ABSTRACT

This study investigates the profitability of insider trading around the time when investment bankers appoint their representatives to the board of directors. If Chinese Walls at security firms are somewhat porous, then the presence of investment bankers on a board will increase the information efficiency of the clients’ stocks and reduce the profitability of insider trading. Consistent with expectations, appointment of investment bankers to the board of directors eliminates the profitability of insider trading and reduces both the bid-ask spreads and volatility. These effects are temporary and are reversed when the representatives depart. The finding that Chinese Walls are porous has a number of important economic, legal, and regulatory implications.

I. INTRODUCTION

This study comprises an indirect test of the effectiveness of Chinese Walls, defined as “policies and procedures that are designed to stop the passage of information, especially price-sensitive information, operating between departments within a firm or a financial group.” The concept of
Chinese Walls has gained importance both as a prophylactic against illegal activity and as a legal defense against insider trading and potential conflicts of interest in securities firms. Recent relaxation of the Glass-Steagall Act restrictions has allowed commercial and investment banks, insurance companies, and securities firms to engage in multi-service activities provided that these activities are separated by a Chinese Wall. More recently, the 2003 Global Settlement between the Securities and Exchange Commission, National Association of Securities Dealers, and the New York Attorney General arising from biased analysts’ research also calls for strengthened Chinese Walls in securities firms. This regulatory approach raises the natural question of whether the Chinese Walls in securities firms are effective.


Section 15(b)(4)(E) of the Securities and Exchange Act provides that a broker-dealer may avoid liability for failing to supervise a violator if it has a system to detect and prevent such violations.

Potential conflicts of interest as a result of the relaxation of the Glass-Steagall Act have also been studied extensively. Kroszner and Rajan (1994) examine the default experience of bond issues by commercial banks and investment banks from the pre-Glass-Steagall era (Kroszner and Rajan 1994). They find that commercial bank-issued bonds performed subsequently better than investment bank issues, an outcome inconsistent with the conflict of interest motivation. Similarly, commercial bank issues were sold at a higher price than the investment bank issues which is, again, inconsistent with a conflict of interest motivation (Puri 1996; Gand de et al. 1997). More recent studies, from sources outside of the U.S., have provided some additional evidence of conflicts of interest. Lehar and Randl (2006) have found some evidence of conflicts of interest for analysts in German banks through the suppression of negative information when the market is too optimistic (Lehar and Randl 2006). Gompers and Lerner (1999), Hamao and Yoshi (2000), and Klein and Zoeller (2003) find some evidence of conflicts of interest in markets ranging from venture capital to Japanese bond markets to German IPOs.

The Global Research Analyst Settlement imposed after-tax penalties of $1.4 billion on ten of the most prominent financial institutions and called for the ten securities firms involved to institute policies to reduce potential conflicts of interests and to “physically separate their research and investment banking departments to prevent the flow of information between the groups.” A second provision called for securities firms to create and enforce firewalls restricting interaction between investment banking and research. The settling firms were Bear Stearns, CSFB, Goldman Sachs, Lehman, JP Morgan, Merrill Lynch, Morgan Stanley, Citigroup-SSB, UBS, and Piper Jaffray. In 2004, Deutsche Bank and Thomas Weisel Partners as well as two individuals, Jack Grubman and Henry Blodget, joined the settlement agreement. Recent studies by O’Brien, McNichols and Lin (2005), Bradshaw, Richardson, and Sloan (2006), Chan, Karceski and Lakonishok (2006), and James and Karceski (2006) find evidence of conflicts of interest for sell-side analysts.
then much of the material, nonpublic financial information gathered by its board representative will also find its way into other departments of the securities firm, including the research desk, proprietary and retail trading desks, and market-making operations. An interesting test of the Chinese Walls at multi-service securities firms can be performed by examining the changes in the profitability of insider trading before, during, and after the board appointments of the securities firms’ representatives.5

If Chinese Walls are somewhat porous and material, the dissemination of nonpublic information, exchanged between the board representative and other divisions of the securities firms, should result in increased information efficiency for the pricing of a client’s stock. As more information about the client firm is incorporated into its stock price through research reports, buy-sell recommendations, or direct trading, I expect stock prices of the client firms to move closer to their full-information values. As stock prices become more efficient, I would expect the profitability of insider trading within the client firms to be either reduced or eliminated. Reduction in informational asymmetries should also reduce the bid-ask spreads and stock price volatilities by reducing the adverse-selection component in the bid-ask spreads immediately following the arrival of the securities firm’s representatives. Finally, I would also expect these effects to be temporary and to reverse when the representatives of the investment banks leave the boards, thus eliminating the information exchange between the client firm and securities firm.

The evidence provided in this study suggests that the Chinese Walls are porous and ineffective, and material, nonpublic information about the client firm is allowed to pass between departments of the securities firms. I find that the arrival of the representative of the securities firms on the board of directors completely eliminates the ability of the other insiders to trade profitably. I also find that the presence of representatives of the securities firm on the board of directors of the client firm reduces both the bid-ask spread and volatility of client-firms’ stock price. Furthermore, I find that these changes are temporary and that they are reversed upon the departure of the securities firms’ representatives. Following the departure of the securities firms’ representatives, insiders’ profits increase to previous levels, bid-ask spreads widen, and volatility of the stock returns increases.

The finding that Chinese Walls at securities firms are porous has important implications for the clients of the securities firms. It is important for the clients to request and receive price, trading volume, and change of status information from the securities firms to be able to monitor and ensure

5 Kroszner and Strahan (2001) examine incentives of commercial bankers to sit on clients’ boards and analyze corporate governance issues as well as the trade-off between monitoring and potential conflicts of interest. They find that the likelihood that a firm has a commercial banker on its board first increases then decreases with volatility, consistent with the notion that monitoring dominates at low levels of risk and potential conflicts of interest dominates at high levels of risk.
that the securities firms are not profiting at the client’s expense. The nature
of this information is outlined in the conclusions and implications section.
Otherwise, leakage of information across the various departments of the
securities firms may not be in the best interest of the client firms.6

There are numerous other important implications of this study. First,
the approach followed here can be used to test the effectiveness of Chinese
Walls in any securities firm. This approach can be used by litigants, or by
shareholders and executives of the client firms, to determine the extent to
which nonpublic information about the client firm is disseminated and in-
corporated into the stock prices. Second, my evidence suggests that porous
Chinese Walls can lead to greater informational efficiencies: increased dis-
semination of corporate information reduces insiders’ profits, bid-ask
spreads, and volatility. These informational efficiencies can increase the
stock prices. Finally, this study also suggests that the interests of corporate
insiders and market professionals are often opposed to each other. While
both corporate insiders and market professionals in securities firms wish to
trade on nonpublic information, market professionals in securities are able
to utilize this information more fully, leading to greater information effi-
cienies. Consequently, greater trading opportunities for the market profes-
sionals in securities firms correspond to reduced profits for corporate insid-
ers. Therefore, I would expect various regulatory policies that impede in-
sider trading to benefit market professionals and vice-versa.

The remainder of the paper is organized as follows: Section II dis-
cusses the relation between securities firms’ representatives and the client
firms; Section III describes testable hypotheses; Section IV describes the
data and the sample characteristics; and Section V presents the empirical
results. Conclusions and implications are in Section VI. Appendix 1 pro-
vides a discussion of Chinese Walls and Appendix 2 gives the details of the
computation of event study methodology.

6 The Australian Securities and Investments Commission (ASIC) recently accused Citigroup of
insider trading and of breaching its Chinese Walls, after Citigroup purchased $5 million of Patrick
Corporation shares for its proprietary trading account on August 19, 2005 while advising its client Toll
Holdings of its Patrick takeover attempt. The Citigroup purchase pushed up the stock price of Patrick
by 13%. On August 22, Toll Holdings announced its own takeover attempt of Patrick. See New York
Times, Citigroup sued by market regulator in Australia, April 1, 2006. Also, in 2005, brokers at Merrill
Lynch, Lehman Brothers, and Citigroup were criminally charged with giving access to block trading
information that allowed the traders at A. B. Watley and Millennium Brokerage to front-run their own
customers. Brokers did this by calling up the traders in the morning and then leaving their telephones
open next to the internal telecoms, or “squawk boxes,” that allowed the traders to listen to the incoming
II. SECURITIES FIRM REPRESENTATIVES AND INFORMATIONAL ASYMMETRIES

Securities firms typically become “insiders” in a client firm when an underwriter unit of a securities firm brings an initial public offering (or a reverse leveraged buy-out) to the market. Often, underwriters are compensated by warrants. Underwriters also retain some portion of the initial stock offering. If underwriters retain more than ten percent of equity or any equity-like security (warrants, convertible bonds), they are legally classified as insiders and are subject to insider trading regulations, including reporting requirements. In addition to the market-making relation, the underwriters’ advisory relation as well as their substantial equity interest in the firm, provides them with inside representation in the client firm.

