>Intercept</i>	-0.012 (-1.84)*	-0.015 (-2.16)**	-0.015 (-2.22)**	0.012 (2.24)**
$RM_t - RF_t$	0.163 (2.38)**	0.274 (1.54)	0.250 (1.18)	0.008 (0.02)
SMB_t	-0.115 (-0.84)	0.066 (0.36)	0.305 (1.38)	-0.216 (-1.51)
HML_t	-0.079 (-0.21)	-0.216 (-0.96)	0.137 (0.47)	-0.345 (-1.84)*
MOM_t	0.104 (1.25)	-0.250 (-2.08)**	0.350 (2.41)**	0.257 (1.74)*
N	120	105	118	120
<i>Adjusted R²</i>	0.041	0.024	0.053	0.065

Panel B: Portfolio returns from going long on CEO's stock trading of (1) family firms with high family ownership and short on CEO's stock trading of non-family firms v.s.(2) going long on family firms with low family ownership and short on stock trading of non-family firms

<i>Dep var</i> : Raw return from transaction date to one day before filing date				
Stock trading by CEOs of family firms with high family ownership v.s. CEO's stock trading of non-family firms				
	Family firm	Founder CEO	Descendent CEO	Hired CEO
<i>Insider purchases</i>	0.035 (2.64) ** N=112	0.042 (2.08)** N=100	0.003 (0.63) N=32	0.006 (0.82) N=84
<i>Insider sales</i>	-0.021 (-2.37)** N=120	-0.025 (-2.79)*** N=105	-0.024 (-2.88)*** N=112	0.019 (2.34)** N=116
Stock trading by CEOs of family firms with low family ownership v.s. CEO's stock trading of non-family firms				
<i>Insider purchases</i>	0.009 (0.48) N=108	0.019 (1.83)* N=82	-0.009 (-0.85) N=27	0.008 (1.07) N=96
<i>Insider sales</i>	-0.003 (-0.41) N=120	-0.006 (-0.21) N=105	-0.007 (-0.62) N=92	0.005 (0.41) N=117

Table 4

The effect of volatility on insider trading gains. This table reports the results from the estimation of equation (2). Our sample firms are classified into two groups based on firm-specific volatility. Firm-specific volatility is the standard deviation of the firm's monthly stock returns over our sample period (1997 – 2006), and a company is considered as highly volatile if its firm-specific risk is above the median of the sample distribution, otherwise it is classified as a low-volatility firm. The dependent variable, $CAR_{transaction\ to\ filing}$, is the cumulative abnormal returns from the transaction date to one day before the transaction's filing date with SEC. We use traditional market model to compute the abnormal stock returns. *FAMILYFIRM* is a dummy variable equals to one if the company is a family firm, and zero otherwise. *SIZE* the natural log of the firm's total assets. *MB* is firm-specific market-to-book ratio. *ROA* is earnings before extraordinary item divided by lagged total assets. The *t*-statistics are based on the Huber-White sandwich estimate of variances and are adjusted by clustering by firm and calendar month. *** indicates significance at the 0.01 level, ** indicates significance at 0.05 level, and * indicates significance at the 0.10 level.

	Firms with high volatility		Firms with low volatility	
	(1) <i>Insider purchases</i>	(2) <i>Insider sales</i>	(3) <i>Insider purchases</i>	(4) <i>Insider sales</i>
<i>Intercept</i>	0.068 (4.44)***	-0.033 (-1.39)	0.004 (0.09)	-0.016 (-0.89)
<i>FOUNDER</i>	0.037 (2.18)**	-0.020 (-2.56)**	0.006 (0.35)	0.003 (0.31)
<i>DESCEDENT</i>	0.024 (0.67)	-0.018 (-1.98)**	-0.007 (-0.39)	0.008 (0.72)
<i>HIRED</i>	-0.025 (-3.02)***	0.009 (0.43)	-0.015 (-1.91)*	0.007 (1.47)
<i>SIZE</i>	-0.016 (-3.28)***	0.001 (0.13)	0.006 (1.44)	0.001 (0.03)
<i>MB</i>	0.007 (1.15)	0.002 (2.51)**	-0.001 (-0.77)	0.001 (1.21)
<i>ROA</i>	-0.202 (-1.57)	0.010 (0.18)	-0.011 (-0.54)	-0.083 (-1.56)
<i>Adjusted R²</i>	0.059	0.022	0.016	0.005
<i>N</i>	1751	8423	1257	4418

