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– Conflicts of Interest in the Stock Recommendations of Investment Banks and Their Determinants (2/2)

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Trust Your Friends, But Don't Forget
to Lock Your Car Door
– Conflicts of Interest in the Stock Recommendations
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Abstract

This paper explores the phenomena associated with conflicts of interest, particularly as they pertain to the proprietary trading and brokerage divisions of investment banks. This distinguishes it from past studies, which have researched conflicts of interest between underwriting and brokerage divisions. We examine whether or not an investment bank issues buy recommendations to the market and, at the same time, sells the same recommended stocks through its proprietary trading division, and if so, to what extent this goes on. This paper, therefore, constructs the indices of such conflicts of interest based on weeks, amounts and shares so as to measure the extent of such conflicts of interest using Taiwan's stock market from January 2000 to December 2003. We obtain the following results.

First, conflicts of interest do, indeed, exist, and some investment banks continuously sell (and/or buy no) recommended stocks a few weeks before and after posting their buy recommendations. Second, those investment banks, which are more prone to have conflicts of interest are generally characterized as being smaller in size and issuing more frequent buy recommendations. Third, firms whose stocks are most associated with a conflict of interest typically have a smaller trading volume, are smaller in size, have greater systematic risk, have more insider holdings and are issued recommendations less frequently. Finally, a stock recommendation coupled with a conflict of interest is beneficial to the profits of an investment bank, especially to its brokerage division.

1. Introduction

On account of recent allegations of accounting fraud at Enron, soon followed by allegations of there being problems with tainted research at such brokerage houses as Merrill Lynch and Morgan Stanley, investors seem to have increasingly lost confidence in brokerage analysts' integrity as far as issuing unbiased and trustworthy stock recommendations goes. In response to such potential conflicts of interest among security analysts employed by investment banking firms, on April 28, 2003, the Securities and Exchange Commission (SEC) in the U.S. announced a historic agreement with large investment banks, known as the *Global Analyst Research Settlement*.[1] Since then, securities firms have been required to separate their brokerage from their investment banking activities because research analysts in the former may face undue pressure from their respective investment banking division to issue stock reports that favor the interests of their investment banking clients over those of their brokerage clients (Morgan and Stocken, 2003). According to Michaely and Womack (1999), three main sources of income for investment banks, i.e., investment banking (such as underwriting issues of publicly traded companies, raising bank loans and giving advice on mergers), brokerage services (such as providing investment advice and conducting equity research) and proprietary trading, may create conflicts of interest within a bank and between a bank and its clients. To examine whether investment banks have constructed a "Chinese Wall" between their investment banking division and their brokerage division, researchers have seriously begun to analyze the quality of stock recommendations because conflicts of interest have often arisen, and these from two scenarios, in particular. First, when brokerage analysts' compensation is positively related to the profits of the corporate finance division, these analysts are more likely to issue positively-biased recommendations about firms that have business dealings with their corporate finance divisions even

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[1]The ten firms are Bear Sterns, Citigroup, Credit Suisse First Boston, Goldman Sachs, J. P. Morgan Securities, Lehman Brothers, Merrill Lynch, Morgan Stanley, UBS Warburg and U.S. Bancorp Piper Jaffrey.

though those analysts' outside reputation depends, at least partially, on the quality of their recommendations. Secondly, not wanting to offend their investment banking clients, analysts may well opt to offer favorable comments on their clients' stocks.

To cite another example, Michaely and Womack (1999) find that when recommended by underwriter analysts, stocks typically perform more poorly than when they are recommended by unaffiliated equity analysts. This is also supported by the research of Barber, Lehavy and Trueman (2004) who find that the average daily abnormal returns from an independent research firm's buy recommendations exceed those of investment banks by almost 8 percent annualized. Conversely, those same investment banks' buy recommendations subsequent to equity offerings underperform by an almost astounding 22 percent annualized, when compared to the buy recommendations of independent research firms. To account for this underperformance on the part of investment banks, Barber, Lehavy and Trueman (2004) hold the view that at least part of this can be attributed to banks' reluctance to downgrade stocks even when the prospects of those stocks have actually diminished. This, therefore, represents a potential conflict of interest among security analysts employed by investment banking firms.[2]

More empirical evidence that supports the view that affiliated analysts' earnings forecasts and recommendations are significantly more favorable than those made by unaffiliated analysts abound. Among these, Dechow, Hutton, and Sloan (2000) find that, as a rule, stocks are most overpriced when they are covered by affiliated underwriters. Again, this finding is a clear sign that potential conflicts of

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[2]Some research finds that analysts' recommendations are informative. For example, Stickel (1995) and Womack (1996) find that favorable (unfavorable) changes in individual analyst recommendations are accompanied by positive (negative) returns at the time of and after their announcement. But Barber, Lehavy, McNichols, and Trueman (2001) show that high trading levels are required to capture the excess returns generated by purchasing (selling short) stocks with the most (least) favorable agreed upon recommendations along with daily portfolio rebalancing and a timely response to changes in recommendations. Since these strategies entail substantial transaction costs, they cannot reliably generate positive abnormal returns.

interest exist among security analysts employed by investment banking firms (also see Dugar and Nathan, 1995; Lin and McNichols, 1998).

While research on stock recommendations has been voluminous, for the most part, such studies have focused on conflicts of interest between an "investment banking" division and a "brokerage" division.[3] Yet, the picture would be far from complete without recognizing potential conflicts of interest between a "proprietary trading" division and a "brokerage" division. To the best of the present authors' knowledge, however, no study has ever empirically studied the conflicts of interest between a "proprietary trading" division and a "brokerage" division.[4] It cannot be ignored that additional conflicts of interest may arise when an investment bank holds a large number of overvalued stocks which are expected to fall in value in the near future. In this case, to avoid losses, that bank's research department might issue buy

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[3]See Dugar and Nathan (1995); Lin and McNichols (1998); Dechow, Hutton, and Sloan, (2000); Ljungqvist, Marston, and Wilhelm (2003); Ellis, Michaely, and O'Hara (2004); as well as Barber, Lehavy, and Trueman (2004) and references therein.

[4]One exception is Chan, Chang, and Wang (2004) who measure the relation between equity recommendations and stock trades of financial firms using U.S. data. They find that financial firms actually trade with their own recommendations before, during and after they are issued. However, their paper is quite different from ours in four aspects: (i) To measure the stock trades of financial firms, they use changes in the holdings of financial firms, where the data are only available at quarterly intervals. However, the use of quarterly holdings may ignore that stock recommendations have been revised several times within a quarter. Also, the performance of a corporation has changed. The use of weekly data may therefore be more precise in detecting whether investment banks send a wrong message. (ii) We also explore the determinants of the conflicts of interest of investment banks. This helps us to understand the motivating forces for security houses to issue biased buy recommendations. (iii) We also delve into the financial characteristics of those biased buy recommendation stocks. (iv) We explore whether brokerage and dealer departments of the investment banks profit when they have conflicts of interest.

Also, Sirri's (2004) analysis of conflicts of interest between research and proprietary trading is similar to but not completely the same as ours. He claims that analysts could favor some investors over others in choosing how to disseminate the information, which is used to make more precise inferences about the value of a given security. For example, analysts could allow the information to be used internally at the bank's proprietary trading desk where the bank may establish a large principal position based on such information. However, he does not empirically analyze the potential for conflicts of interest between the two sectors investigated here.

recommendations, thereby misleading its brokerage customers, and at the same time, its proprietary trading division might be selling off the same recommended stocks. In the presence of this new type of conflict of interest, an independent security house[5] may also issue biased recommendations even though it has no affiliation with its customers. Insight into conflicts of interest between a proprietary trading division and a brokerage division within an investment bank complements and completes the understanding we require of conflicts of interest.

The major aim of this paper is to investigate, for the first time, this never before studied conflict of interest: i.e., one between a proprietary trading division and a brokerage division. Hereafter, our conflict of interest only refers to the stress and strain that occurs between a proprietary trading division and a brokerage division. To do so, we use a developing country, Taiwan, as the example because of data availability. In Taiwan, in every Sunday commercial newspaper, roughly six security houses make buy recommendations based on their own favored stocks. We investigate the buying and selling activities of security houses one and two weeks before and after buy recommendations are made. As there are no sell recommendations, we refine our definition of this new type of conflict of interest by limiting it as follows. There is no conflict of interest in the event that a security house buys the stocks it has recommended, whereas there is a conflict of interest in the event that it sells the very stocks it has recommended.

To achieve our goal to investigate this new type of conflict of interest, we first construct three indices of conflicts of interest within each security house based on weeks, amounts and shares, this in order to measure the magnitude of the conflicts of interest in stock recommendations. We employ information for only one and two weeks before and after a buy recommendation, where 'week' means the number of weeks the net sells of a security house are positive, 'amount' means the net worth of the stocks it buys and sells, and 'shares' means the net number of shares it buys and

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[5] We use the terms 'investment bank' and 'security house' interchangeably.

sells.

Once we construct the indices of the conflicts of interest, we explore their determinants as this helps us to gain an understanding and insight into the motivating forces for security houses to issue biased buy recommendations. We investigate the following questions: First, are larger security houses which have been established for a longer period of time less prone to operate with conflicts of interest for fear of tarnishing their reputation? Secondly, are security houses that more frequently issue recommendations associated with conflicts of interest? It is important to note that we expect that unsophisticated, less savvy investors will be able to greatly benefit from our findings when they are confronted with the decision to accept or reject stock recommendations.

Besides this, we delve into the financial characteristics of those firms whose stocks are often recommended because of a bias. More specifically, we examine whether the characteristics of being illiquid, smaller and fast-growing as well as of having higher systematic risk and of making less frequent recommendations make those firms' stocks more prone to be associated with a higher incidence of conflicts of interest vis-à-vis stock recommendations.