This study identifies the representatives of the securities firms who make a market in firms’ stock and at the same time serve as directors or officers in the client firms. Representatives of securities firms identify themselves as market makers, in addition to their officer or director relations within the client firms, using a special code under the “nature of ownership” field when they file initial or periodic insider ownership reports to the Securities and Exchange Commission. In some securities firms, there is more than one inside representative in a given client firm.

There are a number of ways (not mutually exclusive) in which confidential information possessed by the securities firm would reduce the informational advantage of the client firm insiders. Assuming that the Chinese Walls between departments of the securities firms are somewhat porous, the securities firm can use the representative-insiders’ information for its proprietary or retail trading accounts. This trading of clients’ stocks should be profitable for the securities firm and it should also lead to some price adjustment and erode the information advantage of the unaffiliated insiders of the client firm. As the securities firm trades to a greater extent either for its own benefit, or for its clients’ benefit, greater price adjustment would occur. Alternatively, the securities firm could pass this information to its favored clients using buy-sell recommendations, target price guidance, or earning forecasts. These favored clients (hedge funds or mutual funds) should return the favor by directing a greater fraction of their executions through the securities firm and, at the same time, be willing to pay above-market fees for these services. Once again, securities firm benefits and client-insiders’ informational advantage is eroded. If insiders’ information about the client firm is passed to the securities firm’s market-making unit, then the market-maker could simply change his or her quoted prices for the client firm’s stock and make changes in its inventory holdings. All of these actions would result in incorporating material nonpublic information, formerly available only to the board of directors, into stock prices, thereby reducing client-insiders’ informational advantages.
Once the securities firm has taken positions based on the newly acquired information, the firm no longer has any interest in keeping this information confidential. In fact, the securities firm will want to disseminate this information as widely as possible, and if necessary, give the information away for free. The widest possible dissemination of the original inside information allows the securities firm to capitalize on its earlier trading positions. If the securities firm traded based on the information, revelation and dissemination of the information will produce profits for these trades. If the securities firm issued research reports, dissemination of the information will allow the security firm’s other clients to profit based on their trading activity. With the widest possible dissemination of the original material, nonpublic information will in turn further reduce and may completely eliminate the client-insiders’ informational advantages.

III. TESTABLE HYPOTHESES ABOUT INFORMATIONAL EFFICIENCIES

In this paper, I test the following hypotheses:

**Porous Chinese Walls Hypothesis**: If Chinese Walls are porous, then closer cooperation between multi-service securities firms and the client firms improves informational efficiencies of the client firms’ stock prices and reduces profitability of insider trading.7

**Effective Chinese Walls Hypothesis**: If Chinese Walls are effective, then closer cooperation between multi-service securities firms and the client firms does not affect informational efficiencies.

If Chinese Walls at the securities firms are somewhat porous, and the security firms are not worried about exploiting their newly found access to material, nonpublic information, then greater dissemination and exploitation of the corporate information will improve informational efficiencies. Conversely, if the Chinese Walls are nonporous, or the security firms are worried about exploiting their newly found access to information, or there is no material, nonpublic information flow, then informational efficiencies should not be affected.

Under the Porous Chinese Walls Hypothesis, the informational advantage of the unaffiliated officers of the client firm is reduced and eventually completely eliminated by increasing the information efficiency of the cli-

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7 Directly testing for the effectiveness of the Chinese Walls in securities firms is difficult and requires access to nonpublic information. Kolasinski (2006) provides another indirect test and finds that Chinese Walls have not been raised after the Global Settlement.
ent’s stock price. In this case, the profitability of insider trading in firms with securities firm representatives should be less than a matching cross-section of firms without such representatives. Also, the arrival of the inside representatives should result in a decline in the profitability of the insider trading and the subsequent departure of the representatives should result in an increase in the profitability of the insider trading close to the original profitability levels. In the very extreme, if the Chinese Walls are totally porous and all special information known by the insiders is passed to the securities firms and then to the investing public at large, the unaffiliated insiders of the client firm should not be able to trade profitably at all based on their “not-so-confidential-anymore” information. Hence, the degree to which profitability of insiders’ information decreases is directly correlated with increases in informational efficiencies. Consequently, changes in the informational asymmetries enjoyed by insiders before, during, and after the arrival of the representatives of the securities firms can provide a critical test of the informational leakage across the Chinese Walls.

Under the Effective Chinese Walls Hypothesis, the board representatives of the securities firms will not convey any information back to the securities firm, and thus the unaffiliated corporate officers of the client firms should continue to enjoy informational advantages and earn profits as before. Moreover, the profitability of client-firm-insiders should be no different than the profitability of corporate insider trading without securities firm representatives. Also, in a time-series sense, the profitability of the insiders should not diminish upon the arrival of the securities firms’ representatives nor should it increase after the representatives of the securities firms leave the client firm.

My second test of the informational asymmetries involves examining the bid-ask spread and volatility of client firms’ stock prices before, during and after the representatives of the securities firms are appointed to the client firms. “Bid” represents the low price at which the market-maker is willing to buy the stock, and “ask” represents the high price at which the market-maker is willing to sell the stock. Thus, the bid-ask spread represents the compensation to the market-maker for providing immediate execution services. Since market-makers typically lose to informed traders and make profits from liquidity traders, the bid-ask spread is set higher to offset market-makers’ losses to the informed traders. Holding all else constant, when there are greater informational asymmetries, the bid-ask spread has to be

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8 Section 16(a) of the Securities and Exchange Act defines insiders as officers, directors, and holders of more than ten percent of any equity class of securities (15 U.S.C. § 78p(a)(1) (2006)). Section 16(a) also requires that insiders report all transactions to the Securities and Exchange Commission, or the exchange where the transaction took place, no more than ten days after the end of the month of the transaction. To determine whether the insiders are informed, this study examines the profitability of trading by other corporate insiders similar to Jaffe (1974), Finnerty (1976), and Seyhun (1986, 1998) show that insiders typically earn about 3% abnormal profit over a year following their transactions.
even greater (called the adverse selection component). When information asymmetries are reduced, the adverse selection component of the bid-ask spread should also decline, thereby reducing total bid-ask spreads.

To test whether Chinese Walls are porous, and thus whether the presence of securities firms' representatives improves informational efficiencies, I also examine changes in the bid-ask spreads and volatility of stock returns. If informational efficiencies are improved, then both the bid-ask spread and volatility of stock returns should decline upon the arrival of the representatives. Similarly, departure of the securities firms' representatives should result in an increase in the bid-ask spread and volatility of stock returns. If the Chinese Walls are effective and the presence of the securities firms' representatives does not affect informational asymmetries, then I expect no change in the bid-ask spreads or the volatility, either when the representative arrives or when the representative departs.

IV. DATA AND SAMPLE CHARACTERISTICS

The insider trading data used in this study comes from the United States National Archives. The data includes all insider transactions in all publicly listed firms between January 1975 and December 2005. Unfortunately, the most recent data provider, Thomson Financial, does not include the code that is used to identify the market-makers after 2000. Consequently, the market-maker code is only available between 1975 and 2000. Data on stock prices, stock returns, trading volumes, outstanding shares, and bid-ask spreads were obtained from the files of the Center of Research on Security Prices at the University of Chicago (CRSP). The bid-ask spread data was collected from the transactions database provided by the Institute for the Study of Security Markets (ISSM) and Trade and Quote (TAQ) database made available by the New York Stock Exchange and supplemented by the CRSP tapes.

For a firm to be included in the sample, it must have at least one valid open market sale or purchase by an insider. This restriction is necessary to ensure that the firm is complying with the insider trading reporting requirements of Section 16(a) of the Securities and Exchange Act of 1934. In addition, a certain amount of return data must be available for estimating abnormal returns.

