

# Conflicts of Interest in the Stock Recommendations of Investment Banks and Their Determinants

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## Abstract

This study explores the phenomena associated with conflicts of interest, particularly as they pertain to the brokerage and proprietary trading 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 buys (sells) the same recommended stocks through its proprietary trading division before (after) recommendations, and if so, to what extent this goes on. We find that these conflicts of interest do exist and that these investment banks can profit from their recommendations in the short run.

## I. Introduction

On account of recent allegations of accounting fraud at Enron, soon followed by allegations of tainted research at brokerage houses such 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 U.S. Securities and Exchange Commission (SEC) announced a historic agreement with large investment banks (IBs), known as the Global Analyst Research Settlement.<sup>1</sup> Since then, securities firms have been required to separate their brokerage from their investment banking activities because brokerage research analysts may face undue pressure from their respective investment banking divisions to issue stock reports that favor the interests of their investment banking clients over those of

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<sup>1</sup>The 10 firms are Bear Stearns, 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.

their brokerage clients (Morgan and Stocken (2003)). According to Michaely and Womack (1999), three main sources of income for IBs, for example, 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 IBs have constructed a “Chinese wall” between their investment banking and their brokerage divisions, researchers have seriously begun to analyze the quality of stock recommendations. Conflicts of interest have often arisen, and from two scenarios in particular. First, when brokerage analysts’ compensation relates positively 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 though those analysts’ outside reputations depend, at least partially, on the quality of their recommendations. Second, in 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 (2007), who find that the average daily abnormal returns (ARs) from an independent research firm’s buy recommendations exceed those of IBs by almost 8% annualized. Conversely, those same IBs’ buy recommendations subsequent to equity offerings underperform by an almost astounding 22% annualized when compared to the buy recommendations of independent research firms. To account for this underperformance on the part of IBs, Barber et al. (2007) 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.<sup>2</sup>

More empirical evidence abounds that supports the view that affiliated analysts’ earnings forecasts and recommendations are significantly more favorable than those made by unaffiliated analysts. 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 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

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<sup>2</sup>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 ARs.

banking” division and a “brokerage” division.<sup>3</sup> 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 empirically studied the conflicts of interest between a “proprietary trading” division and a “brokerage” division.<sup>4</sup> It cannot be ignored that additional conflicts of interest may arise when an IB holds a large number of overvalued stocks that are expected to fall in value in the near future. In this case, to avoid losses, that bank’s research department might issue buy recommendations, thereby misleading its brokerage customers, and at the same time, its proprietary trading division might sell off the same recommended stocks. In the presence of this new type of conflict of interest, an independent security house<sup>5</sup> 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 IB complements and completes the understanding we require of conflicts of interest.

The major aim of this paper is to investigate, for the first time, the conflict of interest 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 eight 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 a conflict of interest in the event that an IB, which issues buy recommendations to the stock

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<sup>3</sup>See Dugar and Nathan (1995), Lin and McNichols (1998), Dechow et al. (2000), Ljungqvist, Marston, and Wilhelm (2006), and Ellis, Michaely, and O’Hara (2006), as well as Barber et al. (2007) and references therein.

<sup>4</sup>One exception is Chan, Chang, and Wang (2005), 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 IBs send a wrong message. ii) We also explore the determinants of the conflicts of interest of IBs. 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 IBs profit when they have conflicts of interest. Bodnaruk, Massa, and Simonov (2008) examine the conflicts of interest of IBs that provide M&A advice to bidder companies and simultaneously trade in the target companies. They find a link between the proprietary trading profits of the IB and the likelihood of the deal being completed.

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.

<sup>5</sup>We use the terms “investment bank” and “security house” interchangeably.

market, buys the same recommended stocks through its proprietary trading division before recommendations and sells the same recommended stocks through its proprietary trading division after recommendations.

To achieve our goal of investigating this new type of conflict of interest, we first construct indices of conflicts of interest within each security house based on shares, in order to measure the magnitude of conflicts of interest in stock recommendations. We employ information for eight weeks before and after a buy recommendation, where 'shares' means the net number of shares the security house buys and 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 that have been established for a longer period of time less prone to operate with conflicts of interest for fear of tarnishing their reputation? Second, 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.

We also 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 liquid, smaller, and fast-growing, as well as having lower systematic risk and 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 IB. The purpose of making buy recommendations and trading those stocks strategically is either to gain profit or to avoid loss. In this regard, an IB's issuance of biased recommendations may generate trade and increase the amount of trading revenue it expects their reports to generate.<sup>6</sup> To explore this issue, we examine whether the profits of IBs are affected by conflicts of interest. If the market is able to differentiate between good and bad stock recommendations, then in all likelihood, IBs with more conflicts of interest cannot generate as much profit by issuing biased recommendations.

This paper is organized as follows. Section II outlines the relevant background information and the sources of the data. Section III 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 IV provides

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<sup>6</sup>The ability of analysts to generate trade is a key assumption in McNichols and O'Brien (1997), 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 that analysts' coverage decisions depend, at least in part, on the amount of trading revenue they expect their reports will generate.

a discussion of the empirical models. Section V summarizes the data and the descriptive statistics. Section VI discusses the determinants of and the impact on profits gained from having conflicts of interest, based on empirical research. Section VII presents the conclusions that we draw from this extensive research.

## II. Background and Sources of the Data

### A. 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 US\$373.91 billion. In tune with the objectives of the TAIEX to accelerate capital market internationalization and 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-end and mutual 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 stock recommendations issued by IBs. Institutional investors, on the other hand, are gradually becoming 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, who have 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. It is particularly important to note here that IBs, 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.

### B. Sources of the Data on Proprietary Trading

As stated earlier, in every Sunday commercial newspaper in Taiwan, about six security houses issue buy recommendations, but exactly which six IBs 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 rarely are there any “hold” recommendations. It is, of course, widely assumed that security houses themselves do not sell the stocks that they recommend unsophisticated investors buy.

The proprietary trading information, including the names of stocks, the transaction amounts of stocks, and the number of shares, is reported to the SEC weekly.<sup>7</sup> For this reason, we are in the unique position of having complete records of the buying and selling activities of IBs 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 eight weeks before and after each recommendation, and these data cover January 2000 to December 2003.