Table 5

The effect of corporate transparency on insider trading gains. This table reports the results from the estimation of equation (2). Our sample firms are classified into two groups based on a transparency index. The transparency index uses the following four variables: *AnalystFollowing*, *ForecastError*, *Bid-ask Spread*, and *Tradevolume*. Where *AnalystFollowing* is the number of analysts providing EPS estimates 9 months prior to the end of the fiscal year-end. *ForecastError* is defined as absolute value of difference between the mean analysts' earnings forecast (9 months prior) and the actual firm earnings scaled by the beginning of the year price. *Bid-ask Spread* is calculated as ask price minus bid price divided by the average of bid and ask price. Bid-ask spreads are computed by averaging all trades for each firm from the third Wednesday of each month and then average across these 12 observations. *Tradevolume* is the firm's average daily trading volume. We rank our sample firms into ten deciles based on *AnalystFollowing*, *ForecastError*, *Bid-ask Spread* and *Tradevolume* with the most transparent firms taking a value of 10 and the least transparent firms taking a value of 1. The four ranks are then summed and divided by 40 to get a transparency index that ranges from 0.1 to 1, and the sample median of this transparency index is used to determine each individual firm in our sample as being transparent and opaque. A company is considered as transparent if its transparency value is above the median of the sample distribution, otherwise it is classified as an opaque firm. We then estimate equation (2) separately for the transparent and opaque groups. The dependent variable, $CAR_{transaction\ to\ filing}$, is the cumulative abnormal returns from the transaction date to one day before the transaction's filing date with SEC. We use traditional market model to compute the abnormal stock returns. *FAMILYFIRM* is a dummy variable equals to one if the company is a family firm, and zero otherwise. *SIZE* the natural log of the firm's total assets. *MB* is firm-specific market-to-book ratio. *ROA* is earnings before extraordinary item divided by lagged total assets. The *t*-statistics are based on the Huber-White sandwich estimate of variances and are adjusted by clustering by firm and calendar month. *** indicates significance at the 0.01 level, ** indicates significance at 0.05 level, and * indicates significance at the 0.10 level.

	Transparent firms		Opaque firms	
	(1) <i>Insider purchases</i>	(2) <i>Insider sales</i>	(3) <i>Insider purchases</i>	(4) <i>Insider sales</i>
<i>Intercept</i>	0.017 (4.57)***	-0.084 (-4.13)***	0.036 (3.35)***	-0.058 (-2.59)**
<i>FOUNDER</i>	0.010 (0.53)	-0.010 (-1.37)	0.042 (2.31)**	-0.016 (-1.81)*
<i>DESCEDENT</i>	0.002 (0.56)	0.017 (1.47)	0.015 (0.72)	-0.033 (-2.89)***
<i>HIRED</i>	-0.033 (-2.71)***	0.019 (2.24)**	-0.022 (-1.31)	0.025 (0.35)
<i>SIZE</i>	-0.014 (-3.48)***	0.007 (2.88)***	-0.013 (-1.93)*	0.004 (1.41)
<i>MB</i>	-0.001 (-0.67)	0.002 (2.31)	-0.002 (-0.57)	0.004 (2.52)**
<i>ROA</i>	-0.121 (-0.83)	-0.023 (-0.23)	-0.174 (-3.48)***	0.061 (1.13)
<i>Adjusted R²</i>	0.026	0.048	0.019	0.028
<i>N</i>	783	5411	1123	5520