This study examines insiders' open market sales and purchases. All other transactions, such as private transactions, exercises of options, stock splits, and redemptions are less likely to be associated with special information. These transactions are excluded. All duplicate transactions, amended

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transactions, and inconsistent transactions have been eliminated. The data
set includes the firm’s Committee on Uniform Securities Identification Pro-
cedures (CUSIP) number, the insider’s relationship to the firm, the number
of shares transacted, the nature of the ownership, the nature of transaction,
the stock price, the date the transaction was reported to the SEC, and the
publication date of the transaction.

Table 1 shows the distribution and identity of the representatives of the
securities firms. Using the insider-trading database, 550 representatives of
the securities firms are identified in 509 client firms. Table 1 also shows
the relation between the representatives and the client firms. By far, the
most common title for representatives of the securities firms is outside di-
rector. Of the 550 representatives, 418 are outside directors. Hence, these
representatives are present when important policy discussions are taking
place at the client firm. The remaining designations include officers (22
representatives), large shareholders (76 representatives), and trustees and
other (34 representatives).

Client firm sizes cover a broad spectrum, although most
representatives are in very small firms (201 representatives in 188 firms
with average market capitalization less than $25 million). Number of
representatives generally falls with rise in firm size. As the average firm
size increases from $25 million to over $1 billion, the number of
representatives of the securities firms declines to 143, 125, 31, and 50,
respectively.

An interesting issue that arises with the presence of the securities firm
representative-directors is whether the unaffiliated insiders of the client
firms become reluctant to engage in insider trading. This reluctance can be
imposed by securities firms or voluntarily adopted by insiders themselves.
In some special cases, securities firms typically do restrict insider trading
immediately after an IPO, through lock-up agreements. These agreements
restrict the insiders’ ability to sell stock, typically for a period of nine to
twelve months, though the insiders are allowed to buy stock during this
period. Alternatively, the officers of the client firms may curtail their
insider trading activity voluntarily because of the signal such trading sends
to investors. This reasoning suggests that both the volume and the
information content of insider trading will decline after the representatives
of the securities firms join the board. To address this issue, I begin by
examining both the level of investment banking activity and the volume of
insider trading activity before, during, and after the presence of the
securities firm representatives.

The trading activity of the investment banks is examined in Table 2.
The activity is measured in terms of number of initial public offerings as
well as seasoned equity offering, and the average dollar volume of the
proceedings before, during, and after the presence of the securities firm
representatives. The exact date of the representatives’ arrival is determined
from the insider trading reports. Those considered insiders under Section
16(a) of the Securities and Exchange Act of 1934 must file a Form 3 report with the SEC, as well as the exchange where the stock is listed, as soon as they become insiders. This report must indicate the date, the name of their company, their name, their relation to the firm, and any shares held. Thereafter, insiders are required to file Forms 4 and 5 whenever they acquire or dispose of any shares in their firms. These can be voluntary transactions such as open market purchases and sales of stock, or involuntary ones such as granting of options, redemption of securities by the firm, and any distributions by the firm. Each insider trading field also contains a code indicating whether these reports came from Form 3, 4, or 5. I use the first filing of Form 3 by any representative of the securities firm to mark the arrival of the representatives.

While insiders must file Form 3 when they arrive and while they are still considered insiders, they do not have to file special reports when they cease to be insiders. To estimate insiders’ departure dates, I use the last insider trading report utilizing Forms 4 or 5. I consider the representatives of the securities firm to still be on the board as long as any representative files insider trading reports. For some of the client firms, insider trading reports by their representatives stop at some point. Since Form 5 must be filed once a year, I consider the representatives to be on board for one year after the last insider trading report was filed. These reports must be filed within forty-five days of the end of the fiscal year to reconcile any discrepancies, report any sales by insiders back to the issuer that are approved by the board of directors, and report any small transactions (currently under $10,000), distributions, or redemptions that are exempt from Form 4 filing. Hence, the last filing of Form 5 indicates that the insider is no longer affiliated with the firm. After this date, I consider any representation by the securities firm to have ended. To be included in the “during” sample below, non-affiliated insiders of the client firms must have traded after the arrival date and before the estimated departure date of the representatives of the securities firms.

While the arrival date of the representatives is accurately reported, the departure date of the representatives is an estimate. If the representatives depart the day after they file Form 5 for the last time, with my assumption that the representatives are present one year after the last Form 5 filing, I will incorrectly assume that they are with the client firm for one more year than they actually are. Under the hypothesis of porous Chinese Walls, profitability of insider trading should be high both before and after the appointment of representatives to the board and low while the representatives are on the board. Under the hypothesis of effective Chinese Walls, this estimation error will not matter since no change in profitability

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10 Not filing a Form 5, even though the insider is still affiliated with the firm, would be a violation of the Section 16(a) of the Securities and Exchange Act of 1934. My results do not change when I consider the departure date to be the date of the last filing of Form 5, instead of a year later.
is expected. Hence, if the representatives’ departure date is incorrectly estimated, it will be difficult to distinguish between the profitability during and after the representatives’ presence, which will work against the rejection of the effective Chinese Walls hypothesis.

Overall, the evidence in Table 2 does not suggest anything unusual in terms of investment banking activity when the board representation includes securities firms’ employees. By and large, the period when the securities firms’ representatives are present on the board of directors does not correspond to the period of most intensive investment banking activity. Of the 113 initial public offerings, only one occurred during the period when the representatives of the securities firms were present on the board of directors. Both the number of deals as well as the average dollar volume of proceeds are highest for the period after the departure of the securities firms representatives.

To determine if there are other confounding events when the representatives of the securities firms are present, I also examine option exchange listing activity before, during, and after the presence of the securities firms’ representatives. Only 57 of the 509 client firms, 11% of the total, are listed on an options exchange during my sample period. Of these, 19 listings took place before the arrival of the representatives, 5 listings occurred while the representatives were present, and 33 listings occurred after the representatives departed (Table 2). Hence, the period when the representatives of the securities firms are present inside the client firm is not characterized by an unusually high level of options exchange listing activity.

I next examine the changes in insider trading activity before, during, and after the arrival of the representatives of the securities firms (Table 3). My overall sample contains 17,412 transactions before the arrival of the representatives. During the period when the representatives are on the board of the client firms, insiders trade 17,251 times. After the departure of the representatives of the securities firms, insiders trade 41,528 times. Hence, the overall sample contains 76,191 transactions by insiders in firms that are clients of the securities firms.

Table 3 shows that insiders in client firms are typically buyers in small firms and sellers in large firms.\footnote{For similar patterns in all publicly listed firms, see Seyhun (1986).} This pattern generally holds before, during, and after representation by the securities firms. Hence, on average, insiders in small firms remain buyers of stock before, during, and after the arrival of the representatives. Similarly, insiders in large firms, on average, remain sellers of stock before, during, and after the arrival of the representatives. The fact that insider-trading directions are not affected by the presence of representatives of the securities firms suggests that insiders’
perception of over or under-valuation of the firm does not change as a result of the affiliation with a securities firm.

Table 3 also shows that the frequency of insider trading during the representation period is in fact substantially higher than before or after the arrival of the representatives. The arrival of the representatives of the securities firms on the board of directors, then, appears to encourage rather than discourage insider trading. In small firms, insider trading frequency increases almost three- to four-fold compared to the period prior to the representatives’ arrival. Insider trading frequency also increases in large firms, but to a lesser degree. The insider trading activity reverts to its initial patterns after the representatives leave. Table 3 also shows that increases in insider trading activity are present on insiders’ purchases as well as insiders’ sales. Both sales as well as purchases increase three or four-fold. Overall, there is no evidence of a decline in insider trading when representatives are present.

The changes in the intensity of insider trading patterns before, during, and after the arrival of the representatives of the securities firms are examined more formally in Table 4, along with statistical significance analysis. My evidence shows that insiders with securities firm representatives tend to trade more than those without securities firm representatives. The differences are statistically significant in smaller firms. Table 4 also shows that the increase in insider trading activity is especially pronounced at the time the representatives are on the board. Insider trading activity increases when the representatives of the securities firm join the firm and declines back to original levels when the representatives leave. Overall, I find no evidence that the presence of securities firm representatives discourages insider trading in client firms.