Finally, with respect to these very conflicts of interest vis-à-vis stock recommendations, we investigate the extent to which they are beneficial to the profits of an investment bank. The purpose of making buy recommendations and, all the while, selling those very stocks is either to gain profit or to avoid loss. In this regard, an investment bank's issuing biased recommendations may generate trade and increase the amount of trading revenue it expects their reports to generate.[6] To

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[6] The ability of analysts to generate trade is a key assumption in McNichols and O'Brien (1997) study, which shows that self-censoring is a possible explanation for analysts' earnings optimism. The authors contend that potential trading revenue influences an analyst's decision to release a particular forecast. By using a unique data set obtained from the Toronto Stock Exchange (TSE), Irvine (2001) finds that analysts' coverage of a particular stock results in a significantly higher broker volume in that stock; on average, brokers increase their market share in covered stocks by 3.8% relative to uncovered stocks. These results support the notion

explore this issue, we examine whether the profits of investment banks are affected by conflicts of interest. If the market is able to differentiate between good and bad stock recommendations, then in all likelihood, investment banks with more conflicts of interest cannot generate as much profit by issuing biased recommendations.

This paper is organized as follows. Section 2 outlines the relevant background information and the sources of the data. Section 3 provides details on the method we use to construct the "indices of the conflicts of interest in stock recommendations" and discusses the determinants of these. Section 4 provides a discussion on the empirical models. Section 5 summarizes the data and the descriptive statistics. Section 6 discusses the determinants of and the impact on profits gained from having conflicts of interest, this based on empirical research. Section 7 presents the conclusions that we draw from this extensive research.

2. Background and Sources of the Data

2.1 Taiwan Stock Exchange

Generally, a stock exchange is one of the most important financial markets in a country, and this is certainly no less true of the Taiwan Stock Exchange (TAIEX), which reflects Taiwan as an emerging yet rapidly expanding market. The TAIEX commenced operations on February 9, 1962 with only 18 listed companies, but by the end of 2003, that number had drastically increased to 669. The total year-end market capitalization in 2003, represented by 470 billion shares outstanding, amounted to an impressive NT$ 12,896 billion. In tune with the objectives of the TAIEX to accelerate capital market internationalization and to promote innovation and professionalism, the share of total trade by classified institutional investors increased from a mere 3.33% at the end of 1990 to a somewhat staggering 22.16% in just 13 years. This figure includes trade by registered trading firms (dealing with their own accounts), domestic investment companies (closed-ended and mutual

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that analysts' coverage decisions depend, at least in part, on the amount of trading revenue they expect their reports will generate.

funds), asset management companies with overseas capital and qualified foreign institutional investors. Just as stunning, the number of securities company branches and the accumulated number of accounts opened at securities companies surged from 67 and 634,495 at the end of 1987 to 1,153 and 13,720,461 at the end of 2004, respectively.

Such rapid expansion notwithstanding, small individual investors largely tend to base their investments on news reports in various media, such as TV and the web, analyst reports and on stock recommendations issued by investment banks. Institutional investors, on the other hand, are gradually becoming more and more astute, sophisticated players, and their trading affects stock returns which, in turn, affects small individual investors (see Lee, Lin and Liu, 1999). It goes without saying, therefore, that the relatively more unsophisticated individual investors, with much less expertise with which to judge the prospects of listed companies, could be much better off by institutionalizing their investment decisions by investing in mutual funds. But according to annual statistical reports from the Taiwan Stock Exchange Corporation (TSEC), despite a decline from 96.67% at the end of 1990, trading by individual investors still amounted to 78.84% of total trade by the end of 2003. Thus, there is little doubt that individual investors in Taiwan still prefer to make their trade decisions on their own. Particularly important to note here is that investment banks, by virtue of their greater expertise and definitive edge in terms of access to information, could very well expropriate undue profits from individual investors by issuing biased stock recommendations.

2.2 Sources of the Data on Proprietary Trading

As stated earlier, in every Sunday commercial newspaper, about six security houses issue buy recommendations, but exactly which six investment banks is usually randomly selected by those newspapers and hence may not be the same each week. That a particular stock receives a buy recommendation sends a strong signal that its price is expected to rise in the following few weeks. No "sell"

recommendations are given as that could offend a bank's customers, and besides this, rarely are there any "hold" recommendations. It is, of course, widely assumed that security houses themselves do not sell the stocks they recommend unsophisticated investors to buy.

This proprietary trading information, including the names of stocks, the transaction amounts of stocks and the number of shares, is reported to the SEC weekly.[7] For this reason, we are in the unique position of having complete records of the buying and selling activities of investment banks before and after they issue buy recommendations. Because this trading information is released on a weekly basis, we only use "weekly" data. Furthermore, because the impact of a particular stock recommendation on unsophisticated investors cannot be sustained over a long period of time, we only collect data on the proprietary trading of security houses for one- and two-week periods before and after each recommendation, and these data cover January 2000 to December 2003.

To get a firmer grip on our data, we use the data presented in Table 1 as the example to explain proprietary trading after recommendations have been made. As shown, the investment bank, Securities House IV,[8] which is ranked among the top three in terms of brokerage, offered eight buy recommendations between 2000 and 2002. As described above, we collect the proprietary trading data for one- and two-week periods before and after each recommendation. Between 2000 and 2002, Securities House IV recommended eight stocks, i.e., Macronix International (MXIC), Sunplus, Compal, MediaTek, AUO, FPC and Accton. Clearly, there were conflicts of interest with regard to five stocks, but not for MXIC and Compal. Take Sunplus (Sunplus Technology Company Limited) to illustrate this. Securities House IV made a buy recommendation on December 2, 2000 but sold the stocks on

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[7] The *Taiwan Economic Journal*, a private data vendor in Taiwan, collects these data.
[8] We use capital letters from A to Z and Roman numerals from II to VI as substitutes for the actual name of the security houses. See Appendix 1 for their correspondences.

proprietary trading for four weeks, i.e., the dealer department sold Sunplus stocks
for these four weeks (two weeks before and two weeks after the recommendation),
with the selling amounts per week being 100 (100,000 shares), 150 (150,000
shares), 142 (142,000 shares) and 199 (199,000 shares) respectively in each
consecutive year. From this, it is apparent that not all buy recommendations with a
conflict of interest are highly concealed for fear of being viewed as tricks; quite the
contrary, some, like this, are very noticeable indeed.

3. Measures and Determinants of Conflicts of Interest

We construct three indices for conflicts of interests between the proprietary
trading division and the brokerage division of an investment bank.

3.1 Three Measures of the Conflict of Interest Indices

A. By Week. We use net sell and net buy to define the selling action of a
proprietary division because the division may buy and sell the same stocks in the
same week. That is, a net sell week (denoted as NSW_i) means that the sell amounts
of proprietary trading exceed the buy amounts, whereas a net buy week (denoted as
NBW_i) means the buy amounts exceed the sell amounts, where the subscript i
denotes the ith week. The two terms are equal to one if they are positive and zero if
negative. For example, for i week around the recommendation, if a dealer
department buys 10 shares but sells 7, then $NSW_i = 1$ and $NBW_i = 0$. Thus, the
measure of *the conflict of interest by week* (*CI_W*) is defined as the net sell week
minus the net buy week. That is:

$$CI\_W_N = \sum_{i=t-N}^{t+N}(NSW_i - NBW_i), \ N=1, 2. \tag{1}$$

This means we calculate the number of the cumulative week's total as the difference
between NSW_i and NBW_i , first, for one week ($N=1$) and, then, for two weeks ($N=2$)
before and after the recommendation at time t. When $N=1$, the highest measure of
the conflict of interest is found when $CI\_W_1 = 2$ because the net sell amount is
positive for two weeks ($NSW_{t-1} = NSW_{t+1} = 1$ and $NBW_{t-1} = NBW_{t+1} = 0$). In the same

way, when $CI\_W_1 = -2$, the lowest measure of the conflict of interest is found ($NSW_{t-1} = NSW_{t+1} = 0$ and $NBW_{t-1} = NBW_{t+1} = 1$). Next, when $N=2$, the highest measure of conflict of interest is found when $CI\_W_2 = 4$ ($NSW_{t-2} = NSW_{t-1} = NSW_{t+1} = NSW_{t+2} = 1$ and $NBW_{t-2} = NBW_{t-1} = NBW_{t+1} = NBW_{t+2} = 0$) and -4 ($NSW_{t-2} = NSW_{t-1} = NSW_{t+1} = NSW_{t+2} = 0$ and $NBW_{t-2} = NBW_{t-1} = NBW_{t+1} = NBW_{t+2} = 1$) when there is the lowest measure of the conflict of interest. Accordingly, the larger the value of CI_W_N is, the stronger is the conflict of interest.

B. By Amount. Similar to our net sell week, we define the net sell amount as $NSA_i = $ max (total amount of sells – total amount of buys, 0), which is the maximum of the total amount of sells minus the total amount of buys and zero; and we define the net buy amount as $NBA_i = $ max (total amount of buys – total amount of sells, 0), which is the maximum of the total amount of buys minus the total amount of sells in a week and zero. For example, if the value of the amount that a security house buys is \$100 but the value of the amount that it sells is \$120 in a certain week during the sample period, then NSA is equal to \$20, but NBA is equal to 0. Thus, the measure of *the conflict of interest by amount* (*CI_A*) is defined again as the net sells minus the net buys. That is:

$$CI\_A_N = \sum_{i=t-N}^{t+N} (NSA_i - NBA_i), \quad N=1, 2. \tag{2}$$

where N is defined the same as in equation (1). A positive value for CI_A_N indicates that the security house sells more of a particular stock than it buys when it recommends that investors buy that stock. Accordingly, the larger the value of CI_A_N, the stronger is the conflict of interest.