To more firmly grasp our data, see Table 1, which explains proprietary trading in situations involving conflicts of interest. Panel A illustrates the hypothesis regarding conflicts of interest with a theoretical example. In the example, it is hypothesized that before the week during which the shares are recommended, the buy position of the stocks recommended by the recommending IBs exceeds the sell position, while after that week, the sell position in the recommended stocks by the recommending IBs exceeds the buy position. The resulting net traded shares (NTS) are therefore positive and negative, before and after the week during which the shares are recommended, respectively. Panel B employs eight real cases, where the NTS of the recommended stock denotes transactions by the recommending IB. Before the week in which the shares are recommended (weeks  $-8$  to  $-1$ ), the net buying position in the shares is mostly positive, except for FPC, suggesting that IBs buy more of the recommended stocks than they sell before making their recommendation. After the week in which the shares are recommended (weeks  $1$  to  $8$ ), and especially during weeks  $1$  to  $3$ , the NTS values are overwhelmingly negative, and most become  $0$  after week  $4$ . If the window is reduced to two weeks before and after the recommendation, the results of the positive and negative NTS values before and after the week in which the shares are recommended, respectively, become even more distinctive. The results of buying more before the week in which the shares are recommended and selling more after that week are highly consistent with the conflicts of interest hypothesis.

### III. Measures and Determinants of Conflicts of Interest

#### A. Conflicts of Interest Indices for Investment Banks

For each of the weeks, this study calculates the net buy position for the recommended stocks by the IB issuing the recommendation for the period from eight

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<sup>7</sup>The Taiwan Economic Journal, a private data vendor in Taiwan, collects these data.

TABLE 1  
Case Study: Trading of Recommended Stocks by Recommending Investment Banks  
around Recommendations

*Panel A. Hypothetical Cases of the Buy, Sell, and Net Traded Shares (NTS) for the Recommended Stocks by One Recommending Investment Bank*

1. This is the hypothetical case involving trading activity in shares of a recommended stock eight weeks before and after a buy recommendation is made by an investment bank. Weeks  $-8, -7, \dots, 7$ , and  $8$  denote the weeks before and after the week in which the recommendations are made, respectively.

2. The hypothesis of conflicts of interest suggests that buying activity exceeds selling activity prior to the week in which the recommendation is made, whereas selling activity exceeds buying activity after the week in which the recommendation is made, respectively. Therefore, net traded shares (NTS) are positive and negative before and after the recommendation, respectively.

	Weeks Relative to Recommendation Date (unit: 1,000 shares)															
	-8	-7	-6	-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8
Buy shares (A)	200	200	300	600	350	720	700	600	100	30	100	100	200	100	0	5
Sell shares (B)	100	0	100	200	50	20	500	100	400	230	1,000	700	700	200	80	15
NTS = (A) - (B)	100	200	200	400	300	700	200	500	-300	-200	-900	-600	-500	-100	-80	-10

*Panel B. Real Cases of Net Traded Shares (NTS) for Eight Recommended Stocks by One Investment Bank*

The conflicts of interest hypothesis suggests that the NTS are positive and negative before and after the week in which the recommendation is made, respectively.

Weeks Relative to Recommendation Date (unit: 1,000 shares)																
Recommended Stock	-8	-7	-6	-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8
1. AUO	400	0	0	400	0	798	0	-1,216	-300	-700	-580	0	0	0	0	0
2. Compal	0	0	0	0	0	0	600	1,168	-268	-1,200	-300	0	0	0	0	0
3. FPC	300	675	600	-200	-675	-700	900	643	-1,427	-13	-103	0	0	0	0	0
4. Gigabyte	0	0	0	0	0	0	0	270	-245	-125	-150	0	0	15	-15	0
5. MediaTek	0	0	15	20	30	115	-120	240	0	0	0	-100	-50	0	-150	0
6. Quanta	0	0	0	0	0	60	60	20	-140	0	0	0	0	0	0	0
7. TSMC	30	80	-45	10	85	10	10	20	36	-15	-40	-24	-72	-5	0	0
8. UMC	0	0	0	0	0	0	500	0	0	-500	0	0	0	0	0	0

weeks preceding to eight weeks following the recommendation. The NTS is divided by the average daily trading volumes across the sample period (2000–2003) to remove the scale effect. That is,

$$(1) \quad NTS_{i,\tau} = \frac{\sum_{j=1}^{M_i} \text{BUY\_SHARES}_{i,\tau}^j - \sum_{j=1}^{M_i} \text{SELL\_SHARES}_{i,\tau}^j}{M_i},$$

where  $i$  denotes the  $i$ th recommending IB,  $\tau$  represents the  $\tau$ th week before or after the recommendation,  $j$  is the  $j$ th recommendation using the  $i$ th IB, and  $M_i$  denotes the total number of recommendations issued by the  $i$ th recommending IB.<sup>8</sup> The positive  $NTS_{i,\tau}$  denotes that the number of shares bought exceeds the number sold by the  $i$ th recommending IB of all its recommended stocks and vice versa for the negative  $NTS_{i,\tau}$ .

<sup>8</sup>Note that the total number of recommendations issued to stocks is larger than the total number of recommended stocks, since one stock may be recommended more than once.



Then,  $CI\_IB_{i,t}$ , which denotes the conflicts of interest of the  $i$ th IB during the period  $-t$  to  $t$  weeks with regard to the recommendations, is

$$(2) \quad CI\_IB_{i,t} = \left( \sum_{\tau=-t}^{-1} NTS_{i,\tau} - \sum_{\tau=1}^t NTS_{i,\tau} \right), \quad t = 1, 2, \dots, 8.$$

Equation (2) comprises the NTS of all recommended stocks recommended by the  $i$ th recommending IB during the period from  $-t$  to  $t$  weeks around the recommendations. The right-hand side of the formula comprises two parts, namely, the sum of the NTS of the  $i$ th recommending IB before the recommendation ( $\sum_{\tau=-t}^{-1} NTS_{i,\tau}$ ) and the sum of the NTS following the recommendation ( $\sum_{\tau=1}^t NTS_{i,\tau}$ ), respectively. The hypothesis regarding the conflicts of interest for an IB suggests that the first part is positive, whereas the second part is negative; for example, the recommending IB buys more of the recommended stocks before issuing the recommendation but sells more after issuing the recommendation. The difference between these two parts, for example,  $CI\_IB_{i,t}$  indicates the strength of the conflicts of interest of the  $i$ th recommending IB during the  $-t$  to  $t$  weeks around the recommendations. The positive  $CI\_IB_{i,t}$  indicates that conflicts of interest regarding the  $i$ th recommending IB exist during  $-t$  to  $t$  weeks around recommendations, and increase with the size of the positive number. Conversely, conflicts of interest become less likely with an increasing negative number. The mnemonic definition and description of  $CI\_IB_{i,t}$  are shown in Table 2.