V. INFORMATIONAL ADVANTAGES OF CLIENT-FIRM INSIDERS

A. Profitability of Insider Trading in Client Firms Prior to Arrival of Securities Firm Representatives

The group of tests presented in this section attempts to determine if the insiders of the client firm enjoy any informational advantages before, during, and after the arrival of the representatives of the securities firms. If insiders are able to trade profitably and no changes occur in the informational advantages of insiders before, during, and after the arrival of the representatives, then clearly, no information leakages have occurred as a result of their arrival and the Chinese Walls are effective. In contrast, if client firms’ insiders traded profitably before the arrival of the representatives, and less profitably after the arrival of the securities firm representatives, then my evidence would suggest that the Chinese Walls are ineffective.
I begin by examining the pre-arrival profitability of insider trading in client firms. Profitability of insider trading is computed four different ways: (1) equally-weighted market-adjusted returns, (2) share-weighted market-adjusted returns, (3) equally-weighted holding period abnormal returns, and (4) share-weighted holding period abnormal returns. By computing insiders’ performance through a variety of approaches, I hope to ensure that my findings are sufficiently general.

Insiders’ abnormal profits are estimated using a standard event study method, which is explained in Appendix 2. Month zero refers to the insider-trading month. Standard errors of abnormal profits and cumulative abnormal profits are estimated from the time-series variation in abnormal profits over a 72-month window, from 35 months before to 36 months after the insider trading month, after taking into account any serial correlation of abnormal profits. Hence, the t-statistics assume neither cross-sectional independence nor time-series independence. The standard error of the differences in insiders’ abnormal profits in client firms versus non-client firms are computed in the same way, for the same 72-month window around the insider trading month. The significance of the holding period abnormal returns is measured by a bootstrapping approach. An empirical distribution of holding period abnormal returns is generated around randomly selected dates, one thousand times. The significance of the holding period abnormal return for insiders is then determined by comparing insider profit with its empirical distribution.

Corporate insiders’ abnormal profits are computed by taking equally-weighted averages of all trades as well as weighting the abnormal profit from each trade by the number of shares traded. For share-weighted results, insiders’ abnormal profits are weighted by the number of shares bought and sold within each firm and then equally weighted across firms. This procedure gives proportionately greater weight to higher volume transactions and ensures that each firm gets the same weight in the overall averages.

The evidence in Table 5 indicates that insiders in client firms trade profitably before the arrival of the representatives of the securities firms. Their equally-weighted abnormal profit averages 1.26% after one month, rising to 4.96% after twelve months. Both figures are significant at the 1% level. I then compare the profitability of insider trading in client firms before the representatives’ arrival with a sample of control firms matched in size and prior stock price momentum. There is no difference in the abnormal profits of these two groups. In control firms, insiders’ profit after one month averages 0.93%, rising to 4.32% after twelve months. The differences between the profitability of insiders’ trading in client firms and in control firms are not statistically significant.

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12 To review the event study methodologies using monthly and daily returns, see Brown and Warner (1980, 1985).
The remainder of Table 5 repeats the same analysis using the other three measures of insiders’ profitability. Both the qualitative and the quantitative conclusions remain similar. Insiders in client firms earn profits before the arrival of the representatives of the securities firms. Moreover, the profitability of insider trading in client firms is no different than the profitability of insider trading in other, similar firms. My evidence so far suggests that there is nothing unusual about insider trading in firms where the securities firms have appointed directors.

B. Profitability of Insider Trading when Securities Firm Representatives are on Board

I now examine the profitability of insider trading in client firms during the time when the representatives of the securities firms are present on the board of directors. I also compare the profitability of insiders’ trades in client firms with a sample of matching control firms, where the securities firms do not have any representatives on the board. These tests are to determine whether insiders maintain their informational advantages after the securities firm representatives’ arrival.

The evidence in Table 6 shows that insiders are no longer able to trade profitably when representatives of the securities firms are present. Insiders’ abnormal profit now ranges from 0.18% after one month to 1.11% after twelve months. Estimates of insiders’ trading profits never attain a statistically significant level. In contrast, insiders in control firms matched by size and momentum continue to trade profitably. The results are the same when insiders’ profits are measured by weighting according to the number of shares traded or by using holding period returns. Insiders in these firms, who were trading profitably before the representatives of the securities firm joined, are unable to generate any trading profits after the representatives join.

I have replicated the evidence in Table 6 for officers and top executives only. As with the full group, when the representatives of the securities firms are present, officers and top executives are not able to trade profitably. This evidence suggests that the information advantages of all insiders are eroded by having representatives of the securities firms on the board of directors.

C. Profitability of Insider Trading After Securities Firm Representatives Depart

I next examine the profitability of insider trading after the representatives of the securities firms depart. If the representatives’ presence causes information leakages, then their departure should restore the ability of insiders to trade profitably. If the decline in the profitability
of insider trading after the representatives’ arrival was coincidental, and did not represent violation of the Chinese Walls. I would expect no change in the profitability of insider trading after the representatives’ departure. If the decline of the profitability of insider trading was due to information leakages by the representatives, then I would expect insider trading profits to return to their original levels after the representatives’ departure.

Table 7 shows that after the securities firms’ representatives depart, insiders once again trade profitably. In fact, the profitability of insider trading is restored to its original levels. Insiders’ abnormal returns during the sub-period following the representatives’ departure date range from 0.80% after one month to 3.95% after twelve months. These figures are similar to insiders’ trading profits before the representatives joined. These figures are also similar to the profitability of insider trading in size- and momentum-matched control firms. Using share-weighted abnormal profits, or holding period abnormal profits, yields similar results. The same tests repeated on officers and top executives again yield similar results.

My evidence suggests that insiders trade profitably before the representatives arrive. Having the representatives of the securities firm on the board results in information leakages and a reduction in the information advantages of insiders. Finally, the representatives’ departure results in increased information asymmetries and restored profitability of insider trading. This evidence is inconsistent with effective Chinese Walls.

D. Sensitivity Analysis

While not shown here in detail, I have conducted some sensitivity tests of my findings. First, I compared my findings with the appointment of any outside director instead of representatives of investment banking firms. In this case, I do not find any change in either the profitability or volume of insider trading around the appointment of outside directors. Hence, my findings in this study are unique to the appointment of representatives of investment banking firms, and do not apply to outside directors in general. Second, I examine the time-series stationarity of my findings by dividing the sample between pre- and post-1990. My findings were similar in both pre-1990 and post-1990 sub-samples. This evidence suggests that my findings are general and cannot be attributed to some unusual event such as the burst of the tech stocks in early 2000.

Third, I examined the profitability of insiders’ purchases and sales separately and compared the changes in profitability of purchases and sales through the three regimes. I find that the changes in profitability of insider trading in client firms are driven mostly by purchases. Both purchases and sales show usual profitability prior to the arrival of the representatives of the securities firm. Once the representatives are on board, the profitability of insiders’ purchases becomes negative, while insider sales maintain their profitability. After the representatives of the securities firms leave, both
insider purchases and sales exhibit usual profitability levels once again. These findings suggest that the presence of the representatives on the board of directors allows good news to be reflected in the stock price more quickly and more fully, while not affecting the speed of reaction to negative news. This finding is consistent with other literature that securities firms tend to issue more buy recommendations than sell recommendations and are more reluctant to exploit negative information.13

Fourth, models of strategic insider trading suggest that the variance of security returns is an important determinant of the profitability of insider trading.14 Higher variance of security returns increases the value of any nonpublic information and thereby leads to more profitable insider trading. Empirically, when insiders’ profits are grouped by the volatility of underlying stock returns, there is a positive relation between insiders’ profits and volatility. Corporate insiders are able to earn higher abnormal profits as the volatility of security returns increases. For the lowest volatility group, insiders’ profits average 2.6% after one year. For the highest volatility group, insiders’ average profits reach an astounding 15.6% after one year. When representatives of the securities firms are present on the board of directors, the relation between volatility and insiders’ profits disappear. This finding suggests that the presence of the representatives removes an important source of insider trading information.

I also examined the relation between exchange listing and changes in profitability of insider trading before, during, and after the presence of the representatives. I find no relation. Hence, whether the firm is listed on NYSE, AMEX, or NASDAQ, the presence of securities firms’ representatives reduces the ability of insiders to exploit their information.