C. By Share. Our last index is based on the number of the shares bought and sold. Here, the definitions and calculations of the number of the net sell shares (*NSS*) and net buy shares (*NBS*) are exactly the same as those for *NSA* and *NSB* above. Hence, we do not provide a detailed discussion on these here. The third index is *the conflict of interest by share* (*CI_S*) therefore:

$$CI\_S_N = \sum_{i=t-N}^{t+N} (NSS_i - NBS_i), \quad N=1, 2. \tag{3}$$

3.2 Conflict of Interest Index for Each Investment Bank

We calculate the average conflict of interest index for each of the investment banks for one year. For example, if a stock is recommended 20 times by an investment bank in a given year, then $R = 20$. Using IB to denote investment banks, we construct *the conflict of interest index for investment bank*:

$$CI\_IB\_W_N = \frac{\sum_{r=1}^{R} CI\_W_{N,r}}{R}, \quad N=1, 2; \tag{4}$$

$$CI\_IB\_A_N = \frac{\sum_{r=1}^{R} CI\_A_{N,r}}{R}, \quad N=1, 2; \text{ and} \tag{5}$$

$$CI\_IB\_S_N = \frac{\sum_{r=1}^{R} CI\_S_{N,r}}{R}, \quad N=1, 2. \tag{6}$$

where the underlying r denotes the *rth* number of recommendations, and $CI\_IB\_W_N$, $CI\_IB\_A_N$ and $CI\_IB\_S_N$ are the average scores or measures of the investment banks' recommendations based on the weeks, amounts and shares, respectively. For example, if $CI\_IB\_W_2 = 3$, it means that, on average, the investment bank sells its recommended stock for three weeks out of four (i.e., the two-week period before and that after the recommendation) for each recommendation. The higher the value of the three indices, the greater is the occurrence of the conflict of interest. In other words, a higher index is indicative that there is greater likelihood that there are conflicts of interest.

3.3 Conflict of Interest Index for Stocks

It is also of interest here to identify which particular stocks have a higher measure of conflict of interest. Different investment banks may all sell exactly the same stock

that each and everyone of them has recommended. We refer to this type of stock as the "stock most commonly tied to conflicts of interest with respect to stock recommendations by investment banks", or for conciseness in this paper, "conflict of interest with respect to individual stock recommended by investment banks", or as most frequently used in this paper, simply "conflict of interest."

We denote G as the number of times a given stock is recommended which, in essence, reveals the extent of the conflict of interest associated with that stock in a given year. Then, using IS to denote individual stocks, we construct *the conflict of interest index for individual stock*:

$$CI\_IS\_W_N = \frac{\sum_{g=1}^{G} CI\_W_{N,g}}{G}, \qquad N=1, 2; \tag{7}$$

$$CI\_IS\_A_N = \frac{\sum_{g=1}^{G} CI\_A_{N,g}}{G}, \qquad N=1, 2; \text{ and} \tag{8}$$

$$CI\_IS\_S_N = \frac{\sum_{g=1}^{G} CI\_S_{N,g}}{G}, \qquad N=1, 2, \tag{9}$$

where subscript g denotes the gth recommendation of the stock, and $CI\_IS\_W_N$, $CI\_IS\_A_N$ and $CI\_IS\_S_N$ represent the degree of the conflict of interest of an individual stock based on the weeks, amounts and shares, respectively. The larger the indices are, the greater is the tendency that there are conflicts of interest associated with that stock.

4. Empirical Models

4.1 Determinants of the Measure of Conflict of Interest

A. For Investment Banks

Once we obtain the measures of the conflict of interest for investment banks (equations (4), (5) and (6)), we investigate their determinants. We attempt three variables, i.e., the total assets of the investment banks (*SIZE*), the number of years since the investment banks were established (*Duration*) and the frequency with which the investment banks issue buy recommendations (*TIMES*). Hence, the model is:

$$Y_{N,i,t} = a_0 + a_1 SIZE_{i,t} + a_2 Duration_{i,t} + a_3 TIMES_{i,t} + \varepsilon_{i,t}, \qquad (10)$$

$$N=1,2; \ i=1,2,\ldots,30; \ t=2000, 2001, 2002, 2003.$$

where $Y_{N,i,t}$ is substituted alternatively with $CI\_IB\_W_{N,i}$, $CI\_IB\_A_{N,i,t}$ and $CI\_IB\_S_{N,i,t}$. Since there are 30 investment banks in our sample from 2000 to 2003, subscript i is the number of investment banks from 1 to 30, and t is the year from 2000 to 2003.

With respect to *SIZE* and *Duration*, we expect that investment banks which are larger in size and which have been established a longer period of time should operate with a lower degree of conflict of interest since they have higher opportunity costs, the point being that they are likely to be more concerned about their reputation and thus more cautious about issuing biased, untrustworthy recommendations. As concerns the third variable *TIMES*, there are reasons both for and against investment banks, which frequently issue recommendations to be motivated to include conflicts of interest in their business strategy. On the one hand, in order to take advantage of its competitive advantage with regard to gathering inside information, an investment bank which issues buy recommendations more frequently probably issues more biased recommendations. On the other hand, in order to build its reputation, an investment bank which recommends more frequently is perhaps more cautious when it issues buy recommendations. Thus, the signs of a_1 and a_2 are expected to be negative, while the sign of a_3 should be uncertain.

B. For Individual Stocks

This subsection focuses on the characteristics of stocks most commonly associated with conflicts of interest. Seven determinants are suggested: the trading volume of a recommended stock (*VOLUME*); the total assets of the company with a recommended stock (*SIZE*); the frequency with which a particular stock is recommended by all security houses (*FREQ*); the number of similar stocks in the same industry (based on SIC 4 digits) (*NUMBER*); the systematic risk associated with a particular recommended stock (*Beta*); the growth opportunity of a particular stock (*MVBV*=Market value/Book Value); and the equity shares of the stock held by insiders (*INSIDER*). Thus:

$$Y_{N,i,t} = a_0 + a_1 \ln VOLUME_{i,t} + a_2 SIZE_{i,t} + a_3 FREQ_{i,t} + a_4 NUMBER_{i,t} + a_5 Beta_{i,t} +$$

$$a_6 MVBV_{i,t} + a_7 INSIDER_{i,t} + \varepsilon_{i,t}, \tag{11}$$

$$N=1,2; \; i=1,2\ldots30; \; t=2000, 2001, 2002, 2003$$

where $Y_{N,i,t}$ are replaced by $CI\_IS\_W_{N,i,t}$, $CI\_IS\_A_{N,i,t}$ and $CI\_IS\_S_{N,i,t}$ from equations (7), (8) and (9), and the notation ln is the natural logarithm. There are 80 recommended stocks in our sample from 2000 to 2003.

The relation between *VOLUME* and the measure of conflict of interest is uncertain. However, since a stock with a high trading volume usually attracts a great deal of attention from the market, it is probably more difficult for a security house to make a buy recommendation and turn around and sell it without being caught. Thus, it is suggested that the relationship should be negative. By stark contrast, Verrecchia (1982) and Bhushan (1989a) make the case that a high trading volume may stem from the high volatility of a stock due to liquidity traders. More to the point, a security house may take advantage of such a volatile condition by selling its stocks simply in order to earn profits. Hence, it is suggested that under this scenario, the relationship could be positive.

The relationship between *SIZE* and the sign of the measure of conflict of interest is also uncertain. On the one hand, a high demand for analysts' reports, which is

greater for companies with large assets, means that investors' attention is highly drawn to those companies (Bhushan (1989b); Collins, Kothari, and Rayburn (1987); Lang and Lundholm (1996)). Thus, security houses must be more vigilant when making a recommendation so as to avoid blemishing their reputation. On the other hand, again on account of investors' high demand for analysts' reports, an ideal opportunity is opened up for security houses to earn profits by making an undue buy recommendation. In sum, the relationship between *SIZE* and the sign of the degree of conflict of interest could be either negative or positive-- neither would be unexpected.

The relationship between *FREQ* and the degree of conflict of interest is expected to be negative. An increase in the frequency with which buy recommendations are made for a given stock by different security houses is unquestionably indicative that there is a clear consensus that the stock price is expected to rise. For this reason, were the security house to sell the stock, it would in all likelihood end up with a loss.

The variable *NUMBER*, i.e., the number of firms in the same industry, is also expected to be negatively related to the measure of conflict of interest. There is no doubt that firms in the same industry share common information about developments in that industry; thus, it would be extremely difficult for a security house to make a positive buy recommendation when the prices of other stocks in the same industry are falling. On these grounds, an increase in the number of companies in a particular industry should decrease the possibility of there being conflicts of interest.

The relationship between *Beta, i.e.,* the systemic risk associated with a recommended stock, and the measure of conflict of interest is probably positive. A high *Beta* means that the stock has high risk associated with high returns. Thus, its future stock returns are ambiguous, thus signaling that security houses may be less intimidated about making a questionable recommendation.

The relationship between *MVBV,* which represents the growth opportunity of a stock, and the degree of conflict of interest is, as should be expected, positive. As Frankel, Kothari and Weber (2003) put it, companies with a high value of *MVBV* are most often newly-established stock with high growth potential. These companies also lack a long-term, or historical, financial background. Therefore, under these circumstances, investment banks, which make a buy recommendation and simultaneously sell it are not likely to get caught. In other words, investment banks should have a greater opportunity to operate with conflicts of interest when a company has a high value of *MVBV* and when it does not have a long-term financial background.

Turning to the last variable, *INSIDER*, which stands for the equity shares of a particular stock held by insiders, it is expected that it is positively related to the measure of conflict of interest. Also based on the view of Frankel, Kothari and Weber (2003), the more equity that is held by insiders, the less transparent the company is to outsiders. In this sense, outsiders can never be fully aware of the prospects of the company, and for this very reason, investment banks are at great liberty to exploit any information that is available.

4.2. Impact on the Profits of Investment Banks

We next explore whether or not it is profitable for an investment bank to operate when it knowingly is involved in conflicts of interest. In a strict sense, in the event that it has conflicts of interest as part of its modus operandi and that it is able to increase profits, then it makes sense, at least on the surface, that that investment bank tries to continue doing so since it does not risk suffering the consequences. Should this be the case, then the market must be considered inefficient owing to the fact that it does not fully utilize all of the available information, but instead, it accepts information whether it be misleading or not. Against this, if the market is capable of detecting misleading information, the investment bank can surely not profit from misdirecting trading, and therefore, there is little or no use leading

investors astray.