## B. Conflicts of Interest Indices for Individual Stocks

It is also interesting to identify which individual stocks (IS) have higher conflicts of interest. Similar to  $NTS_{i,\tau}$ , this study now calculates the NTS of the  $k$ th recommended stock for all IBs:

$$(3) \quad NTS_{k,\tau} = \frac{\sum_{l=1}^{N_k} BUY\_SHARES_{k,\tau}^l - \sum_{l=1}^{N_k} SELL\_SHARES_{k,\tau}^l}{N_k},$$

where  $k$  denotes the  $k$ th recommended stock,  $\tau$  represents the  $\tau$ th week before or after the recommendation,  $l$  is the  $l$ th recommendation, and  $N_k$  is the total number of recommendations issued regarding the  $k$ th stock by all recommending IBs. Different IBs may all have conflicts of interest with a single stock that they have all recommended. Such stocks are referred to as the “stocks most commonly associated with conflicts of interest regarding stock recommendations by investment banks,” or simply “conflicts of interest stocks,” denoted as  $CI\_IS_{k,t}$ :

$$(4) \quad CI\_IS_{k,t} = \left( \sum_{\tau=-t}^{-1} NTS_{k,\tau} - \sum_{\tau=1}^t NTS_{k,\tau} \right), \quad t = 1, 2, \dots, 8.$$

Equation (4) says that  $CI\_IS_{k,t}$  is the conflict of interest of the  $k$ th recommended stock during  $-t$  to  $t$  weeks around the recommendations. The right-hand side of the formula also comprises two parts: the sum of the total number of traded shares



TABLE 2  
Mnemonics, Definitions, and Descriptions

Variables	Definition	Description
<i>Panel A. Conflicts of Interest for Investment Banks</i>		
$CI\_IB_{i,t}$ $t = 1, 2, 3, 4$	Conflicts of interest (CI) indices for the $i$ th investment bank (IB) within $-t$ to $t$ weeks around the recommendations	<p>This is the index of conflicts of interest for <math>i</math>th IB during the period from <math>-t</math> to <math>t</math> weeks around the recommendation, which is</p> $(2) \quad CI\_IB_{i,t} = \left( \sum_{\tau=-t}^{-1} NTS_{i,\tau} - \sum_{\tau=1}^t NTS_{i,\tau} \right), \quad t = 1, 2, \dots, 8.$ <p>This index is the difference between the NTS recommended by the <math>i</math>th IB <math>t</math> weeks before and after the recommendations, <math>\tau</math> is the <math>\tau</math>th week, <math>j</math> is the <math>j</math>th recommendation issued by the <math>i</math>th IB, and <math>M_j</math> is the total number of recommendations issued by the <math>i</math>th IB. The positive <math>CI\_IB_{i,t}</math> suggests that the conflicts of interest of the <math>i</math>th IB exist within <math>-t</math> to <math>t</math> weeks around the recommendations (i.e., the <math>i</math>th IB tends to be a net buyer of the recommended stocks before the recommendations but a net seller after the recommendations). The larger the positive number, the stronger the conflicts of interest. Conversely, the larger the negative number, the higher the tendency that conflicts of interest will not exist.</p>
<i>Panel B. Conflicts of Interest for Individual Stocks</i>		
$CI\_IS_{k,t}$ $t = 1, 2, 3, 4$	Conflicts of interest (CI) indices for the $k$ th individual stock (IS) within $-t$ to $t$ weeks around the recommendations	<p>This is the index of conflicts of index for <math>k</math>th IS during the period from <math>-t</math> to <math>t</math> weeks around the recommendations, which is</p> $(4) \quad CI\_IS_{k,t} = \left( \sum_{\tau=-t}^{-1} NTS_{k,\tau} - \sum_{\tau=1}^t NTS_{k,\tau} \right), \quad t = 1, 2, \dots, 8.$ <p>This index is the difference between the NTS of the <math>k</math>th stock by all IBs that recommend the <math>k</math>th stock, before and after the recommendations, where <math>\tau</math> is the <math>\tau</math>th week before or after the recommendation, <math>l</math> is the <math>l</math>th recommendation issued to the <math>k</math>th stock, and <math>N_k</math> is the total number of recommendations issued to the <math>k</math>th stock. The positive <math>CI\_IS_{k,t}</math> suggest that the conflicts of interest of the <math>k</math>th IS exist during the period from <math>-t</math> to <math>t</math> weeks around recommendations (i.e., the <math>k</math>th IS tends to be bought more often before the recommendations and sold more after the recommendations). The larger the positive number, the stronger the conflicts of interest. Conversely, the higher the negative number, the higher the tendency not to have conflicts of interest.</p>

of the  $k$ th recommended stock before the recommendation ( $\sum_{\tau=-t}^{-1} NTS_{k,\tau}$ ) and after the recommendation ( $\sum_{\tau=1}^t NTS_{k,\tau}$ ), respectively. The hypothesis regarding the conflicts of interest for an IS suggests that the first part is positive, whereas the second part is negative; that is, the  $k$ th IS is increased buying activity before the recommendations and increased selling activity after the recommendations. The difference between these two parts creates  $CI\_IS_{k,t}$ , which demonstrates the strength of conflicts of interest regarding the  $k$ th IS during  $-t$  to  $t$  weeks around recommendations. Similar to the NTS in equation (3), the positive  $CI\_IS_{k,t}$  indicates that the conflicts of interest surrounding  $k$ th IS exist during the period  $-t$  to  $t$  weeks around recommendations, and that the larger the positive number, the stronger the conflicts of interest. The mnemonic definition and description of  $CI\_IS_{k,t}$  are shown in Table 2.

## IV. Empirical Models

### A. Determinants of the Measure of Conflicts of Interest for Investment Banks

After obtaining the measures of the conflicts of interest for IBs from equation (1), this study examines their determinants by using three variables, that is, the

total equity of the IBs (SIZE), the number of years since the IBs were established (DURATION), and the frequency with which the IBs issue buy recommendations (TIMES). All three variables are averaged across the sample period of 2000–2003. The model is

$$(5) \quad \text{CI\_IB}_i = \alpha_0 + \alpha_1 \text{SIZE}_i + \alpha_2 \text{DURATION}_i + \alpha_3 \text{TIMES}_i + e_i,$$

where  $\text{CI\_IB}_i$  denotes the conflicts of interest indices for the  $i$ th IB and is defined in equation (2). Since the sample contains 31 IBs, subscript  $i$  denotes the number of IBs from 1 to 31.