E. Informational Asymmetries and the Bid-Ask Spreads

A secondary test of the effectiveness of the Chinese Walls can be performed by comparing the dealer’s bid-ask spread in client firms before, during, and after the presence of securities firms’ representatives. The dealer’s bid-ask spread provides compensation for inventory costs, order processing, and risk-aversion, as well as losses to more informed traders. If the losses to informed traders constitutes a significant part of the bid-ask spread (adverse-selection component), then having a representative on the board of directors of the client firm would reduce these costs. To the extent the securities firms exploit their special connection with the client firms,

13 Malmendier and Shanthikumar (2008) analyze a sample of 121,130 analysts’ recommendations from October 29, 1993 to December 31, 2002. They find that only 4.58% of the recommendations fall in the categories of sell or strong sell, while 58.57% fall in the categories of buy or strong buy. The remainder, 36.84% are hold recommendations.
14 See Kyle (1985).
inside information is reflected more quickly and fully in the stock prices. Consequently, I would expect the information asymmetry component of the bid-ask spread to be smaller when the representatives of the securities firms are appointed to the board of directors. These predictions are tested next.

The relation between securities firms’ representation and bid-ask spreads (the difference between quoted bid and ask prices) are shown in Table 8. In most cases, the spread is computed from the intra-day posted quotes available from the transactions databases provided by ISSM and TAQ. Intra-day bid-ask spreads were first averaged for each day. The daily averages were then used to compute the average bid-ask spread for each period. In cases where the bid-ask spread could not be computed from the transactions databases, the CRSP database was used to obtain the closing bid-ask quotes.

In all firm size groups including the overall sample, the arrival of the representatives of the securities firms reduces the bid-ask spread by about 50%, while the departure of the representatives restores the bid-ask spread to its original level. For instance, in the smallest firm size group, prior to the arrival of the representatives, the bid-ask spread averages 13.7%. When the representatives are appointed to the board of directors, the bid-ask spread falls to 6.3%. After the representatives depart, the bid-ask spread rises back to 14.4%. In the largest firm size group, prior to the arrival of the representatives, the bid-ask spread averages 1.98%. When the representatives are appointed to the board of directors, the bid-ask spread falls to 0.85%. After the representatives depart, the bid-ask spread rises back to 1.13%. The same pattern of decline and subsequent increase in the bid-ask spread is present in all firm size groups. The initial decline and the subsequent increase in the bid-ask spread are both statistically significant.

I finally examine the changes in volatility of stock returns around the appointments of the representatives of the securities firms. If the presence of the representatives reduces informational asymmetries, I would expect a decline in the volatility when the representatives are present on the board and an increase in volatility after the representatives depart. I compute volatility as the variance of daily stock returns.

The evidence, shown in Table 9, is consistent with this prediction. For each firm size group, arrival of the representatives reduces informational asymmetries measured by the variance of stock returns. In every case, the reduction in daily variance after the arrival of representatives is over 50%. The declines are statistically significant at the 1% level for the smallest and the largest group, as well as the total sample. These temporary declines in volatility reverse after the departure of the representatives. In every case, volatility increases back to original levels and, in some cases, above the original levels. All of the increases are statistically significant at either 1% or 5% levels. Overall, this evidence is consistent with the interpretation that closer cooperation with the securities firm leads to increases in informational efficiencies.
F. Additional Analysis

An interesting question not directly addressed by this study is why the securities firms appoint directors to some client firms in the first place. A logistic analysis is conducted to analyze the factors that make it more likely to have board representation by the securities firms. The most significant factor that emerges is firm size. In a cross-sectional analysis, increasing firm size increases the likelihood of board representation by the securities firms. Larger firms are more likely to have securities firms’ representatives on their boards.

Firm size also happens to be a most important variable for explaining the profitability of insider trading. Insider trading is least profitable in large firms and most profitable in small firms. An interesting question that arises is whether changes in firm size (market capitalization) over time can explain the findings documented here.

While firm size shows up significantly in a cross-sectional analysis as an important determinant of board representation and insider trading profitability, it does not have the right sign to explain the changes in informational asymmetries that have been documented here in a time-series sense. Typically, larger firms have lower profitability of insider trading, smaller bid-ask spreads, and smaller volatility of stock returns. Larger firms are also more likely to have board representation by securities firms. However, during the period in which client firms have securities firms’ representatives on their boards, market capitalization is lower than before and after the representatives are present. This finding suggests that representatives of the securities firm join the board during a down period for the firm. Hence, based on changes in firm size over time, one would have expected higher profitability of insider trading, higher bid-ask spreads, and higher volatility when securities firms representatives are present on the board of directors. Hence, changes in market capitalization have the opposite predictions and do not explain the findings documented here.

VI. Conclusions and Implications

This study investigates the effectiveness of Chinese Walls in securities firms by analyzing the profitability of insider trading in client firms during times when investment bankers appoint their representatives to the boards of directors of those client firms. If Chinese Walls at the securities firms are porous, then the presence of investment bankers on the board of directors is expected to increase the information efficiency of the clients’ stocks and reduce the profitability of other insiders. If Chinese Walls are nonpor-

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ous, then the presence of investment bankers on boards is not expected to affect the information efficiency of the clients’ stocks.

To test the effectiveness of Chinese Walls, this study examines the profitability of unaffiliated corporate insiders’ transactions in client firms before, during, and after the appointment of the representatives of securities firms to the client’s board of directors. If Chinese Walls are porous, insider trading in the client firm should be less profitable after the arrival of the representative of the securities firm. If Chinese Walls are effective, then the profitability of insider trading in the client firm should not be affected.

Evidence presented here shows that the insiders in client firms trade profitably before the arrival of the representatives of the securities firms. When the representatives of the securities firms are present on the board of directors, the ability of unaffiliated corporate insiders to trade profitably is completely eliminated. After the departure of the representatives, client-firm insiders once again are able to trade profitably. Overall, my evidence suggests that Chinese Walls are porous and the presence of the securities firms’ representatives improves informational efficiencies of the stock price by reducing informational asymmetries for the client-firms and reduces both the bid-ask spread and volatility of the stock returns in the client-firms’ stocks. My evidence also shows that these effects are temporary and reverse when the representatives of the securities firms leave the board of directors.

My findings have important implications for the current regulatory changes in the securities firms. Recent changes in the law have allowed commercial banks, investment banks, and insurance companies to consolidate under single ownership, provided that they establish Chinese Walls. My evidence shows that these newly formed institutions can have some welfare-improving effects by improving informational efficiencies in the capital markets, by reducing bid-ask spreads and volatility of the stock prices. Porous Chinese Walls, however, increase both the likelihood and the costs of potential conflicts of interest. Whenever securities firms have access to greater information regarding clients, the same clients must ensure that this access is not used against the best interest of their own shareholders.

My findings suggest that all clients of securities firms should start with the assumption that the Chinese Walls are porous and monitor security prices and trading activities of the securities firms for potential leakage. The key ingredient in such a monitoring program is the acquisition of information necessary to monitor and evaluate the securities firms’ performance on a continuous basis.

Based on the findings in this study, for instance, securities firms’ institutional clients should implement programs to ensure that their buy-sell orders are not front-run. This can be achieved by looking for systematic second-by-second price movements prior to the execution of their orders. If they cannot conduct such a study on their own, clients may require the se-
securities firm to compile and report such patterns. In addition, as part of their business relations with the securities firm, clients should require immediate disclosure of all trading conducted by the firm in its own securities—whether proprietary trading, retail trading, risk-arbitrage, or market-making. Changes in the market-maker’s inventory position are also useful in this regard. Similarly, client firms should require the securities firm to report any recommendation, evaluation, or forecasting involving its own securities.

In addition, client firms should request any information regarding their own securities about either placement or removal from “watch” list, “grey” list, “restricted” list, or “rumor” list. It is also important to discover the significance of the meaning of these lists at each securities firm. While many firms restrict trading for all employees, some firms only restrict certain employees and allow others to trade. Such information is necessary to ensure that minimum precautions for safeguarding confidential information are taken.
REFERENCES


APPENDIX I

A brief History of Chinese Walls

Chinese Walls—first publicized in a Merrill Lynch policy statement—were the result of securities firms’ own concerns for fairness. In addition to increasing investor confidence, Chinese Walls would serve as a defense in litigation alleging conflicts of interest or dereliction of fiduciary responsibility.16 This concept of compartmentalizing information was subsequently incorporated into exchange regulations for the New York Stock Exchange (NYSE) and American Stock Exchange (AMEX).17 Specifically, Rule 98 of the NYSE Regulations requires that market-making activities be physically and functionally separated from all advisory, corporate finance, and underwriting activities. Hence, the market-making functions must be separated from all other member firms’ activities, including physical location, organization, management influence, management compensation, bookkeeping, financial accounting, and capital requirements. Moreover, any information derived from clearing and margin financing arrangements, trading activities of the approved person, and specialists’ books must remain confidential and may not be disclosed to the rest of the member firm. Similarly, any information derived from business transactions with the issuer must be kept confidential.