We use three profitability indices to investigate this claim. The first is the return on assets of investment banks (*ROA*), which we employ to determine whether all banks actually benefit from operating with conflicts of interest. The second profitability index is the returns ratio from the proprietary division over total profits (*ROD*, where *D* denotes the dealer), which we employ since it is this division that makes profits if the public accepts the buy recommendations that are made. Hence, in this case, the presence of conflicts of interest directly affects *ROD*. The third index is the returns ratio from a brokerage division over total profits (*ROB*, where *B* denotes the broker), which has the same implications as *ROD*. To be straight to the point, the public buys the recommended stocks through the brokerage, and because of this, the profits of the brokerage division increase. Our model is:

$$Profit_{i,t} = a_0 + a_1 SIZE_{i,t} + a_2 Duration_{i,t} + a_3 TIMES_{i,t} + a_4 CI\_IB_{i,t} + \varepsilon_{i,t}, (12)$$

$$i=1,2,\ldots,30; t=2000, 2001, 2002, 2003.$$

where *Profit* is proxied by *ROA*, *ROD* and ROB; $CI\_IB_{i,t}$ are replaced by $CI\_IB\_W_{N,i,t}$, $CI\_IB\_A_{N,i,t}$ and $CI\_IB\_S_{N,i,t}$ (*N*=1, 2).

5. Data and Basic Statistics

5.1 Sources of the Data

The data for the stock recommendations used in this study are taken from the columns of "This Week's Stocks Observations" and "Strategy of Selecting Stocks" found in every Sunday's *Commercial Newspaper* and *Economic Newspaper*, respectively.[9] Because this information has only been made available since January 2000, this determines the beginning date of our sample, with it ending on December

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[9]There are many different magazines and newspapers that offer stock recommendations, but they are not referenced here because our recommendations must be published consistently and continuously. Also, the magazines and newspapers must specialize in the area of economics or business.

2003. There are 30 security houses randomly collected in our sample.[10] The proprietary trading information, *SIZE*, *TIMES*, *Duration*, the profit of investment banks (*ROA*), and other financial variables of firms making recommendations are taken from the *Taiwan Economic Journal* (TEJ) database. The two remaining profit measures, *ROD* and *ROB*, are collected from the exchangeable financial reports among security houses and are not directly available to the public.

5.2 Investment Banks and the Measure of Conflict of Interest

We first report on the measure of conflict of interest that occurs in investment banks and then report on the measure of conflict of interest that occurs in stocks.

Tables 3 to 8 present the basic statistics, including the mean, minimum and maximum of the three measures of conflict of interest: *the conflict of interest by weeks* (*CI_W*), *the conflict of interest by amounts* (*CI_A*), and *the conflict of interest by shares* (*CI_S$_N$*) across all recommendations issued of each of the security houses for each year, and recall that the mean values of these measures are also used to measure *the conflict of interest index for investment banks*: CI_IB_W, CI_IB_A, and CI_IB_S, respectively. A positive number is indicative of a positive net sell, and therefore, the presence of conflicts of interest is implied. The higher the positive number is, the more pervasive are the conflicts of interest. Banks are listed in the tables in descending order on the basis of the mean values from positive to zero and to negative. The term *na* means that that security house does not make any buy recommendations during that year.

In the columns on the far left hand side of Table 3, we take the year 2000 as the example to illustrate the extent to which each security house is involved in conflicts of interest using CI_W$_1$. There are 13 security houses that obtain positive average scores, 6 that obtain zero and 4 that obtain negative average scores. As shown, the top ranking security house N has the highest average scores as it makes

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[10]The names of the thirty security houses are in Appendix.

68 recommendations, and the maximum and minimum value or measure of conflict of interest is respectively +2 and –2. A maximum of +2 means that in a particular week, the security house sells each buy recommended stock one week both before and one week after it issues that recommendation; in this way, it receives the highest score when it is involved in a conflict of interest. When it is –2, it is in no conflict of interest whatsoever since the security house also buys the buy recommended stock. In the case of security house N, the average score is 0.294, a sign that the investment bank sells each recommended stock, on average, for 0.294 weeks out of the possible two weeks. The interpretation of this, of course, is that the security house is occasionally, but certainly not always, involved in a conflict of interest.

Several other interesting findings are worth noting for the year 2000. For one, the number of recommendations differs substantially across security houses. Security house R, for example, makes 87 recommendations, while H, W, M, V, III and A make none. Simply judging from the figures, all in all, a higher number of recommendations tends to be associated with a more positive average measure of conflict of interest. In addition, eleven security houses have a maximum of 2, a strong indication that at no time have they wanted to hold the stocks they have recommended; on the contrary, they have wanted to sell them. What's more, seven security houses have maximum scores of zero, indicating that they have not taken any further action with a particular stock after having recommended it.

Similar findings, albeit with slight differences, are shown between 2001 to 2003. First, it is noted that the number of security houses with a positive score or average measure of conflict of interest steadily drops from 13 to 11 in 2001, to 7 in 2002 and to 5 in 2003. Thus, the prevalence of conflicts of interest is less and less pronounced each year. One reason for this gradual decrease may be that supervision or governance improved during those years. The decrease could also be attributed to worsening economic conditions throughout those three years, which could have made buy recommendations more honest reflecting that security houses might have

been more forthright when making suggestions, or alternatively, in light of the good economic times, investors might have been more prudent and cautious. Next, the number of firms with the maximum score of +2 is, for all intents and purposes, stable throughout the entire four-year period: 11 in 2000, 9 in 2001, 11 in 2002 and 12 in 2003. Evidently, among those firms, the temptation to send the wrong signal does not dissipate. Third, considerably fewer firms make recommendations in 2003, perhaps largely because an increase in the number of mergers, acquisitions and control may have decreased the number of security houses or because 2003 marked the year with the worst economic conditions within the past three decades in Taiwan.

Table 4 presents the same measures of conflict of interest except that we use a two-week window. The maximum and minimum value respectively becomes +4 and –4. We take 2000 as our benchmark; overall, among all of the security houses, 10 have positive average scores, 5 have scores of zero, and 9 have negative average scores. The number with a positive score jumps to 12 in 2001 but dips to 9 in 2002 and suddenly plunges to only 6 in 2003. This signifies that the perceived importance of using conflicts of interest as part of a business strategy appears to have subsided in more recent years. Beyond this, the number of security houses with the maximum of +4, though it fluctuates, does ultimately decrease somewhat from 8 to 6 and then suddenly to just 2 before showing a marked increase back up to 5 in the above consecutive years.

Tables 5 and 6 are the same as Tables 3 and 4 but instead of being based on CI_W_1 and CI_W_2 to determine the pervasiveness of conflicts of interest, they are based on CI_A_1 and CI_A_2, respectively. A positive value suggests the presence of a higher degree of conflict of interest, whereas a negative value suggests a lower degree of conflict of interest. The maximum value means that when a particular security house makes a buy recommendation, the largest number of net sells occurs. Take the year 2000, which uses a one-week window as the example (Table 5). Security house IV has the largest maximum with total net sells of around $590

million ($590,431,000) new Taiwan dollars, which is quite inconsistent with the total buy recommendations. Bear in mind, however, that the other security houses also have noticeably high maximum positive amounts; thus, their proprietary trading or dealer divisions must also be bringing in large profits on account of their high measure of conflict of interest. Granted that the frequency of issuing a recommendation does typically appear to be positively correlated with the average measure of conflict of interest in Tables 3 and 4, but this certainly does not seem to be the case with some security houses in Tables 5 and 6. For example, the highest number of recommendations is 87 followed by 81, but the average value or measure of conflict of interest for each firm is negative. Similar to the results in the previous tables (Tables 3 and 4) nevertheless, the positive average scores decrease over the years. Compared with 12 security houses, which have a positive average score in 2000, only 6 do in 2003. This again, signifies that the measure of conflict of interest decreases with time.

Table 6 is the same as Table 5 except that we use the two-week period for CI_A$_2$. There are 11, 11, 10 and 5 security houses with a positive average score in each consecutive year during the four-year period, suggesting that conflicts of interest are at play. Contrast this with the respective number of security houses with zero or negative scores: 13, 10, 13 and 12, which undoubtedly indicates the absence of any conflicts of interest. Not unlike what is observed in Table 5, the number of security houses with a positive average score seems to have been on the decrease over the years, implying that fewer and fewer investment banks are making use of conflicts of interest as a way to make gains.

The results shown in Tables 7 and 8 correspond to those in Tables 3 to 6, except that we use total shares as a measure of conflict of interest. The results are similar to those in the other four tables, where the number of shares with a positive value is 11, 13, 8 and 6 for the one-week window and 9, 12, 11 and 5 for the two-week window.

5.3 Individual Stocks and the Measure of Conflict of Interest

Tables 9 through 14 show the stocks, which are most likely to be associated with conflicts of interest. We only discuss ten stocks with the highest and lowest measure or value of conflict of interest. In Table 9, where the reported number, $CI\_IS\_W_1$, is the sum of CI_W_1 divided by the number of recommendations; it is clear that the maximum and minimum number of recommendations is +2 and –2, respectively. A higher number is indicative of a higher measure of conflict of interest. For example, the stocks most associated with conflicts of interest show up in 2001 when Prolink receives three buy recommendations but is sold by the recommending security houses one week immediately before and immediately after the recommendations. When $CI\_IS\_W_1$ is employed as the criterion, the average is +2, and the sole reason for this is that each measure of conflict of interest, CI_W_1, is also +2. (i.e., $CI\_IS\_W_1 = (2+2+2)/3$). Stocks with the second highest measure of conflict of interest are UMEC (in 2001), BTC (in 2003) and TGI (in 2003), each of which has a score of +1.000. In the lower part of the same Table are those stocks that are not only recommended but are also actually bought by the same security house. Oddly enough, we find that TSMC and UMC, whose production represents the "semiconductor foundry" of Taiwan and whose rank is respectively number 1 and 2 the world over, also have the stocks with the high measure of conflict of interest. In 2000, UMC stock is recommended 52 times but sold around 15 times. As for TSMC, in 2001 and 2002, it is recommended 7 and 19 times but sold roughly 3 and 6 times. From this, it is reasonable to conclude that even stocks with large assets and an excellent reputation may also fall victim to conflicts of interest.