With respect to SIZE and DURATION, we expect that IBs that are larger in size and that have been established for a longer period of time should operate with a lower degree of conflicts 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 conflicts of interest on issuing recommendations. As concerns the third variable, TIMES, there are reasons both for and against IBs, 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 IB that issues buy recommendations more frequently probably has more tendency to exploit inside information by trading strategically on issuing recommendations. On the other hand, in order to build its reputation, an IB that recommends more frequently is perhaps more cautious in its trades when it issues buy recommendations. Thus, the signs of  $\alpha_1$  and  $\alpha_2$  are expected to be negative, while the sign of  $\alpha_3$  should be uncertain.

## B. Determinants of the Measure of Conflicts of Interest 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 peer firms in the same industry (based on four-digit SIC) (NUMBER); the systematic risk associated with a particular recommended stock (BETA); the growth opportunity of a particular stock (MB = market-to-book value); and the equity shares of the stock held by insiders (INSIDER). All seven variables are the average across the sample period 2000–2003. The model is

$$(6) \quad \text{CI\_IS}_k = \beta_0 + \beta_1 \ln \text{VOLUME}_k + \beta_2 \text{SIZE}_k + \beta_3 \text{FREQ}_k \\ + \beta_4 \text{NUMBER}_k + \beta_5 \text{BETA}_k + \beta_6 \text{MB}_k + \beta_7 \text{INSIDER}_k + \varepsilon_k,$$

where  $\text{CI\_IS}_k$  is the conflicts of interest index for the  $k$ th IS and is defined in equation (4). The notation  $\ln$  is the natural logarithm. Since there are 74 recommended stocks in our sample, subscript  $k$  is the number of individual stocks from 1 to 74.

The relation between VOLUME and the measure of conflicts 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 trade the recommended stock strategically 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 trading its recommended stocks strategically 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 measure of conflicts 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), and Lang and Lundholm (1996)). Thus, security houses must be more vigilant when making a recommendation so as to avoid blemishing their reputations. 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 undue trades on recommended stocks. In sum, the relationship between SIZE and the sign of the degree of conflicts of interest could be either negative or positive—neither would be unexpected.

The relationship between FREQ and the degree of conflicts 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 unquestionably indicates that there is a clear consensus about the value of the recommended stock, information asymmetry, and the adverse selection cost of trading in the stock is low, such that it is harder for IBs to trade strategically around recommendations to earn undue profits.

The relationship between NUMBER (i.e., the number of peer firms in the same industry) and the measure of conflicts of interest is ambiguous. On the one hand, 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 issue a 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 on recommendations. On the other hand, Bhushan (1989b) argues that analysts' information-gathering costs increase in a firm's number of lines of business. The high cost of information gathering might reduce competition in information gathering and make each recommendation more informative, increasing the possibility of there being conflicts of interest on recommendations.

The relationship between BETA (i.e., the systematic risk associated with a recommended stock) and the measure of conflicts of interest is probably negative. A higher BETA means that the stock has higher sensitivity to changes in the value of the market, and its future stock returns are, therefore, relatively insensitive to firm-specific information, such that it is harder for IBs to exploit firm-specific information by trading recommended stocks strategically.

The relationship between MB, which represents the growth opportunity of a stock, and the degree of conflicts of interest is, as should be expected, positive.

As Frankel, Kothari, and Weber (2006) put it, companies with a high value of MB are most often newly established stocks with high growth potential. These companies also lack a long-term, or historical, financial background. Under these circumstances, IBs, which make buy recommendations, can more easily exploit inside information by trading recommended stocks strategically. In other words, IBs should have a greater opportunity to operate with conflicts of interest when a company has a high value of MB 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 conflicts of interest. Also based on the view of Frankel et al. (2006), 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, IBs are at great liberty to exploit any information that is available.

### C. Impact on the Profits of Investment Banks

We next explore whether or not it is profitable for an IB to operate when it is knowingly involved in conflicts of interest. Strictly speaking, if conflicts of interest are part of the bank's modus operandi and increase profits, then it makes sense, at least superficially, that the IB would try to continue operating, since it does not risk suffering any consequences. In this case, the market must be considered inefficient, as it does not fully use all available information but instead accepts information whether misleading or not. On the other hand, if the market can detect misleading information, the IB will surely not profit from the misdirection of trade, and therefore, there is little or no use in leading investors astray.

We use one profitability index to investigate this claim: the abnormal trading return (ATR) for the  $i$ th IB during  $t$  weeks before and after the recommendations, that is,

$$(7) \quad \text{ATR}_i = \sum_{\tau=-t}^t \sum_{q=1}^{Q_\tau} w_{q,\tau}^i \text{CAR}_{q,\tau},$$

where  $Q_\tau$  denotes the total number of stocks held by the  $i$ th IB in week  $\tau$ ,  $q$  represents the  $q$ th stock, and  $w_{q,\tau}$  is the weight of the  $q$ th stock in the portfolio of  $Q$  in the  $i$ th IB; that is,  $w_{q,\tau}^i = \text{AMOUNT}_{q,\tau}^i / \sum_{s=1}^{Q_\tau} \text{AMOUNT}_{s,\tau}^i$ , where AMOUNT denotes the amount of the  $q$ th stock;  $\text{CAR}_{q,\tau}$  is the cumulative abnormal return of the  $q$ th stock in week  $\tau$ . Furthermore, ATR is the actual abnormal trading return made by the recommending IBs, calculated based on the number of shares they held before and after making the buy recommendations and the price of those shares when bought and sold. To test whether conflicts of interest can increase outsized profits for recommended stocks held by IBs, our model is

$$(8) \quad \text{ATR}_i = \gamma_0 + \gamma_1 \text{SIZE}_i + \gamma_2 \text{TIMES}_i + \gamma_3 \text{CI\_IB}_i + \delta_i,$$

where  $\text{CI\_IB}_i$  denotes the conflicts of interest indices for the  $i$ th IB and is defined in equation (2). Since the sample contains 31 IBs, subscript  $i$  denotes the number of IBs from 1 to 31.

## V. Data and Basic Statistics

### A. Sources of the Data

The stock recommendation data used in this work were obtained from the columns "This Week's Stock Observations" and "Stock Selection Strategy," which can be found each week in the Sunday editions of the *Commercial Times* and *Economic Daily News*.<sup>9</sup> This information's availability, since only January 2000, determines the beginning date of the sample, which ends in December 2003. The proprietary trading information, SIZE, TIMES, DURATION, and other financial variables of firms making recommendations were obtained from the Taiwan Economic Journal (TEJ) database.