In 1988, the concept of Chinese Walls was given statutory recognition in the United States with the passage of the Insider Trading and Securities Fraud Enforcement Act (ITSFEA) of 1988.18 The subsection 15(f) of ITSFEA reads:

Every registered broker or dealer shall establish, maintain, and enforce written policies and procedures reasonably designed, taking into consideration the nature of such broker’s or dealer’s business, to prevent the misuse in violation of this title, or the rules or regulations thereunder, of material, nonpublic information by such broker or dealer or any person associated with such broker or dealer. The Commission, as it deems necessary, shall adopt regulations to require specific policies or procedures reasonably designed to prevent misuse in violation of this title of material nonpublic information.

16 Harry McVea (1993) also describes policies and procedures that ought to be part of the Chinese Walls: (i) compliance manual publication, (ii) systematic identification of risk areas, (iii) procedures to address risks, (iv) compliance responsibilities, (v) routine monitoring, (vi) contingency plans in case of accidental breach, (vii) ongoing education programs, (viii) regulatory links, (ix) encouraging timely client disclosure of price sensitive information, (x) procedures to recognize when information has bypassed the Wall, and (xi) trading records for auditing purposes (McVea 1993).

17 The SEC gave approval to NYSE and AMEX rule changes in 1987. See SEC Rel. No. 34-23768.

18 In 1980, using its rule making authority, SEC had already provided a Chinese Wall exemption from liability for securities trading subject to a tender offer in possession of material information by promulgating Rule 14e-3(b). See 17 C.F.R § 240.14e-3(b).
Due to the deregulation of financial services firms, Chinese Walls recently gained additional importance. Legislation enacted in 1999 ended most Glass-Steagall proscriptions against commercial banks and has allowed the banks freedom to merge with insurance firms and investment banks. This legislation replaced the Glass-Steagall Act’s strict prohibitions and relies on the enactment and enforcement of the Chinese Walls to avoid potential conflicts of interest.

19 Legislation signed into law by President Clinton on November 5, 1999 repealed the barriers between banks, insurance companies, and securities firms. See 12 C.F.R. § 225.28, 86-92.
APPENDIX 2

Event Study Methodology

Given the minimal explanatory power of betas, this study uses market adjusted returns to compute the prediction errors, PE_{i,t}:

(1) \[ PE_{i,t} = (r_{i,t} - r_{m,t})H_{i,t} \]

where \( r_{i,t} \) is the simple with-dividend return to security \( i \) on month \( t \) and \( r_{m,t} \) is the simple with-dividend return to the equally-weighted portfolio of all New York Stock Exchange (NYSE), American Stock Exchange (ASE), and NASDAQ stocks on month \( t \). For equally-weighted abnormal profits, the parameter \( H_{i,t} \) is equal to 1 if the number of shares purchased exceeds the number of shares sold in that month \( t \), or -1 if the number of shares sold exceeds the number of shares purchased. If no shares are traded or if the number of shares purchased equals the number of shares sold, then month \( t \) is excluded. For share-weighted abnormal profits, the parameter \( H_{i,t} \) is equal to the ratio of shares traded in firm \( i \), month \( t \) divided total net number of shares traded by insiders in firm \( i \). The sign of \( H_{i,t} \) is positive if insiders buy shares in firm \( i \) and month \( t \) and the sign of \( H_{i,t} \) is negative if insiders sell shares in firm \( i \) and month \( t \).

The average portfolio prediction error in firm \( i \) for event month \( t \), APE_{i,t}, is the weighted averages of all prediction errors from Equation (1) for that event month:

(2) \[ APE_{i,t} = \frac{1}{312} \sum_{j=1}^{312} PE_{i,t} \]

and

(3) \[ APE_t = \frac{1}{K_t} \sum_{i=1}^{K_t} APE_{i,t} \]

where \( K_t \) equals the number of prediction errors in month \( t \). Insiders’ abnormal profits are computed by weighting prediction errors with the number of shares traded. The procedure described in (2) and (3) ensures that proportionately greater weight is given to larger volume inside trading, but at the same time, since each firm received equal representation in the overall results, a single outlier does not dominate the overall evidence. There are a total of 312 months from January 1975 to December 2000. The cumulative gross abnormal profit from exploiting insider trading information is measured by the cumulative monthly average prediction error from event month 1 (the month following the month in which insiders trade) to \( T \).
CAP(T), which is calculated by summing the monthly average prediction errors:

\[ \text{CAP}(T) = \sum_{t=1}^{T} APE_t \]

To retain as much information as possible, the study includes all open-market transactions by the firms’ insiders that are represented in the sample. The standard errors of the gross abnormal profits are measured by taking into account the sample serial correlation of the time series of abnormal returns. The general formula for the variance of a sum is used to compute the standard error of the gross abnormal profits. Hence:

\[ s(\text{CAP}(T)) = \left( \sum_{i=1}^{T-1} \sum_{j=1}^{T-1+1} \text{cov}(APE_i, APE_j) \right)^{1/2} \]

where covariance between APE_i and APE_j, \text{cov}(APE_i, APE_j), is estimated from a third order, unconstrained autoregressive model for APE_t using Box and Jenkins (1976) methods. The estimated model for APE_t is represented as follows:

\[ APE_t = \delta_0 + \delta_1 D + \phi_1 APE_{t-1} + \phi_2 APE_{t-2} + \phi_3 APE_{t-3} + \eta_t \]

where indicator variable D equals 1 for the six months prior to the insider trading month, and 0 otherwise. The indicator variable D—accounting for the differences in mean abnormal returns before and after the insider trading month—is necessary because insider sales tend to follow price increases while insider purchases follow price declines. Consequently, the sign of APE adjusts the insider trading month from negative to positive. For each model using (6), the Box-Pierce Q statistics at lags 6, 12, and 18 are insignificant, indicating that the residuals, \eta_t, are serially uncorrelated.

The methodology described above takes into account whatever serial and cross sectional correlations of stock returns there may be. Hence my procedure makes minimal assumptions about properties of stock returns. In addition, given my procedure, usual caveats such as event time clustering or sector clustering would not cause bias in my estimates of standard errors.
### Distribution of Multi-Service Securities Firms Across Client Firm Size Groups

<table>
<thead>
<tr>
<th>Multi-Service Securities Firm Maintains</th>
<th>Less than $25 Million</th>
<th>Between $25 and $100 Million</th>
<th>Between $100 and $500 Million</th>
<th>Between $500 Million and $1 Billion</th>
<th>More than $1 Billion</th>
<th>All Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Officers</td>
<td>6</td>
<td>9</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>22</td>
</tr>
<tr>
<td>Directors</td>
<td>154</td>
<td>110</td>
<td>96</td>
<td>22</td>
<td>36</td>
<td>418</td>
</tr>
<tr>
<td>Large Shareholdership</td>
<td>25</td>
<td>17</td>
<td>22</td>
<td>6</td>
<td>6</td>
<td>76</td>
</tr>
<tr>
<td>Trustee and other</td>
<td>16</td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>34</td>
</tr>
<tr>
<td>Total Representatives</td>
<td>201</td>
<td>143</td>
<td>125</td>
<td>31</td>
<td>50</td>
<td>550</td>
</tr>
<tr>
<td>Number of Client Firms</td>
<td>188</td>
<td>131</td>
<td>116</td>
<td>28</td>
<td>46</td>
<td>509</td>
</tr>
<tr>
<td>Average client firm size (Smillion)</td>
<td>$10.3</td>
<td>$53.5</td>
<td>$200.3</td>
<td>$753.4</td>
<td>$5,977.3</td>
<td>$655.8</td>
</tr>
</tbody>
</table>

Multi-service securities firms refer to those firms who make a market in the client firm’s securities as well as maintain an advisory role through its directors and officers placed inside the client firm. The sample is restricted to CRSP firms.