Table 10 shows similar results though we use $CI\_IS\_W_2$ to compute the average scores. The stocks with the highest extent or measure of conflict of interest are those of Leadtec (in 2002), with an average of +3.333, possibly resulting from (4+3+3)/3. This indicates that it is sold by the recommending security houses for 3.333 weeks out of the possible four weeks.

Tables 11 and 12 are based on amounts, while Tables 13 and 14 are based on

shares as the criteria with which we evaluate the extent or measure of conflict of interest. With CI_IS_A$_1$ employed as the criterion, the stocks with the highest measure of conflict of interest are those of Compal (in 2000), Leadtec (in 2001), UMEC (in 2002) and Hon Hai (in 2003), as shown in Table 11. Meanwhile, Compal (in 2000) has the highest net sells (around \$47 million), but this is not in agreement with the number of buy recommendations. Stocks with the highest scores for or measure of conflict of interest (CI_IS_A$_2$) in Table 12 are those of Acer (in 2003), with average net sells of nearly \$50 million. When we use shares as the criterion with which to evaluate the extent or measure of conflict of interest, as shown in Table 13, the stocks with the highest values of conflict of interest (CI_IS_S$_1$) in 2000 and 2001 are those of Compal and Leadtec, respectively, a finding which parallels that from Table 10. Table 14 shows that the stocks with the highest scores for conflict of interest (CI_IS_S$_2$) are those of BTC, with net sells approaching 2.47 million shares, once again illustrating a lack of consistency with the buy recommendations.

6. Determinants of and the Impact of Conflicts of Interest on Profits

6.1 Determinants of Conflicts of Interest

A. Investment Banks. Table 15 shows the determinants of the conflicts of interest, which are used by investment banks. *SIZE* is significantly negative when we use CI_IB_W$_2$ as the dependent variable, suggesting that the larger the assets of an investment bank are, the less likely it is that it has conflicts of interest. *Times* is significantly positive when we use CI_IB_W$_1$, CI_IB_W$_2$ and CI_IB_S$_1$ as the dependent variables, indicating that the more frequently an investment bank issues a recommendation, the higher is the probability that that bank will let itself get involved in conflicts of interest. *Duration*, i.e., the length of time a company has been established, is found to have no effect on the presence or absence of conflicts of interest.

B. Stocks. Table 16 presents the determinants of the presence of conflicts of interest associated with stocks. When we use CI_IS_W$_1$ as the dependent variable, *VOLUME* and *SIZE* are found to be significantly negative, which indicates that the greater the trading volume or asset size is, the less likely it is that the buy recommended stocks are sold. On the other side of the coin, *INSIDER* is significantly positive in one of the three specifications, which means that, to some extent, an increase in insider holding increases the likelihood of there being conflicts of interest. Contradicting our earlier expectation, *NUMBER* in the same industry is insignificant, which implies that the number of firms in the same industry is strictly not relevant when it comes to the presence or absence of conflicts of interest with respect to stocks.

When we use CI_IS_W$_2$ as the dependent variable, not one of the explanatory variables is significant. Thus, there are no clear-cut factors that seem to explain conflicts of interest that last for two weeks.

Table 17 employs the amounts of CI_IS_A$_1$ and CI_IS_A$_2$ as the dependent variables, and the results do not change significantly from those reported in Table 16. Thus, we skip the discussion on these results.

Table 18 differs from Table 17 in that it employs the shares rather than the amounts of CI_IS_S$_1$ and CI_IS_S$_2$ as the dependent variables. *Beta* is found to be significantly positive during the two-week period, suggesting that a stock with higher systematic risk tends to be more closely associated with a higher measure of conflict of interest.

6.2 Higher Measures of Conflict of Interest vis-à-vis Profits

A. ROA. Table 19 presents the estimated results using the ROA of investment banks as the dependent variable. Should an investment bank choose to operate with a conflict of interest for the sake of increasing profits, then it could be said that the market is inefficient since that bank is able to arbitrage information by

inappropriately making buy recommendations. The coefficients are significant when conflicts of interest are proxied by CI_IS_W$_1$ or CI_IS_W$_2$ when one or two weeks is used as the criterion. Hence, when investment banks, which make recommendations that could put them into jeopardy because of their use of conflicts of interest receive little or no retribution from the market, this automatically compels us to flatly reject the concept of market efficiency. After all, this points out that investment banks are truly able to exploit profits by increasing the number of conflicts of interest they include as part of their modus operandi. By contrast, when the remaining two variables, i.e., amounts and shares, are used as the criteria, because the coefficients are insignificant, it seems that the argument that favors market efficiency is fully supported.

B. ROD.   The estimated results in Table 20 are similar to those in Table 19, but they are based on ROD as the dependent variable because the proprietary trading division is customarily the major beneficiary of a misleading buy recommendation. Much to our surprise, none of the conflict of interest indices is significant. Hence, from the evidence here, it would seem that the presence of conflicts of interest does not raise the profits of a proprietary trading division.[11]

C. ROB.   In a broad sense, just like the case with ROA but most unlike that with ROD, the presence of conflicts of interest may benefit the brokerage department since a misinformed investor may heavily rely on investment bank reports no matter if they are misleading or not. Such being the case, then making buy recommendations and concurrently selling those very stocks must really be

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[11]Caution should be taken regarding the insignificance of the results. Because the ROD data are obtained directly from investment banks and are not examined by accountants, they may contain profits from other transactions. For example, in addition to stock trading, the profits of a proprietary department also include the gain/loss of bond trading. In Taiwan, sometimes the trading of stocks by the underwriting department, and not by the dealer department, is also classified as profits of the dealer department, thereby muddling the issue of this department's profits. Without more detailed information, we actually cannot identify the source of those profits.

rewarding for investment banks. In support of this, Table 21 shows that five of the six conflict of interest indices are significant, suggesting that, as a rule of thumb, investors cannot generally distinguish reliable recommendations from biased ones. Add to that and central to the issue at hand is the fact that a brokerage division is a profitable entity whether or not investment banks are rife with our newly-defined type of conflict of interest (i.e., that is, an investment bank issues biased recommendations on the presumption that the amount of trading revenue it expects their reports to generate will increase). There could very well be some truth to the matter that the capital market in Taiwan is far from being efficient. It is, in fact, hardly a misconception: some, but not all, investment banks are being allowed to go on making profits simply by providing double-dealing buy recommendations.

7. Concluding Remarks

That investment banks provide the market with buy recommendations, but at the same time, their proprietary trading division is selling the very same recommended stocks is, in a word, troubling. We refer to this type of stock as the stock "most commonly tied to conflicts of interest with respect to stock recommendations by investment banks", or for conciseness in this paper, conflict of interest with respect to individual stock recommended by investment banks", or as most frequently used in this paper, simply "conflict of interest."

The aim of this paper is to construct the conflict of interest indices based on weeks, amounts and shares so as to determine the measure, value or extent of conflict of interest, or similar in meaning, the pervasiveness of conflicts of interest in stock recommendations by investment banks from January 2000 to December 2003 on Taiwan's stock market. There is strong evidence to support the following conclusions.

First, conflicts of interest do indeed exist, which in this study means that it is not uncommon for some investment banks to sell their recommended stocks in the one- or two-week period before and in the one- or two- week period after they issue buy

recommendations. However, the pervasiveness of such conflicts of interest, generally speaking, dissipates over time. Secondly, those investment banks associated with more conflicts of interest share the following characteristics: they are smaller in size; and they issue recommendations more frequently. Apart from this, firms with stocks which are more associated with conflicts of interest have the following features: they have smaller trading volumes; they are smaller in size; they have higher systematic risk; they have more insider holdings; and equally important, they make recommendations less frequently. Last but certainly not least, conflicts of interest associated with stock recommendations are beneficial to the profits of investment banks, especially to their brokerage division. What this clearly demonstrates is that the market does not penalize banks, which are more heavily involved in conflicts of interest, and for this reason alone, the incentives to issue trustworthy and unbiased recommendations are greatly reduced.

A call is made here for future studies to compare the realized returns on stocks with high and low measures of conflict of interest. Also, research into whether or not foreign investment banks in Taiwan have the same measure of conflict of interest is most worthy of future study.

References

Barber, B. M., R. Lehavy, and B. Trueman, 2004, "Comparing the Stock Recommendation Performance of Investment Banks and Independent Research Firms," *Working Paper*, University of California at Davis, http://ssrn.com/abstract=572301.

Barber, B., R. Lehavy, M. McNichols, and B. Trueman, 2001, "Can Investors Profit from the Prophets? Security Analyst Recommendations and Stock Returns," *Journal of Finance*, LVI (2), 531-563.

Bhushan, R., 1989a, "Collection of Information about Publicly Traded Firms: Theory and Evidence," *Journal of Accounting & Economics,* 11, 183-206.

Bhushan, R, 1989b, "Firm Characteristics and Analyst Following," *Journal of Accounting and Economics*, 11, 255-274.

Chan, K. W., C. Chang, and A. Wang, 2004, "Put Your Money Where Your Mouth Is: Do Financial Firms Follow Their Own Recommendations?" *Working Paper*, Department of Applied Economics and Management, Cornell University.

Collins, D., Kothari, S., Rayburn, J., (1987), "Firm Size and Information Content of Prices with Respect to Earnings," *Journal of Accounting and Economics*, 9, 111-138.