Table 3 lists the basic statistics of the sample, including the number of recommending IBs, recommended stocks, and other statistics. The sample contains a total of 74 recommended stocks and 79 IBs trading those stocks. Out of these 79 IBs, 31 IBs previously recommended stocks and thus are labeled recommending IBs. Because each recommending IB may recommend each stock multiple times, the total number of recommendations is 2,825, which equals  $\sum_{i=1}^{31} M_i$  or  $\sum_{k=1}^{74} N_k$ , where  $M$  and  $N$  are defined in equations (1) and (3), respectively. Therefore, the average number of recommendations made by a recommending bank is 91.13 ( $=2,825/31$ ), with the maximum and minimum being 131 and 5, respectively. On average, each stock is recommended 38.18 times ( $=2,825/74$ ), with the maximum and minimum number of recommendations being 230 and 4, respectively.

TABLE 3  
Basic Statistics of the Sample

Item	Statistic
1. Sample years	2000–2003
2. Number of recommended individual stocks	74
3. Number of IBs that traded recommended stocks	79
4. Number of recommending IBs (IBs that issued recommendations and traded these recommended stocks)	31
5. Number of IBs that never recommend stocks	48
6. Number of recommendations issued by recommending IBs	2,825
Mean	91.13
Maximum	131
Minimum	5
7. Number of recommendations issued to individual stocks	2,825
Mean	38.18
Maximum	230
Minimum	4
8. Number of trades by all IBs	235,035
9. Sum of average daily trading volume (ADTV) across 74 recommended stocks (unit: 1,000 shares)	1,088,150
Mean	14,705
Maximum	72,860
Minimum	253

<sup>9</sup>Many different magazines and newspapers offer stock recommendations but are not referenced here because our recommendations must be published consistently and continuously. The magazines and newspapers also must specialize in the appropriate area of economics or business.

## B. Investment Banks and the Measure of Conflicts of Interest

The NTS of all stocks recommended by recommended and nonrecommended IBs are calculated (Table 4). Abnormal returns from the recommended stocks are also examined (Table 5). Finally, the measure of conflicts of interest in banks (Table 6) and stocks (Table 7) are reported.

To further verify the argument of this study, Panels A and B of Table 4 report statistics on the NTS of recommended stocks before and after the recommendation based on the two contrasting types of IBs, recommending and nonrecommending, respectively. The reported value for recommending IBs is total NTS across all the recommending IBs which have issued buy recommendation. For nonrecommending IBs, the reported values are also the NTS; notably, however, these IBs do not issue recommendations of these stocks. This study also calculates the mean, cumulative mean, standard deviation, maximum, and minimum across all stocks for every week immediately prior to and following the recommendations. The cumulative mean for the  $\tau$ th week is the accumulated average from the 8th week before the event to the present week. This calculation is based on 79 IBs that previously traded recommended stocks and 2,825 recommendations, involving 74 individual stocks and made by 31 recommending banks.

In Panel A of Table 4, the mean of NTS by recommending IBs becomes positive seven weeks before the recommendation, peaks at four weeks before the recommendation, and remains positive until one week before the recommendation. Not surprisingly, the mean of NTS by recommending IBs becomes negative immediately following the recommendation, and subsequently remains negative (except for the 5th week after the recommendation). The cumulative mean shows the corresponding rising pattern and thus peaks one week before the recommendation. This behavior suggests that recommending IBs become net buyers of recommended stocks seven weeks before making their recommendations. Furthermore, the recommending IBs seem to accumulate stocks they recommend until the date on which they make the recommendation and sell them shortly afterward. This behavior is completely consistent with the conflicts of interest hypothesis.

The pattern becomes strikingly different when the results are compared with those of nonrecommending IBs. Panel B of Table 4 lists the basic statistics for NTS for the nonrecommending IBs and reveals significantly different results, in that the means of NTS are all negative during the weeks before the recommendation, except during the week immediately preceding it. Thus, nonrecommending IBs do not show the behavior of conflicts of interest using the results before the recommendation. The NTS continues to be mildly negative for up to four weeks after the recommendation. Consequently, the nonrecommending IBs do not establish net buy trading patterns for the recommended stocks prior to the recommendation being made, though they do sell them during the following week. The sale of the recommended stocks following the recommendation probably occurs because nonrecommending IBs can assess the intrinsic value of the stocks themselves and make their own decision. In examining the above two pieces of evidence together, we find that recommending IBs are prone to be net buyers of the recommended stocks before they make recommendations and net sellers

TABLE 4

This is the net traded shares (NTS) of all stocks recommended by recommending banks (Panel A of Table 4) and nonrecommending banks (Panel B). The cumulative mean at the  $\tau$ th week is calculated by summing the means over the  $\tau$ th week and all preceding weeks. This calculation is based on 79 investment banks (IBs) that had traded recommended stocks and 2,825 recommendations, involving 74 individual stocks and issued by 31 recommending banks. Notably, the NTS are divided by average daily trading volumes across the sample period (2000–2003) to remove the scale effect.

[illegible]



afterward, but only the latter behavior is found for nonrecommending IBs. The analytical results indicate that conflicts of interest exist between brokerage and proprietary divisions of IBs.

Graphs A and B of Figure 1 plot the mean and cumulative mean of the NTS for these two types of IBs, respectively. In Graph A, the plot for the recommending IBs reduces over time, while that for nonrecommending IBs fluctuates around 0. The former phenomenon suggests that the recommendation has influenced the purchasing behavior of recommending IBs, while the latter suggests that no such effect occurs for nonrecommending IBs. Graph B plots the cumulative mean of the NTS and reaches a similar conclusion.

Table 5 lists the estimated results of ARs and CARs for the recommended stocks. The stock returns are positive at approximately 16 days before the recommendation but become negative at the fourth day after the recommendation. The highest stock returns occur one day before the recommendation. The CAR displays the corresponding pattern. See Graphs A and B of Figure 2 for the AR and CAR plots, respectively. The reduction in the stock returns of recommended stocks three days following the event day suggests that the recommending IBs may profit from their own recommendations by selling stocks, consistent with our conflicts of interest hypothesis.

Table 6 lists the  $CL\_IB_{i,t}$ ,  $t = 1, 2, 3$ , and 4. For simplicity, the table only lists the basic statistics up to four weeks before and after the recommendation, because the results reported in Tables 1 and 4 suggest that a four-week window is sufficient for behavior detection. Two interesting findings are obtained. First, as shown in the table, the  $t$ -values indicate that only  $CL\_IB_{i,1}$  and  $CL\_IB_{i,2}$  are significant, implying that a conflict of interest exists for IBs during the one- to two-week period before and after the recommendation. These two measures serve as the dependent variables in the next section for identifying factors that affect them. When considering the wider windows before and after the recommendations, although the coefficients are positive as expected, they are insignificant. Next, as indicated in Table 6, the number of positive conflicts of interest overwhelmingly exceeds the number of negative conflicts of interest regardless of the four measures used, implying that conflicts of interest tend to exist for recommended IBs.