Table 1
<table>
<thead>
<tr>
<th>Period</th>
<th>Number of Initial Public Offerings</th>
<th>Average dollar amount of proceedings</th>
<th>Number of Seasoned Equity Offerings</th>
<th>Average dollar amount of proceedings</th>
<th>Number of firms listing on an options exchange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before the arrival of representatives of securities firms</td>
<td>108</td>
<td>$19.52 Million</td>
<td>239</td>
<td>$23.70 Million</td>
<td>19</td>
</tr>
<tr>
<td>Representatives of securities firms are present</td>
<td>1</td>
<td>$33.80 Million</td>
<td>119</td>
<td>$26.90 Million</td>
<td>5</td>
</tr>
<tr>
<td>After the departure of the representatives of securities firms</td>
<td>4</td>
<td>$124.27 Million</td>
<td>288</td>
<td>$127.10 Million</td>
<td>33</td>
</tr>
</tbody>
</table>

Client firms are those where a securities firm maintains representatives typically on the board of directors, or officers placed inside the client firm. The sample is restricted to CRSP firms. Initial public offerings include equity carve-outs.

Table 2
### Distribution of Insider Trading in Client Firms Before, During, and After the Arrival of the Representatives of the Securities Firms

<table>
<thead>
<tr>
<th>Period</th>
<th>Less than $25 Million</th>
<th>Between $25 and $100 Million</th>
<th>Between $100 Million and $500 Million</th>
<th>Between $500 Million and $1 Billion</th>
<th>More than $1 Billion</th>
<th>All Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before the arrival of representatives</strong></td>
<td>[0.09, 0.09]</td>
<td>[0.10, 0.12]</td>
<td>[0.14, 0.20]</td>
<td>[0.16, 0.21]</td>
<td>[0.20, 0.27]</td>
<td>[0.13, 0.17]</td>
</tr>
<tr>
<td><strong>Representatives of securities firms are present</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Number of months</strong></td>
<td>3,757</td>
<td>4,386</td>
<td>5,235</td>
<td>1,320</td>
<td>2,714</td>
<td>17,412</td>
</tr>
<tr>
<td><strong>Net shares traded</strong></td>
<td>-137</td>
<td>-1,608</td>
<td>-1,735</td>
<td>-425</td>
<td>7,040</td>
<td>108</td>
</tr>
<tr>
<td><strong>Proportion of (buy, sell)</strong></td>
<td>(.44, .38)</td>
<td>(.40, .45)</td>
<td>(.35, .46)</td>
<td>(.25, .39)</td>
<td>(.25, .41)</td>
<td>(.38, .42)</td>
</tr>
<tr>
<td><strong>After the departure of the representatives of securities firms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Number of months</strong></td>
<td>6,025</td>
<td>4,325</td>
<td>4,289</td>
<td>1,070</td>
<td>1,542</td>
<td>17,251</td>
</tr>
<tr>
<td><strong>Net shares traded</strong></td>
<td>-382</td>
<td>-2,245</td>
<td>-1,902</td>
<td>-807</td>
<td>-7,843</td>
<td>-1,920</td>
</tr>
<tr>
<td><strong>Proportion of (buy, sell)</strong></td>
<td>(.07, .06)</td>
<td>(.10, .11)</td>
<td>(.12, .17)</td>
<td>(.11, .20)</td>
<td>(.15, .27)</td>
<td>(.11, .14)</td>
</tr>
</tbody>
</table>

Table 3

Client firms are those where a securities firm maintains representatives: typically on the board of directors, or officers placed inside the client firm. The sample is restricted to CRSP firms.
### Table 4

**Insider Trading Intensity Grouped by Firm Size**

<table>
<thead>
<tr>
<th>Client firm size groups</th>
<th>Securities-Firm Representation</th>
<th>Less than $25 Million</th>
<th>Between $25 and $100 Million</th>
<th>Between $100 and $500 Million</th>
<th>Between $500 Million and $1 Billion</th>
<th>More than $1 Billion</th>
<th>All Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) With representation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1a) Before representation</td>
<td></td>
<td>4.03%</td>
<td>2.32%</td>
<td>1.55%</td>
<td>0.93%</td>
<td>0.89%</td>
<td>2.39%</td>
</tr>
<tr>
<td>(1b) During the period when representatives are present</td>
<td></td>
<td>1.59%</td>
<td>1.55%</td>
<td>1.71%</td>
<td>0.80%</td>
<td>1.98%</td>
<td>1.62%</td>
</tr>
<tr>
<td>(1c) After representation</td>
<td></td>
<td>11.67%</td>
<td>5.44%</td>
<td>3.95%</td>
<td>4.41%</td>
<td>2.91%</td>
<td>5.77%</td>
</tr>
<tr>
<td>(2) Without representation</td>
<td></td>
<td>3.08%</td>
<td>1.94%</td>
<td>1.38%</td>
<td>1.42%</td>
<td>0.54%</td>
<td>1.65%</td>
</tr>
<tr>
<td>Difference (1a) - (1b)</td>
<td></td>
<td>-10.07%</td>
<td>-3.88%</td>
<td>-3.23%</td>
<td>-3.61%</td>
<td>-0.93%</td>
<td>-4.16%</td>
</tr>
<tr>
<td>Difference (1b) - (1c)</td>
<td></td>
<td>-8.60%</td>
<td>-3.50%</td>
<td>-2.56%</td>
<td>-3.99%</td>
<td>-2.37%</td>
<td>-4.13%</td>
</tr>
<tr>
<td>Difference (1a) - (1c)</td>
<td></td>
<td>-1.49%</td>
<td>-0.38%</td>
<td>0.33%</td>
<td>0.38%</td>
<td>1.44%</td>
<td>-0.03%</td>
</tr>
<tr>
<td>Difference (1) - (2)</td>
<td></td>
<td>2.15%</td>
<td>0.61%</td>
<td>0.04%</td>
<td>-0.29%</td>
<td>-0.02%</td>
<td>0.74%</td>
</tr>
</tbody>
</table>

Intensity of insider trading is computed as the absolute value of net number shares traded by insiders in each calendar month divided by the total share volume in that month. Monthly intensities are then equally averaged across calendar months. In parentheses are p-values for the differences in trading intensities. The sample is restricted to CRSP firms.
### Corporate Insiders’ Abnormal Profits Before the Representatives of the Securities Firms Join

<table>
<thead>
<tr>
<th>Holding Period Months</th>
<th>Equally-weighted abnormal profits</th>
<th>Share-weighted abnormal profits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before the representatives of the securities firms join</td>
<td>Size and momentum matched control firms without representatives</td>
</tr>
<tr>
<td>(1)</td>
<td>1.26% (0.00)</td>
<td>0.93% (0.00)</td>
</tr>
<tr>
<td>(1,2)</td>
<td>1.84% (0.00)</td>
<td>1.76% (0.00)</td>
</tr>
<tr>
<td>(1,3)</td>
<td>2.35% (0.00)</td>
<td>2.26% (0.00)</td>
</tr>
<tr>
<td>(1,6)</td>
<td>3.18% (0.00)</td>
<td>3.22% (0.00)</td>
</tr>
<tr>
<td>(1,12)</td>
<td>4.96% (0.00)</td>
<td>4.32% (0.00)</td>
</tr>
</tbody>
</table>

The sample contains 17,412 transactions by insiders in 509 firms. The p-values are shown in parentheses.

Table 5 (Panel A)
Corporate Insiders’ Abnormal Profits Before the Representatives of the Securities Firms Join

**PANEL B**

**Holding Period Abnormal Returns**

<table>
<thead>
<tr>
<th>Holding Period Months</th>
<th>Equally-weighted abnormal profits</th>
<th>Share-weighted abnormal profits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before the representatives of the securities firms join</td>
<td>Size and momentum matched control firms without representatives</td>
</tr>
<tr>
<td>(1)</td>
<td>1.26% (0.01)</td>
<td>0.93% (0.05)</td>
</tr>
<tr>
<td>(1,2)</td>
<td>1.79% (0.01)</td>
<td>1.75% (0.01)</td>
</tr>
<tr>
<td>(1,3)</td>
<td>2.47% (0.01)</td>
<td>2.26% (0.01)</td>
</tr>
<tr>
<td>(1,6)</td>
<td>3.67% (0.00)</td>
<td>3.36% (0.01)</td>
</tr>
<tr>
<td>(1,12)</td>
<td>6.17% (0.00)</td>
<td>4.50% (0.00)</td>
</tr>
</tbody>
</table>

The sample contains 17,412 transactions by insiders in 509 firms. The p-values are shown in parentheses.