Dechow, P., A. Hutton, and R. Sloan, 2000, "The Relation Between Analysts' Long-Term Earnings Forecasts and Stock Price Performance Following Equity Offerings," *Contemporary Accounting Research*, 17, 1-32.

Dugar, A. and S. Nathan, 1995, "The Effect of Investment Banking Relationships on Financial Analysts' Earnings Forecasts and Investment Recommendations," *Contemporary Accounting Research*, 12, 131-160.

Ellis, K., R. Michaely, and M. O'Hara, 2004, "Competition in Investment Banking: Proactive, Reactive, or Retaliatory?" *Working Paper*, Cornell University.

Frankel, R., S. P. Kothari and J. P. Weber (2003) "Determinants of the Informativeness of Analyst Research," *Working Paper*, MIT Sloan School of Management.

Irvine, P. J. A., 2001, "Do Analysts Generate Trade for Their Firms? Evidence from the Toronto Stock Exchange," Journal of Accounting and Economics, 30, 209-226.

Lang, M., Lundholm, R., (1996), "Corporate Disclosure Policy and Analyst Behavior," *The Accounting Review*, 71, 467-492.

Lee, Yi-Tsung, Ji-Chai Lin , and Yu-Jane Liu, 1999, "Trading Patterns of Big versus Small Players in an Emerging Market: An Empirical Analysis," *Journal of Banking and Finance* 23, 701-725.

Lin, H.-W. and M. McNichols, 1998, "Underwriting Relationships and Analysts' Earnings Forecasts and Investment Recommendations," *Journal of Accounting*

and Economics, 25, 101-127.

Ljungqvist, A., F. Marston, and W. Wilhelm, 2003, "Competing for Securities Underwriting Mandates: Banking Relationships and Analyst Recommendations," *Working Paper*, New York University.

McNichols, M., O'Brien, P., 1997, "Self-Selection and Analyst Coverage," *Journal of Accounting Research* (Supplement), 167-199.

Michaely, R. and K. Womack, 1999, "Conflicts of Interest and the Credibility of Underwriter Analyst Recommendations," *Review of Financial Studies*, 12, 653-686.

Morgan, J. and, P. C. Stocken, 2003, "An Analysis of Stock Recommendations," *RAND Journal of Economics*, vol. 34(1), 183-203.

Sirri, E., 2004, "Investment Banks, Scope, and Unavoidable Conflicts of Interest," *Economic Review* (Fourth Quarter 2004), Federal Reserve Bank of Atlanta, 23-35.

Stickel, S. E., 1995, "The Anatomy of the Performance of Buy and Sell Recommendations," *Financial Analysts Journal*, 51, 25-39.

Verrecchia, R. E., 1982, "Information Acquisition in a Noisy Rational Expectations Economy," *Econometrica*, 50(6), 1415–1430.

Womack, K. L., 1996, "Do Brokerage Analysts' Recommendations Have Investment Value?," *Journal of Finance*, 51, 137-167.

Table 1 A Case Study

Stocks Recommended by Securities House IV	Weeks relative to recommendation date	Buys/Sells of the Recommended Stocks by the Proprietary Trading Department of Securities House IV around the Buy Recommendations					
		Shares of Buy (A)	Amounts of Buy (B)	Shares of Sell (C)	Amounts of Sell (D)	Net Trade	
		unit: 1,000 shares	unit: NT$1,000	unit: 1,000 shares	unit : NT$1,000)	Amounts (B)-(D)	Shares (A)-(C)
Macronix International (MXIC) (Mar 4, 2000)	–2	100	6,875	0	0	6,875	100
	–1	950	70,825	150	10,975	59,850	800
	+1	200	14,600	0	0	14,600	200
	+2	350	25,200	0	0	25,200	350
Sunplus Technology (Dec 2, 2000)	–2	0	0	100	14,850	-14,850	-100
	–1	0	0	115	16,762	-16,762	-115
	+1	0	0	142	20,590	-20,590	-142
	+2	0	0	199	29,154	-29,154	-199
Compal (Aug 10, 2001)	–2	500	19,670	0	0	19,670	500
	–1	100	3,840	0	0	3,840	100
	+1	400	14,340	0	0	14,340	400
	+2	0	0	0	0	0	0
MediaTek Incorporation (Aug 10, 2001)	–2	60	22,830	150	58,449	-35,619	-90
	–1	0	0	70	27,720	-27,720	-70
	+1	0	0	0	0	0	0
	+2	0	0	0	0	0	0

Table 1 A Case Study (continued)

Stocks Recommended by Securities House IV (recommendation date)	Weeks relative to recommendation date	Shares of Buy (A)	Amounts of Buy (B)	Shares of Sell (C)	Amounts of Sell (D)	Net Trade	
						Amounts (B)-(D)	Shares (A)-(C)
		unit: 1,000 shares	unit: NT$1,000	unit: 1,000 shares	unit : NT$1,000)		
AU Optronics (Dec 7, 2001)	−2	0	0	700	17,960	-17,960	-700
	−1	0	0	300	9,260	-9,260	-300
	+1	0	0	300	9,582	-9,582	-300
	+2	0	0	1,700	53,095	-9,582	-300
Formosa Plastic (Jul 26, 2002)	−2	126	5,885	1,796	80,798	-74,913	-1,670
	−1	72	3,214	574	25,443	-22,229	-502
	+1	84	3,819	293	13,201	-9,382	-209
	+2	1,026	41,608	1,150	47,111	-5,503	-124
Accton (Sep 5, 2002)	−2	510	28,015	1,219	66,023	-38,008	-709
	−1	570	31,200	762	40,484	-9,284	-192
	+1	510	28,765	755	42,293	-13,528	-245
	+2	105	5,940	579	32,484	-26,544	-474
MediaTek Incorporation (Aug 30, 2002)	−2	40	17,450	190	81,330	-63,880	-150
	−1	0	0	192	81,900	-81,900	-192
	+1	0	0	40	12,160	-12,160	-40
	+2	0	0	118	39,881	-39,881	-118

The header "Buys/Sells of the Recommended Stocks by the Proprietary Trading Department of Securities House IV around the Buy Recommendations" spans the data columns.

Table 2 Mnemonics, Definitions and Descriptions

A. Conflicts of Interest (CI) for Investment Banks (IB)

Variables	Definition	Description
CI_IB_A1B1 CI_IB_A2B2 CI_IB_A3B3 CI_IB_A4B4	Conflicts of interest indices for investment banks	This is the net trading shares (buy – sell) of each recommended stocks traded by investment banks around the issuance of buy recommendation. This net trade is scaled by the stock's average daily trading volume (ADTV)). Second, for each recommending bank, we determine the mean of the net trading shares across its recommendations issued to all sample firms for each of the eight weeks (four weeks before and after issuing its buy recommendations), and then we subtract the means for N weeks after the recommendations from the means for N weeks before the recommendations to determine the conflicts of interest indices for the recommending bank. CI_IB_A1B1, CI_IB_A2B2, CI_IB_A3B3, and CI_IB_A4B4 are the conflicts of interest indices for the recommending bank if N equalizes 1, 2, 3, and 4, respectively. A more positive (negative) number of the conflicts of interest indices denotes that, on average, the investment bank is more prone to be associated with net buying prior to recommendations and net selling after recommendations, and therefore with a higher incidence of conflicts of interest vis-à-vis stock recommendations.

B. Conflicts of Interest (CI) for Individual Stocks (IS)

Variables	Definition	Description
CI_IS_A1B1 CI_IS_A2B2 CI_IS_A3B3 CI_IS_A4B4	Conflicts of interest indices for individual stocks	We first calculate the net trading shares for each sample firm (scaled by its average daily trading volume (ADTV)) traded by the proprietary trading division of investment banks, which, at the same time, issue buy recommendations to the same recommended stock. Second, for each recommended stock, we determine the mean of the net trading shares across recommendations issued to the recommended stock for each of the eight weeks (four weeks before and after issuing the buy recommendations), and then we subtract the means for N weeks after the recommendations from the means for N weeks before the recommendations to determine the conflicts of interest indices for the individual stock. CI_IS_A1B1, CI_IS_A2B2, CI_IS_A3B3, and CI_IS_A4B4 are the conflicts of interest indices for the individual stock if N equalizes 1, 2, 3, and 4, respectively. A more positive (negative) number of the conflicts of interest indices denotes that, on average, the individual stocks is more prone to be associated with net buying prior to recommendations and net selling after recommendations, and therefore with a higher incidence of conflicts of interest vis-à-vis stock recommendations.

Table 3. Net Trading Shares (Buy–Sell) of Recommending Security Houses around Buy Recommendation Weeks

					Weeks around to recommendation date											
Weak	−8	−7	−6	−5	−4	−3	−2	−1	1	2	3	4	5	6	7	8
Mean	-0.016%	0.010%	0.008%	0.052%	0.061%	0.007%	0.023%	0.031%	-0.023%	-0.020%	-0.055%	-0.047%	0.009%	-0.039%	-0.003%	-0.016%
Cum. Mean	-0.016%	-0.006%	0.002%	0.054%	0.115%	0.122%	0.145%	0.176%	0.153%	0.133%	0.078%	0.031%	0.040%	0.002%	-0.002%	-0.018%
Std. Dev.	0.142%	0.183%	0.067%	0.580%	0.791%	0.355%	0.277%	0.309%	0.150%	0.474%	0.377%	0.299%	0.220%	0.224%	0.062%	0.092%
Maximum	0.324%	1.353%	0.322%	4.939%	6.585%	2.233%	1.523%	2.377%	0.512%	3.292%	0.960%	0.566%	1.722%	0.157%	0.200%	0.166%
Minimum	-1.012%	-0.674%	-0.311%	-0.422%	-1.453%	-1.738%	-1.141%	-0.934%	-0.856%	-1.722%	-2.714%	-2.179%	-0.347%	-1.842%	-0.285%	-0.649%
No. of obs.	2,825	2,825	2,825	2,825	2,825	2,825	2,825	2,825	2,825	2,825	2,825	2,825	2,825	2,825	2,825	2,825

The number is the net trading shares (buy – sell) of the recommended stocks by recommending security houses. The net trading shares have been deflated by average daily trading volume (ADTV) including all market participants. Positive and negative weeks denote week before and after the buy recommendation, respectively. For example, –8 and 8 denote eight weeks before and after the recommendation.