Table 6

The effect of corporate governance on insider trading gains. Our sample firms are classified into two groups based on the percentage of institutional investors. If a firm's institutional ownership is higher than sample median then the company is considered as having high institutional ownership, otherwise it is considered as having low institutional ownership. The dependent variable, $CAR_{transaction\ to\ filing}$, is the cumulative abnormal returns from the transaction date to one day before the transaction's filing date with SEC. We use traditional market model to compute the abnormal stock returns. $FAMILYFIRM$ is a dummy variable equals to one if the company is a family firm, and zero otherwise. $SIZE$ the natural log of the firm's total assets. MB is firm-specific market-to-book ratio. ROA is earnings before extraordinary item divided by lagged total assets. Panel B reports the likelihood of firm-level insider trading restrictions. The t -statistics are based on the Huber-White sandwich estimate of variances and are adjusted by clustering by firm and calendar month. *** indicates significance at the 0.01 level, ** indicates significance at 0.05 level, and * indicates significance at the 0.10 level.

	Firms with high institutional ownership		Firms with low institutional ownership	
	(1) <i>Insider purchases</i>	(2) <i>Insider sales</i>	(3) <i>Insider purchases</i>	(4) <i>Insider sales</i>
<i>Intercept</i>	0.087 (3.41)***	0.012 (0.67)	0.088 (2.61)**	-0.058 (-2.67)***
<i>FOUNDER</i>	-0.012 (-0.43)	-0.004 (-0.54)	0.041 (1.98)**	-0.036 (-3.22)***
<i>DESCEDENT</i>	0.032 (1.36)	-0.007 (-1.06)	0.020 (0.75)	-0.010 (-1.43)
<i>HIRED</i>	-0.041 (-3.81)***	0.020 (2.67)***	-0.013 (-0.76)	-0.007 (-0.23)
<i>SIZE</i>	-0.009 (-1.53)	-0.005 (-2.37)**	-0.008 (-1.78)*	0.004 (1.91)*
<i>MB</i>	-0.004 (-1.53)	0.003 (2.78)***	0.003 (1.25)	0.002 (1.80)*
<i>ROA</i>	-0.351 (-1.95)*	-0.151 (-2.54)**	-0.114 (-0.90)	0.024 (0.36)
<i>Adjusted R²</i>	0.079	0.024	0.035	0.032
<i>N</i>	1298	6208	2101	6790

Table 7

The existence of insider trading restrictions. Panel A reports the fraction of CEO's stock trades that occurred before or after firm's earnings and Panel B reports the existence of insider trading restrictions. *FOUNDER* is a dummy variable that equals one if the family firm's CEO is its founder, and zero otherwise. *DESCENDENT* is a dummy variable that equals one if the family firm's CEO is the descendent of its founder, and zero otherwise. *HIRED* is a dummy variable that equals one if the family firm's CEO is not related to the firm's founding family, and zero otherwise. *SIZE* the natural log of the firm's total assets. *MB* is firm-specific market-to-book ratio. *ROA* is earnings before extraordinary item divided by lagged total assets. Panel B reports the likelihood of firm-level insider trading restrictions. *RESTRICT* is a dummy variable if the firm has insider trading restrictions. A firm is considered as having insider trading restrictions if 75% of its insider trades happened within 20 trading days following an earnings announcement. *INSTITUTION* is the percentage of institutional ownership. *INS_TRADE* is ratio of total insider trading over the sample period to total shares outstanding. *TRANSPARENCY* is a dummy variable equals to one if the company is classified as being transparent, and zero otherwise (detailed discussion of the construction of transparency index is provided in Table 5). The *t*-statistics are based on the Huber-White sandwich estimate of variances and are adjusted by clustering by firm and calendar month. The z-statistics in Panel B are based on the Huber-White sandwich estimate of variances and are adjusted by clustering by firm and calendar year. *** indicates significance at the 0.01 level, ** indicates significance at 0.05 level, and * indicates significance at the 0.10 level.