Table 5 (Panel B)
Corporate Insiders’ Abnormal Profits during the Period when the Representatives of the Securities Firms are Present

**PANEL A**
Cumulative Abnormal Returns

<table>
<thead>
<tr>
<th>Holding Period Months</th>
<th>Equally-weighted abnormal profits</th>
<th>Share-weighted abnormal profits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>During the period when securities firms have representatives present</td>
<td>Size and momentum matched control firms without representatives</td>
</tr>
<tr>
<td>(1)</td>
<td>0.18% (0.48)</td>
<td>1.04% (0.00)</td>
</tr>
<tr>
<td>(1,2)</td>
<td>0.16% (0.64)</td>
<td>1.97% (0.00)</td>
</tr>
<tr>
<td>(1,3)</td>
<td>0.31% (0.46)</td>
<td>2.54% (0.00)</td>
</tr>
<tr>
<td>(1,6)</td>
<td>0.36% (0.55)</td>
<td>3.71% (0.00)</td>
</tr>
<tr>
<td>(1,12)</td>
<td>1.11% (0.20)</td>
<td>4.87% (0.00)</td>
</tr>
</tbody>
</table>

The p-values are shown in parentheses.

Table 6 (Panel A)
Corporate Insiders’ Abnormal Profits during the Period when the Representatives of the Securities Firms are Present

**PANEL B**

Holding Period Abnormal Returns

<table>
<thead>
<tr>
<th>Holding Period Months</th>
<th>Equally-weighted abnormal profits</th>
<th>Share-weighted abnormal profits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>During the period when securities firms have representatives present</td>
<td>Size and momentum matched control firms without representatives</td>
</tr>
<tr>
<td></td>
<td>During the period when securities firms have representatives present</td>
<td>Size and momentum matched control firms without representatives</td>
</tr>
<tr>
<td>(1)</td>
<td>0.18% (0.70)</td>
<td>1.04% (0.04)</td>
</tr>
<tr>
<td>(1,2)</td>
<td>0.19% (0.76)</td>
<td>1.96% (0.01)</td>
</tr>
<tr>
<td>(1,3)</td>
<td>0.30% (0.61)</td>
<td>2.53% (0.01)</td>
</tr>
<tr>
<td>(1,6)</td>
<td>0.22% (0.37)</td>
<td>3.75% (0.00)</td>
</tr>
<tr>
<td>(1,12)</td>
<td>0.87% (0.18)</td>
<td>5.03% (0.00)</td>
</tr>
</tbody>
</table>

The sample contains 17,251 transactions by insiders in 509 firms. The p-values are shown in parentheses.

Table 6 (Panel B)
## Table 7 (Panel A)

**Corporate Insiders’ Abnormal Profits After the Departure of the Representatives of the Securities Firms**

### PANEL A

Cumulative Abnormal Returns

<table>
<thead>
<tr>
<th>Holding Period Months</th>
<th>Equally-weighted abnormal profits</th>
<th>Share-weighted abnormal profits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>After the departure of representatives</td>
<td>Size and momentum matched control firms without representatives</td>
</tr>
<tr>
<td>(1)</td>
<td>0.80% (0.02)</td>
<td>0.92% (0.00)</td>
</tr>
<tr>
<td>(1,2)</td>
<td>1.95% (0.00)</td>
<td>1.69% (0.00)</td>
</tr>
<tr>
<td>(1,3)</td>
<td>2.42% (0.00)</td>
<td>2.16% (0.00)</td>
</tr>
<tr>
<td>(1,6)</td>
<td>3.49% (0.00)</td>
<td>3.16% (0.00)</td>
</tr>
<tr>
<td>(1,12)</td>
<td>3.95% (0.00)</td>
<td>4.09% (0.00)</td>
</tr>
</tbody>
</table>

The sample contains 41,528 transactions by insiders in 509 firms. The p-values are shown in parentheses.
## Corporate Insiders' Abnormal Profits After the Departure of the Representatives of the Securities Firms

### PANEL B

**Holding Period Abnormal Returns**

<table>
<thead>
<tr>
<th>Holding Period Months</th>
<th>Equally-weighted abnormal profits</th>
<th>Share-weighted abnormal profits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>After the departure of representatives</td>
<td>Size and momentum matched control firms without representatives</td>
</tr>
<tr>
<td>(1)</td>
<td>0.80% (0.05)</td>
<td>0.92% (0.03)</td>
</tr>
<tr>
<td>(1,2)</td>
<td>1.84% (0.01)</td>
<td>1.68% (0.00)</td>
</tr>
<tr>
<td>(1,3)</td>
<td>2.53% (0.01)</td>
<td>2.15% (0.02)</td>
</tr>
<tr>
<td>(1,6)</td>
<td>3.66% (0.00)</td>
<td>3.22% (0.00)</td>
</tr>
<tr>
<td>(1,12)</td>
<td>3.58% (0.00)</td>
<td>4.30% (0.00)</td>
</tr>
</tbody>
</table>

The sample contains 41,528 transactions by insiders in 599 firms. The p-values are shown in parentheses.

Table 7 (Panel B)
Bid-Ask Spreads Before the Arrival, During the Period when the Representatives are on Board, and After the Departure of the Representatives of Securities Firms

<table>
<thead>
<tr>
<th>Representation by Securities Firms</th>
<th>Before representatives join the client firm</th>
<th>Representatives are on board</th>
<th>After representatives depart from the client firm</th>
<th>Number of firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $25 Million</td>
<td>13.72%</td>
<td>6.30% (0.0001)</td>
<td>14.44% (0.0001)</td>
<td>188</td>
</tr>
<tr>
<td>Between $25 and $100 Million</td>
<td>6.86%</td>
<td>2.60% (0.0001)</td>
<td>5.23% (0.0001)</td>
<td>131</td>
</tr>
<tr>
<td>Between $100 and $500 Million</td>
<td>3.16%</td>
<td>1.58% (0.0001)</td>
<td>3.44% (0.0001)</td>
<td>116</td>
</tr>
<tr>
<td>Between $500 Million and $1 Billion</td>
<td>1.99%</td>
<td>0.80% (0.0002)</td>
<td>1.41% (0.0210)</td>
<td>28</td>
</tr>
<tr>
<td>More than $1 Billion</td>
<td>1.98%</td>
<td>0.85% (0.0005)</td>
<td>1.13% (0.2924)</td>
<td>46</td>
</tr>
<tr>
<td>All Firms</td>
<td>7.74%</td>
<td>3.60% (0.0001)</td>
<td>7.33% (0.0001)</td>
<td>509</td>
</tr>
</tbody>
</table>

The sources of the bid-ask spread information are ISSM files, TAQ files, and CRSP tapes. In parentheses are the p-values for the difference in bid-ask spreads in that period minus that of the period before the representatives of securities firms join the client firm.

Table 8
Daily Variances of Stock Returns Before the Arrival, During the Period when the Representatives are on Board, and After the Departure of the Representatives of Multi-Service Securities Firms

<table>
<thead>
<tr>
<th>Representation by Securities Firms</th>
<th>Less than $25 Million</th>
<th>Between $25 and $100 Million</th>
<th>Between $100 and $500 Million</th>
<th>Between $500 Million and $1 Billion</th>
<th>More than $1 Billion</th>
<th>All Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before representatives join the client firm</td>
<td>0.001775</td>
<td>0.001166</td>
<td>0.000855</td>
<td>0.000483</td>
<td>0.000542</td>
<td>0.001161</td>
</tr>
<tr>
<td>Representatives are on board</td>
<td>0.000977 (0.0118)</td>
<td>0.000584 (0.1017)</td>
<td>0.000299 (0.3120)</td>
<td>0.000299 (0.0590)</td>
<td>0.000202 (0.0001)</td>
<td>0.000646 (0.0027)</td>
</tr>
<tr>
<td>After representatives depart from the client firm</td>
<td>0.002934 (0.0001)</td>
<td>0.002595 (0.0001)</td>
<td>0.002122 (0.0001)</td>
<td>0.000489 (0.0411)</td>
<td>0.000467 (0.0018)</td>
<td>0.002254 (0.0001)</td>
</tr>
<tr>
<td>Number of firms</td>
<td>188</td>
<td>131</td>
<td>116</td>
<td>28</td>
<td>46</td>
<td>509</td>
</tr>
</tbody>
</table>

Daily variances of stock returns are computed from the CRSP tapes. In parentheses are the p-values for the difference in daily variances in that period minus that of the period before the representatives of securities firms join the client firms.

Table 9