Table 4. Net Trading Shares (Buy–Sell) of Recommending Security Houses around Buy Recommendation Weeks

Week	−8	−7	−6	−5	−4	−3	−2	−1	1	2	3	4	5	6	7	8
Mean	0.002%	-0.001%	-0.003%	-0.005%	-0.009%	-0.002%	-0.005%	0.008%	-0.006%	-0.016%	-0.003%	-0.004%	0.003%	0.007%	0.005%	-0.003%
Cum. Mean	0.002%	0.000%	-0.002%	-0.007%	-0.016%	-0.018%	-0.023%	-0.014%	-0.020%	-0.036%	-0.038%	-0.042%	-0.039%	-0.032%	-0.027%	-0.030%
Std. dev.	0.049%	0.042%	0.034%	0.026%	0.081%	0.028%	0.023%	0.052%	0.091%	0.105%	0.024%	0.033%	0.038%	0.032%	0.060%	0.056%
Maximum	0.264%	0.071%	0.095%	0.126%	0.080%	0.051%	0.071%	0.380%	0.421%	0.092%	0.058%	0.135%	0.216%	0.204%	0.421%	0.135%
Minimum	-0.265%	-0.290%	-0.173%	-0.132%	-0.653%	-0.153%	-0.122%	-0.067%	-0.615%	-0.868%	-0.100%	-0.103%	-0.077%	-0.055%	-0.078%	-0.421%
No. of obs.	232,210	232,210	232,210	232,210	232,210	232,210	232,210	232,210	232,210	232,210	232,210	232,210	232,210	232,210	232,210	232,210

The number is the net trading shares (buy – sell) of the recommended stocks by non-recommending security houses. The net trading shares have been deflated by average daily trading volume (ADTV) including all market participatnts. Positive and negative weeks denote week before and after the buy recommendation, respectively. For example, –8 and 8 denote eight weeks before and after the recommendation.
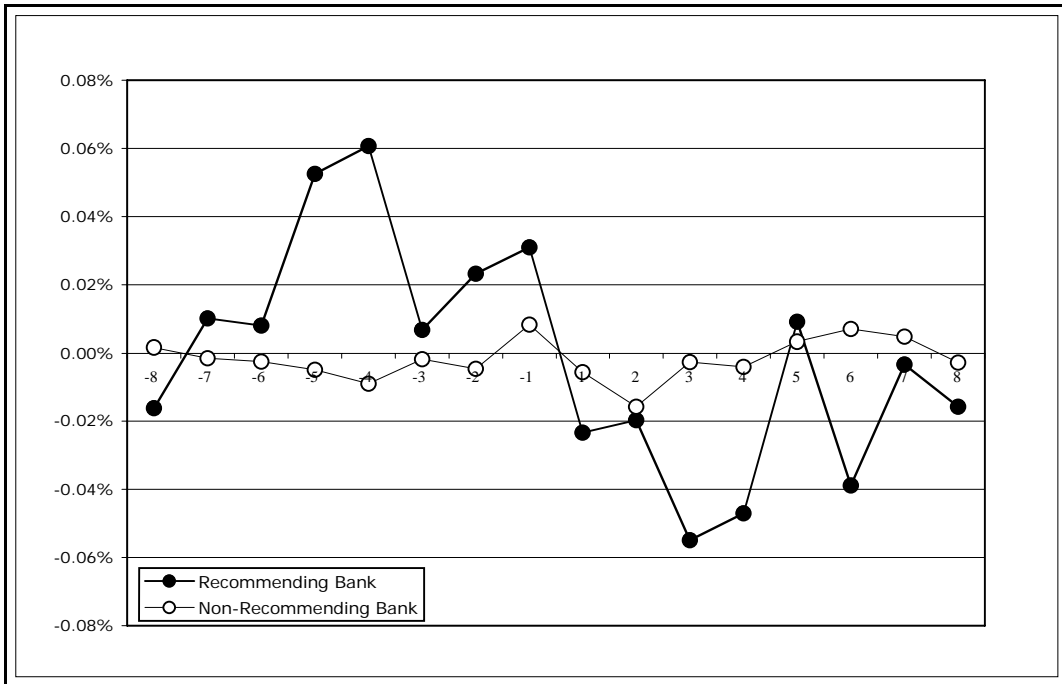
Figure 1 Average Trading Shares of Recommending and Non-Recommending
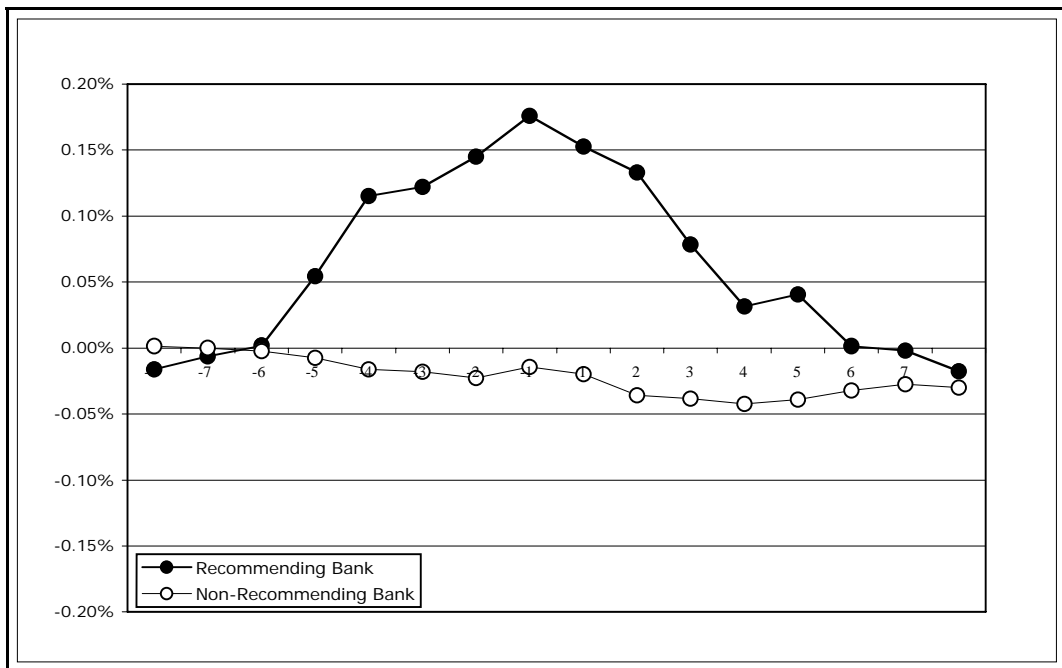Banks Deflated by ADTV around Recommendations

Figure 2 Cumulative Average Trading Shares of Recommending and
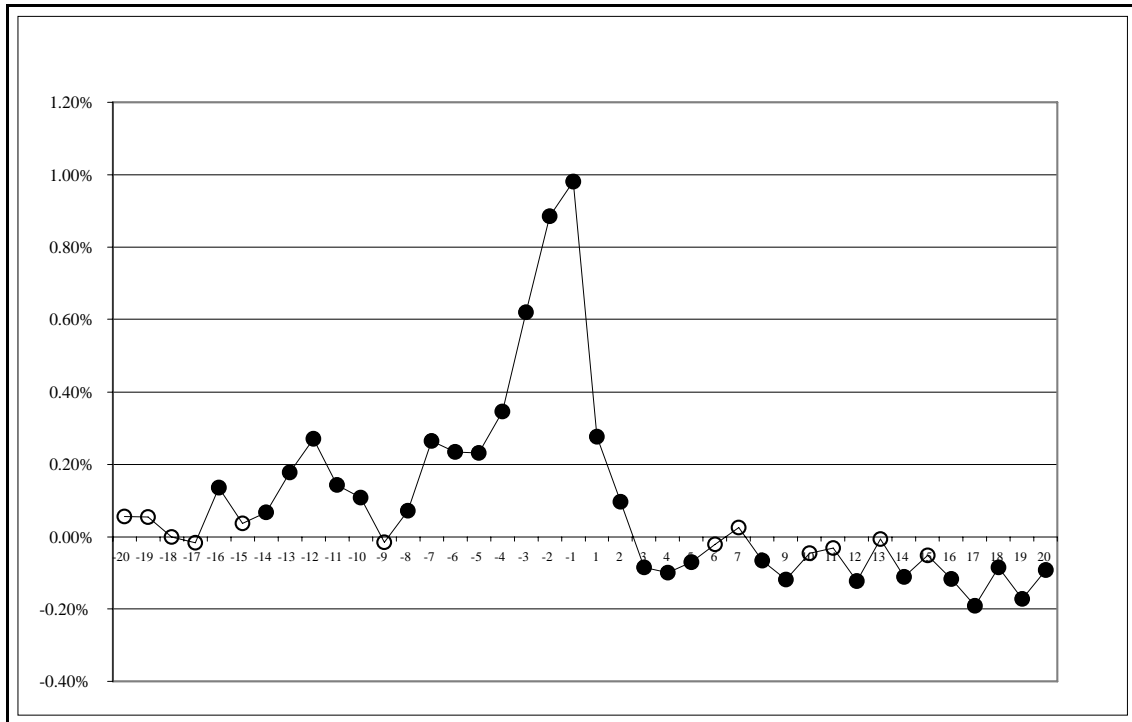Non-Recommending Banks Deflated by ADTV around Recommendations