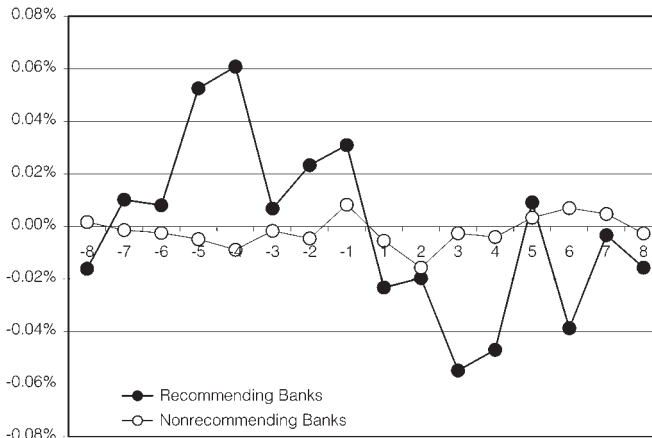
Table 7 lists the  $CL\_IS_{k,t}$ ,  $t = 1, 2, 3$ , and 4, of the recommended stocks. Similar to Table 6, the table only reports the basic statistics during the four weeks immediately preceding and following the recommendations. First, the table reports the means, which are overwhelmingly positive, again supporting the hypothesis. Besides  $CL\_IS_{i,1}$ , the  $t$ -values of the remaining three measures of conflicts of interest are significant. Conflicts of interest for individual stocks thus exist for two, three, and four weeks before and after the recommendations. These three measures are also used as dependent variables to identify the factors that influence them. The largest number falls on  $t = 4$ , meaning that the conflicts of interest of the recommended stocks are greatest during the four weeks immediately preceding and following the recommendations. Next, the table reports the numbers of individual stocks with positive, negative, and zero values of  $CL\_IS_{i,t}$ . The positive numbers significantly exceed the negative ones regardless of week windows, implying that recommended stocks tend to have conflicts of interest.

FIGURE 1

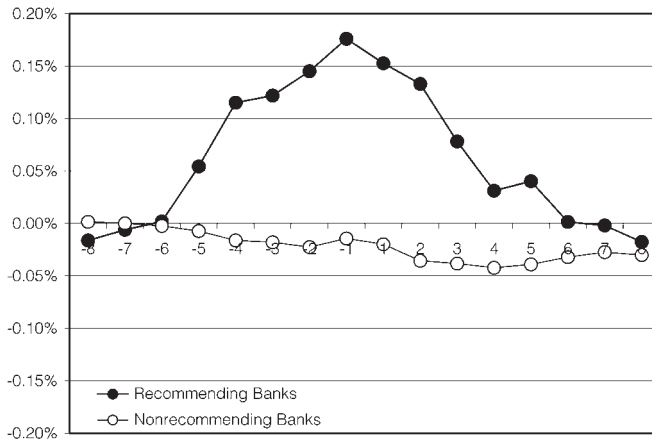
### Mean and Cumulative Mean of Net Trading Shares by Recommending and Nonrecommending IBs

Figure 1 shows the mean (Graph A) and cumulative mean (Graph B) of net traded shares (NTS) of all stocks recommended by recommending banks (black-circle points) and nonrecommending banks (white-circle points) around recommendations. The cumulative mean at the  $\tau$ th week is calculated by summing the means over the  $\tau$ th week and all preceding weeks. This calculation is based on 79 investment banks (IBs) that had traded recommended stocks and 2,825 recommendations, involving 74 individual stocks and issued by 31 recommending banks. Notably, NTS are divided by average daily trading volumes across the sample period (2000–2003) to remove the scale effect.

Graph A. The Mean of NTS by Recommending Banks and Nonrecommending Banks around Recommendations



Graph B. The Cumulative Mean of NTS of Recommending IBs and Nonrecommending IBs around Recommendations



## VI. Determinants of and Impact of Conflicts of Interest on Profits

### A. Determinants of Conflicts of Interest for Investment Banks

Table 8 lists the influences on conflicts of interest for IBs, which are proxied by  $CI\_IB_{i,1}$  and  $CI\_IB_{i,2}$ . Only two-week windows are considered because of the basic statistics and the significance test reported in Table 6. The coefficients of

TABLE 5  
Abnormal Returns and Cumulative Abnormal Returns of Stocks of Recommended Firms  
over 40 Days around Buy Recommendations

This is the estimated abnormal returns (ARs) and cumulative abnormal returns (CARs) based on the event study. The recommendation date is defined as day 0, and the market model is estimated over a 250-day interval from day -270 to day -21 (estimation period). The calculation is based on 2,825 recommendations, issued to 74 firms by 31 recommending investment banks during 2000 to 2003. The Taiwan Volume-Weighted Index is used as the market proxy. \*\*\*, \*\*, and \* represent levels of significance at 0.01, 0.05, and 0.10, respectively.

Days Relative to Recommendation Date ( $t = 0$ )	AR	CAR
-20	0.056%	0.056%
-19	0.054%	0.110%*
-18	0.000%	0.110%
-17	-0.017%	0.093%
-16	0.136%***	0.228%***
-15	0.037%	0.265%***
-14	0.068%*	0.333%***
-13	0.178%***	0.511%***
-12	0.270%***	0.781%***
-11	0.143%***	0.924%***
-10	0.108%***	1.032%***
-9	-0.015%	1.017%***
-8	0.071%*	1.088%***
-7	0.265%***	1.353%***
-6	0.235%***	1.588%***
-5	0.232%***	1.819%***
-4	0.346%***	2.166%***
-3	0.620%***	2.785%***
-2	0.885%***	3.671%***
-1	0.980%***	4.651%***
+1	0.277%***	4.928%***
+2	0.096%***	5.024%***
+3	-0.085%**	4.940%***
+4	-0.099%***	4.840%***
+5	-0.071%*	4.770%***
+6	-0.021%	4.748%***
+7	0.026%	4.774%***
+8	-0.066%*	4.708%***
+9	-0.118%***	4.590%***
+10	-0.046%	4.544%***
+11	-0.032%	4.512%***
+12	-0.123%***	4.389%***
+13	-0.006%	4.384%***
+14	-0.112%***	4.272%***
+15	-0.051%	4.220%***
+16	-0.117%***	4.104%***
+17	-0.191%***	3.913%***
+18	-0.084%**	3.829%***
+19	-0.172%***	3.657%***
+20	-0.092%**	3.565%***

SIZE are overwhelmingly significantly negative for all specifications, suggesting that larger IBs are more concerned with reputation and tend *not* to engage in conflicts of interest when making recommendations. Neither TIME nor DURATION affects the conflicts of interest.