Panel A: Fraction of CEO's stock trades happened before or after quarterly announcements

	Percentage of CEO's stock trades that happened within 10 trading before quarterly earnings announcements			
	(1) Founder CEO	(2) Descendent CEO	(3) Hired CEO	(4) Non-family firms
<i>Insider purchases</i>	7.91%**	8.37%**	3.25%	4.10%
<i>Insider sales</i>	6.41%***	6.81%***	4.31%	4.20%
	Percentage of CEO's stock trades that happened within 10 trading after quarterly earnings announcements			
<i>Insider purchases</i>	48.28%***	59.03%	64.50%	62.95%
<i>Insider sales</i>	56.24%	51.49%***	58.24%*	56.16%

Panel B: The likelihood of firm-level insider trading restrictions

	Depen. Var = <i>RESTRICT</i>	Marginal probability
<i>FOUNDER</i>	-0.321 (-18.00)***	-0.10
<i>DESCEDENT</i>	-0.061 (-0.30)	-0.02
<i>HIRED</i>	0.133 (3.46)*	0.04
<i>SIZE</i>	0.014 (0.55)	0.04
<i>MB</i>	0.018 (3.56)*	0.01
<i>ROA</i>	0.566 (3.22)*	0.18
<i>INSTITUTION</i>	0.004 (0.55)	0.00
<i>INS_TRADE</i>	0.001 (0.38)	0.00
<i>TRANSAPRENCY</i>	-0.049 (0.573)	-0.02
<i>VOLATILITY</i>	0.023 (1.55)	0.00
<i>Industry dummy</i>	<i>Yes</i>	
<i>Year Dummy</i>	<i>Yes</i>	
<i>Pseudo-R²</i>	0.174	
<i>N</i>	6843	

Table 8

The effect of insider trading restrictions on insider trading gains. Our sample firms are classified into two groups based on if the firm has insider trading restrictions. A firm is considered as having insider trading restrictions if 75% of its insider trades happened within 20 trading days following a quarterly earnings announcement. The dependent variable, $CAR_{transaction\ to\ filing}$, is the cumulative abnormal returns from the transaction date to one day before the transaction's filing date with SEC. We use traditional market model to compute the abnormal stock returns. $FAMILYFIRM$ is a dummy variable equals to one if the company is a family firm, and zero otherwise. $SIZE$ the natural log of the firm's total assets. MB is firm-specific market-to-book ratio. ROA is earnings before extraordinary item divided by lagged total assets. Panel B reports the likelihood of firm-level insider trading restrictions. The t -statistics are based on the Huber-White sandwich estimate of variances and are adjusted by clustering by firm and calendar month. *** indicates significance at the 0.01 level, ** indicates significance at 0.05 level, and * indicates significance at the 0.10 level.

	Firms with insider trading restrictions		Firms without insider trading restrictions	
	(1) <i>Insider purchases</i>	(2) <i>Insider sales</i>	(3) <i>Insider purchases</i>	(4) <i>Insider sales</i>
<i>Intercept</i>	0.124 (3.73)***	-0.032 (-1.06)	0.084 (2.29)**	-0.061 (-3.89)***
<i>FOUNDER</i>	-0.010 (-0.28)	-0.013 (-1.17)	0.044 (1.83)*	-0.026 (-3.13)***
<i>DESCEDENT</i>	0.014 (0.35)	0.006 (0.54)	-0.003 (-0.13)	-0.022 (-1.83)*
<i>HIRED</i>	-0.053 (-2.97)***	0.008 (0.61)	-0.037 (-2.16)**	0.001 (0.14)
<i>SIZE</i>	-0.013 (-1.58)	0.001 (0.09)	-0.008 (-1.44)	0.004 (2.34)**
<i>MB</i>	-0.001 (-0.15)	0.001 (0.93)	0.014 (1.84)*	0.003 (2.81)***
<i>ROA</i>	-0.388 (-2.97)***	-0.004 (-1.06)	-0.089 (-0.47)	0.027 (0.19)
<i>Adjusted R²</i>	0.110	0.009	0.061	0.029
<i>N</i>	1355	5436	2521	7794