Figure 4 The Abnormal Returns (AR) of Stocks of Recommended Firms over 40 Days around Buy Recommendations
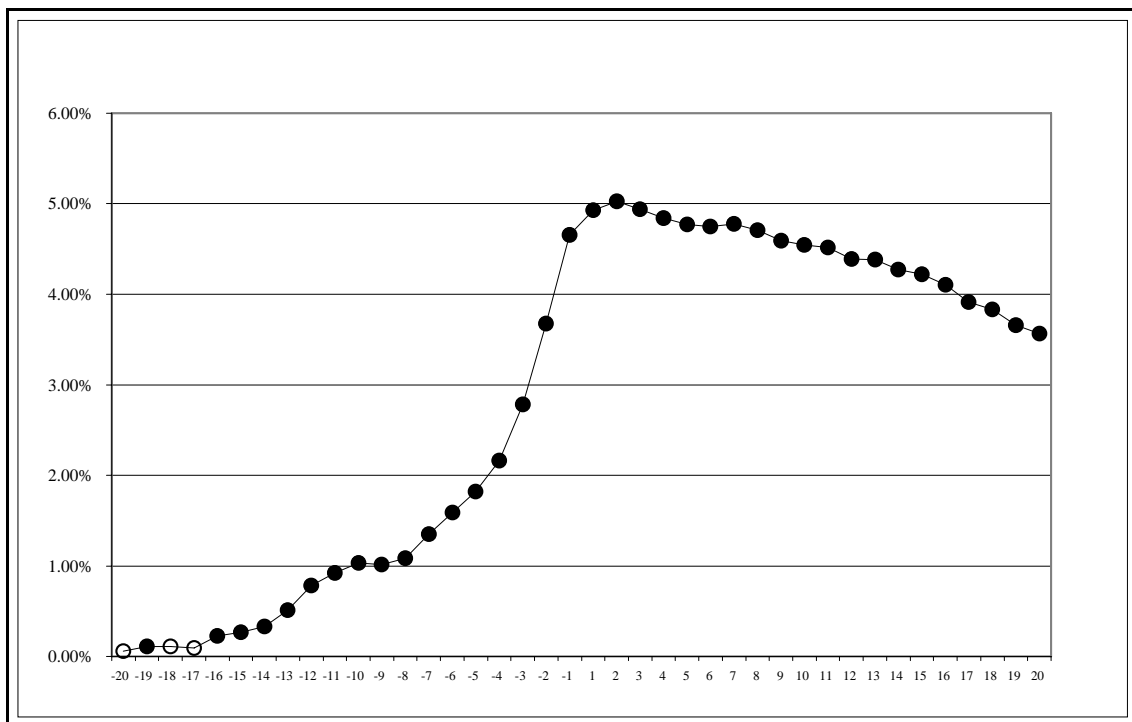

Figure 5 The Cumulative Abnormal Returns (AR) of Stocks of Recommended Firms over 40 Days around Buy Recommendations

Table 5 Descriptive Statistics of Conflicts of Interest Indices for Individual Stocks

	CI_IS_B1A1 Conflict of interest index for one weeks before and after the recommendation	CI_IS_A2B2 Conflict of interest index for two weeks before and after the recommendation	CI_IS_A3B3 Conflict of interest index for three weeks before and after the recommendation	CI_IS_A4B4 Conflict of interest index for four weeks before and after the recommendation
Mean	0.097%	0.265%	0.355%	0.369%
Standard Deviation	0.854%	1.250%	1.518%	1.547%
Maximum	5.784%	9.547%	9.528%	9.753%
Minimum	−3.292%	−0.582%	−0.736%	−1.030%
t-value	0.979	1.826[*]	2.015[**]	2.049[**]
Number of Observations:				
Conflict of interest > 0	28	27	31	33
Conflict of interest < 0	19	23	18	17
Conflict of interest = 0	27	24	25	24
Total	74	74	74	74

We first calculate the net trading shares for each sample firm (scaled by its average daily trading volume (ADTV)) traded by the proprietary trading division of investment banks, which, at the same time, issue buy recommendations to the same recommended stock. Second, for each recommended stock, we determine the mean of the net trading shares across recommendations issued to the recommended stock for each of the eight weeks (four weeks before and after issuing the buy recommendations), and then we subtract the means for N weeks after the recommendations from the means for N weeks before the recommendations to determine the conflicts of interest indices for the individual stock. CI_IS_A1B1, CI_IS_A2B2, CI_IS_A3B3, and CI_IS_A4B4 are the conflicts of interest indices for the individual stock if N equalizes 1, 2, 3, and 4, respectively. A more positive (negative) number of the conflicts of interest indices denotes that, on average, the individual stocks is more prone to be associated with net buying prior to recommendations and net selling after recommendations, and therefore with a higher incidence of conflicts of interest vis-à-vis stock recommendations.

Table 7. Determinants of the Conflict of Interest Indices for Individual Stocks

	(A) CI_IS_A2B2 — Conflict of interest index for two weeks before and after the recommendation	(B) CI_IS_A3B3 — Conflict of interest index for three weeks before and after the recommendation	(C) CI_IS_A4B4 — Conflict of interest index for four weeks before and after the recommendation
Size	0.286	−0.178	−0.498[*]
	(1.046)	(−0.587)	(−1.684)
Average Daily Trading Volume	0.00006[**]	0.00009[***]	0.00005[**]
	(2.649)	(3.961)	(2.095)
Number of Recommendations	−0.031[***]	−0.042[***]	−0.035[***]
	(−2.764)	(−4.251)	(−3.187)
Beta	−5.417[***]	−3.694[***]	−4.152[***]
	(−4.886)	(−3.381)	(−2.663)
Market-to-Book Ratio	0.406	0.670[**]	0.657[**]
	(0.161)	(2.171)	(2.053)
Insider Holdings	0.004	−0.043[**]	−0.033
	(0.130)	(−2.169)	(1.319)
Number of Peer Firms	0.005	0.015	0.036[*]
	(0.230)	(0.665)	(1.956)
Constant	1.091	7.712[*]	13.055[***]
	(0.230)	(1.658)	(2.945)

R^2		0.716	0.219	0.500
$adj\text{-}R^2$		0.686	0.136	0.447
Number of Observations		74	74	74

Size is the total asset of a recommended company; *Average Daily Trading Volume* is the average of daily trading volume of a recommended stock; *Number of Recommendations* is the frequency with which a particular stock is recommended by all security houses; *Beta* is the systematic risk of a recommended stock; *Market-to-Book Ratio* is to measure the growth opportunity of a recommended stock; *Insider Holdings* is the equity shares of the stock held by insiders; *Number of Peer Firms* is the number of similar stocks in the same industry (based on SIC 4 digits). *t-statistics* are in parentheses. ***, **, and * represent the level of significance at 0.01, 0.05 and 0.10, respectively.

Table 8 Descriptive Statistics of Conflicts of Interest Indices for Investment Banks

	CI_IB_B1A1 Conflict of interest index for one weeks before and after the recommendation	CI_IB_A2B2 Conflict of interest index for two weeks before and after the recommendation	CI_IB_A3B3 Conflict of interest index for three weeks before and after the recommendation	CI_IB_A4B4 Conflict of interest index for four weeks before and after the recommendation
Mean	0.076%	0.129%	0.138%	0.114%
Standard Deviation	0.218%	0.404%	1.316%	1.238%
Maximum	0.742%	1.987%	5.877%	4.932%
Minimum	–0.180%	–0.180%	–4.037%	–4.472%
t-value	1.953[*]	1.780[*]	0.583	0.514
Number of Observations:				
Conflict of interest > 0	6	7	9	10
Conflict of interest < 0	5	5	5	4
Conflict of interest = 0	20	19	17	17
Total	31	31	31	31

We first calculate the net trading shares for each sample firm (scaled by its average daily trading volume (ADTV)) traded by the proprietary trading division of investment banks, which, at the same time, issue buy recommendations to the same recommended stock. Second, for each recommending bank, we determine the mean of the net trading shares across its recommendations issued to all sample firms for each of the eight weeks (four weeks before and after issuing its buy recommendations), and then we subtract the means for N weeks after the recommendations from the means for N weeks before the recommendations to determine the conflicts of interest indices for the recommending bank. CI_IB_A1B1, CI_IB_A2B2, CI_IB_A3B3, and CI_IB_A4B4 are the conflicts of interest indices for the recommending bank if N equalizes 1, 2, 3, and 4, respectively. A more positive (negative) number of the conflicts of interest indices denotes that, on average, the investment bank is more prone to be associated with net buying prior to recommendations and net selling after recommendations, and therefore with a higher incidence of conflicts of interest vis-à-vis stock recommendations.

Table 9. Impact of Conflicts of Interest on Abnormal Trading Returns of the Investment Banks

	N	Abnormal Trading Returns of the Investment Banks for One Week before and after Recommendations				Abnormal Trading Returns of the Investment Banks for Two Week before and after Recommendations			
		Mean	Std.	Min	Max	Mean	Std.	Min	Max
High Conflicts of Interest	6	5.458%	10.366%	–4.487%	25.390%	2.562%	2.731%	–0.220%	6.397%
Low Conflicts of Interest	25	0.199%	0.532%	–0.046%	2.223%	–1.750%	8.484%	–41.538%	3.389%
t–test of the diff. (High minus Low)		1.242				2.124[**]			

We first calculate the abnormal trading *profits*, for each recommending bank, by multiplying the net trading *amounts* of stocks by respective abnormal returns on these stocks in the bank's holdings for N weeks before and after recommendations, then we divide the abnormal trading *profits* by the net trading *amounts* to determine the abnormal trading *returns* (N=1, 2). We divide banks into two groups on the basis of their degree of conflicts of interest indices, i.e., CI_IB_A1B1 and CI_IB_A2B2, respectively. In other words, those banks with higher-than-average (lower-than-average) CI_IB_A1B1 are those with high (low) conflicts of interest for one week before and after recommendations, while those banks with higher-than-average (lower-than-average) CI_IB_A2B2 are those with high (low) conflicts of interest for two week before and after recommendations