B. Determinants of Conflicts of Interest for Individual Stocks

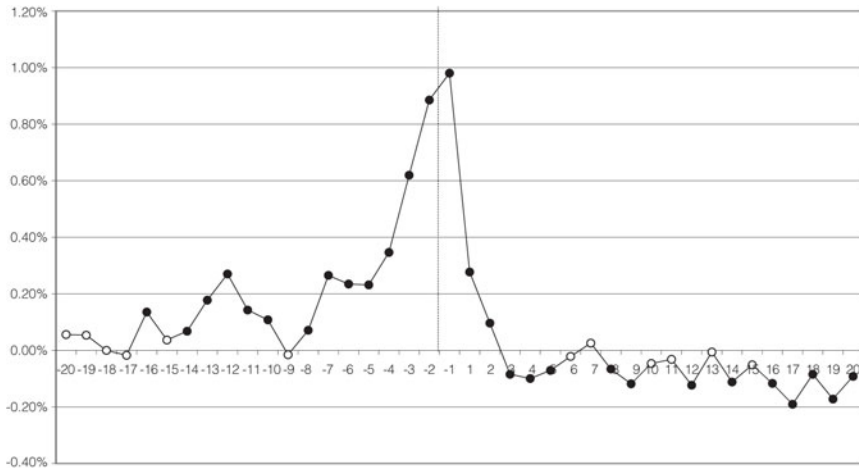
Table 9 lists the influences on the conflicts of interest with regard to stocks, which are proxied by  $CI-IS_{k,t}$  ( $t = 2, 3, 4$ ). A window of up to four weeks is used owing to the basic statistics and results of the significance test reported in Table 7. When  $CI-IS_{k,2}$  serves as the dependent variable, the coefficients for VOLUME, FREQ, and BETA are significantly positive, negative, and negative, respectively. Restated, the larger the trading volume of the recommended stock, the more likely

FIGURE 2

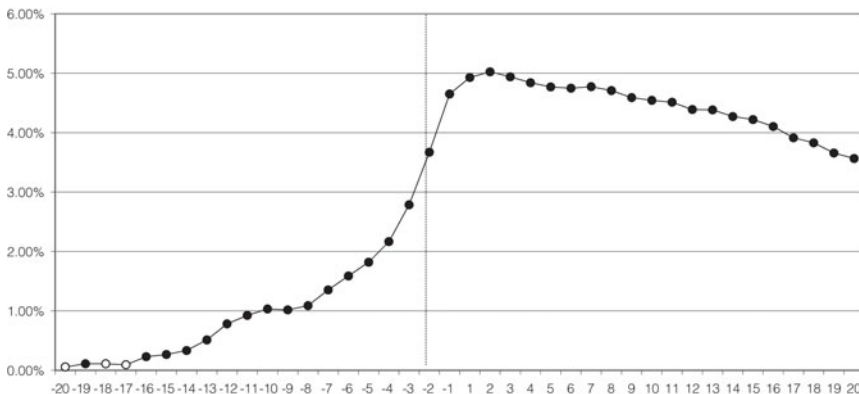
### Abnormal Returns and Cumulative Abnormal Returns around Buy Recommendations

Figure 2 shows the mean of estimated abnormal returns (Graph A) and cumulative abnormal returns (Graph B) based on the event study. The recommendation date is defined as day 0, and the market model is estimated over a 250-day interval from day -270 to day -21 (estimation period). The calculation is based on 2,825 recommendations, issued to 74 firms by 31 recommending investment banks during 2000 to 2003. The Taiwan Volume-Weighted Index is used as the market proxy. The black-circle point represents the mean (or the cumulative mean) is different from 0 at the level of significance of 0.10; the white-circle point represents the mean (or the cumulative mean) is not significantly different from 0.

Graph A. The Abnormal Returns of Recommended Stocks over 40 Days around Buy Recommendations



Graph B. The Cumulative Abnormal Returns of Recommended Stocks over 40 Days around Buy Recommendations



conflicts of interest will exist with regard to the stock. However, higher frequency of being recommended and higher systematic risk will tend to reduce the likelihood of conflicts of interest. This phenomenon probably occurs because it is harder for IBs to exploit firm-specific information by trading a recommended stock strategically if the stock has a higher number of recommendations and transparent information. Additionally, higher systematic risk makes it harder for IBs to issue suspicious recommendations to the public owing to the stock being relatively insensitive to firm-specific information, making it harder for IBs to trade strategically around recommendations to obtain outsized profits.

TABLE 6  
Conflicts of Interest Indices for Investment Banks

In Table 6,  $CI\_IB_{i,t}$  is the conflicts of interest index for the  $i$ th investment bank (IB). The sample involves 2,825 recommendations, issued to 74 firms by 31 recommending IBs that traded stocks they recommended during the 2000–2003 period. A positive number of the conflicts of interest indices indicate that, on average, the recommending IBs were net buyers prior to making their recommendations, suggesting frequent conflicts of interest. A negative number indicates the opposite argument. \*\*\*, \*\*, and \* represent levels of significance at 0.01, 0.05, and 0.10, respectively.

	$CI\_IB_{i,1}$	$CI\_IB_{i,2}$	$CI\_IB_{i,3}$	$CI\_IB_{i,4}$
Mean	0.076%	0.129%	0.138%	0.114%
Std. dev	0.218%	0.404%	1.316%	1.238%
Max.	0.742%	1.987%	5.877%	4.932%
Min.	-0.180%	-0.180%	-4.037%	-4.472%
t-value	1.953*	1.780*	0.583	0.514
Number of observations				
Conflicts of interest > 0	6	7	9	10
Conflicts of interest < 0	5	5	5	4
Conflicts of interest = 0	20	19	17	17
Total	31	31	31	31

TABLE 7  
Conflicts of Interest Indices for Individual Stocks

In Table 7,  $CI\_IS_{k,t}$  is the conflicts of interest index for the  $k$ th recommend stock. The sample involves 2,825 recommendations, issued to 74 stocks by 31 recommending investment banks that traded stocks they recommended during the 2000–2003 period. A positive number of the conflicts of interest indices indicates that, on average, the individual stock is net buying prior to recommendations, suggesting frequent conflicts of interest. A negative number indicates the opposite argument. \*\*\*, \*\*, and \* represent levels of significance at 0.01, 0.05, and 0.10, respectively.

	$CI\_IS_{k,1}$	$CI\_IS_{k,2}$	$CI\_IS_{k,3}$	$CI\_IS_{k,4}$
Mean	0.097%	0.265%	0.355%	0.369%
Std. dev.	0.854%	1.250%	1.518%	1.547%
Max.	5.784%	9.547%	9.528%	9.753%
Min.	-3.292%	-0.582%	-0.736%	-1.030%
t-value	0.979	1.826*	2.015**	2.049**
Number of observations				
Conflicts of interest > 0	28	27	31	33
Conflicts of interest < 0	19	23	18	17
Conflicts of interest = 0	27	24	25	24
Total	74	74	74	74

TABLE 8  
Determinants of the Conflicts of Interest Indices for Investment Banks

In Table 8, SIZE is the total equity of the recommending investment banks (IBs); DURATION is the number of years since the IBs were established; and TIMES is the frequency with which the IBs issue buy recommendations.  $t$ -values are in parentheses. \*\*\*, \*\*, and \* represent the level of significance at 0.01, 0.05, and 0.10, respectively.

	(A) $CI\_IB_{i,1}$	(B) $CI\_IB_{i,1}$	(C) $CI\_IB_{i,2}$	(D) $CI\_IB_{i,2}$
SIZE	-0.774** (-2.142)	-0.653** (-2.133)	-0.967* (-1.678)	-1.133* (-1.646)
DURATION	0.038 (0.769)		-0.051 (-1.066)	
TIMES	0.001 (0.502)	0.001 (0.418)	-0.0003 (-0.073)	0.0006 (0.135)
Constant	12.069** (2.206)	10.755** (2.153)	16.908* (1.639)	18.705 (1.639)
$R^2$	0.128	0.103	0.107	0.094
Adj. $R^2$	0.031	0.039	0.008	0.029
Number of obs.	31	31	31	31

TABLE 9  
Determinants of the Conflicts of Interest Indices for Individual Stocks

In Table 9, SIZE is the total asset of the recommended company; VOLUME is the daily average trading volume of a recommended stock; FREQ is the frequency of a stock recommended by all IBs; BETA is the estimated beta from capital asset pricing model (i.e., systematic risk of a recommended stock); MB is the market-to-book ratio; INSIDER is the equity shares of the stock held by insiders; NUMBER is the number of peer firms in the same industry (based on 4-digit SIC). t-values are in parentheses. \*\*\*, \*\*, and \* represent the level of significance at 0.01, 0.05, and 0.10, respectively.

	(A) CLIS <sub>k,2</sub>	(B) CLIS <sub>k,3</sub>	(C) CLIS <sub>k,4</sub>
SIZE	0.286 (1.046)	-0.178 (-0.587)	-0.498* (-1.684)
VOLUME	0.00006** (2.649)	0.00009*** (3.961)	0.00005** (2.095)
FREQ	-0.031*** (-2.764)	-0.042*** (-4.251)	-0.035*** (-3.187)
BETA	-5.417*** (-4.886)	-3.694*** (-3.381)	-4.152*** (-2.663)
MB	0.406 (0.161)	0.670** (2.171)	0.657** (2.053)
INSIDER	0.004 (0.130)	-0.043** (-2.169)	-0.033 (1.319)
NUMBER	0.005 (0.230)	0.015 (0.665)	0.036* (1.956)
Constant	1.091 (0.230)	7.712* (1.658)	13.055*** (2.945)
R <sup>2</sup>	0.716	0.219	0.500
Adj. R <sup>2</sup>	0.686	0.136	0.447
Number of obs.	74	74	74

### C. Higher Measures of Conflicts of Interest vis-à-vis Profits

Should an IB engage in a conflict of interest to increase profits, then the market can be said to be inefficient, since that bank can arbitrage information by making inappropriate buy recommendations. We further use the ATR to regress on CL-IB<sub>*i,t*</sub> (*i* = 1, 2). We only consider CL-IB<sub>1,*t*</sub> and CL-IB<sub>2,*t*</sub>, because CL-IB<sub>3,*t*</sub> and CL-IB<sub>4,*t*</sub> are insignificant, as reported in Table 6. The coefficients are significant when conflicts of interest are proxied by CL-IB<sub>1,*t*</sub>, suggesting that conflicts of interest can increase outsized profits for recommended stocks held by IBs, but the profit is very short-lived because the coefficient of CL-IB<sub>2,*t*</sub> is insignificant. The results are not reported but are available from the authors.

## VII. Concluding Remarks

That investment banks (IBs) 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, “conflicts of interest with respect to individual stocks recommended by investment banks,” or as most frequently used in this paper, simply “conflicts of interest.”

This study investigates whether conflicts of interest exist between the brokerage and proprietary divisions of recommending IBs when they make buy recommendations. Furthermore, conflicts of interest indices are created based on

their net traded shares (NTS) to determine the measure, or alternatively, the pervasiveness of conflicts of interest in stock recommendations from January 2000 to December 2003 in the Taiwan stock market. The following conclusions are supported.

First, conflicts of interest do exist, which in this study means that the recommending IBs are net buyers of recommended stocks before issuing their recommendations and become net sellers of recommended stocks after making their recommendations. These conflicts of interest are especially evident when examining narrow windows. The NTS (number of shares bought minus number sold) are overwhelmingly positive and negative before and after the recommendations, respectively, strongly supporting the hypothesis that conflicts of interest exist. This study also gathers the NTS of nonrecommending IBs but finds no pattern of net buying before the recommendations made by the recommending IBs, which is also consistent with the hypothesis. However, nonrecommending IBs show weak net selling after the recommendations made by the recommending IBs. In fact, the trading behavior of nonrecommending IBs does not display any significant changes during the window weeks of the recommendations. This study thus hypothesizes that nonrecommending IBs have their own research teams and can assess whether or not the recommended stocks deserve to be sold. Thus, the decision of buying and selling is not affected by the outside recommendations.

Second, the abnormal stock returns for the recommended stocks are positive around 16 days before the recommendation but become negative on the fourth day after the recommendation. We find that the decline of returns of recommended stocks three days after the event days suggests that the recommending IBs could benefit from selling the stocks, consistent with the conflicts of interest hypothesis presented in this study.

Third, IBs involved in trading where conflicts of interest exist share the characteristic of being small. Furthermore, stocks involved in conflicts of interest trading tend to have high trading volumes, low frequency of being recommended, and low systematic risk.

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