The Impact on IPOs Issued by Fraudulent Underwriters

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ABSTRACT

Several underwriters in the United States have been convicted by the Securities Exchange Commission (SEC) for their fraudulent behaviors in the wrongful allocation of IPOs and inappropriate manipulation of the stock supply post issuance. We show that such fraudulent behaviors can have a significantly negative impact on the wealth of the uninformed IPO investors. More specifically, IPOs underwritten by fraudulent underwriters are more likely to have larger issuance size, leave more the money on the table, have higher first-day returns, and worse long-term performance than IPOs underwritten by non-fraudulent underwriters.

1. Introduction

Fraudulent IPO allocation was brought to the general public's attention by the SEC's prosecution of underwriters for their inappropriate allocation of IPOs. While numerous studies have examined IPOs regarding their under-pricing and under-performance,[13] the reputation of underwriters,[14] and earnings manipulations,[15] the impact of underwriters' fraudulent behavior on IPOs has not been inspected. To determine whether such inappropriate underwriter behavior puts less informed investor at a disadvantage, we examine the amount of money left on the table, IPO underpricing, the wealth relative of the investors, and the long-term stock performance between the fraudulent IPO sample and the non-fraudulent IPO sample. We find IPOs issued by fraudulent underwriters are more likely to be larger offerings, to leave more money on the table, and to have higher first-day returns, and worse long-term performance than IPOs issued by non-fraudulent underwriters. These results are consistent with the hypothesis that the fraudulent behavior of underwriters, such as manipulating the supply and demand of IPO shares in the secondary market, can temporarily inflate the stock price of the IPO firms and cause higher first-day returns. More importantly, the worse the long-term performance and the lower the wealth relative of the fraudulent sample prove that such fraudulent behavior of underwriters can cause significantly negative impacts on the investor's wealth. Therefore, while it is well known that investors in common law countries, like the United States, are provided with better investor protections than investors in civil law countries (La Porta, Lopez-deSilanes, Shleifer, and

[13] Please check Ritter (1991), Loughran and Ritter (1995), and Ritter and Welch (2002) for more detailed results.
[14] Carter, Dark, and Singh (1998) find IPOs underwritten by more prestigious underwriters have less underpricing and do not underperform as much post issuance, while Beatty and Welch (1996) and Cliff and Denis (2004) find a positive correlation between the magnitude of underpricing and underwriter reputation.
[15] For example, Teoh, Welch, and Wong (1998) find that issuers with excessive abnormal accruals in the IPO year have poor long-term performance. Their results indicate that managers are often successful at earnings manipulations.

Vishny, 2000), the findings in this study prove that information asymmetry is still a serious problem which leaves uninformed investors vulnerable. In addition to increasing managerial disclosure to protect investors from managerial manipulations, regulators also need to increase stipulations on underwriters in order to protect investors from underwriters.

The SEC prosecuted several underwriters for their inappropriate allocation of IPOs during the period 1998 ~ 2001, while the majority of the fraudulent behaviors occurred during the period 1999 ~ 2000. For example, J. P. Morgan, during March 1999 and August 2000, induced its customers to accept allocations of *cold IPOs*[16] by promising them the allocation of *hot IPOs* in the near future. In addition, it also induced customers with IPO allocations to place additional orders in the aftermarket to inflate the demand in the aftermarket. Such behavior undoubtedly disrupted the supply and demand of the security and price equilibrium, and J.P. Morgan was found to violate rule 101 of Commission's Regulation M and NASD Conduct Rule 2110.

CSFB (Credit Suisse First Boston), between April 1999 and June 2000, allocated *hot IPOs* to officers and investment banking clients based on their perceived decision-making power to direct their firms' investment banking business to CSFB. In return, CSFB received between 35% and 65% of the flipping profits through excessive commissions. In addition, CSFB also allowed issuers to review and comment on the research report and propose recommendations and price targets. Such collaboration between issuers and underwriters decreases the independence and objectivity of the analyst reports while violating NASD rules. More specifically, while the inappropriate

[16] IPOs are often considered as cold (hot) IPOs when they attract less (enormous) investor interest and media attentions because of their perceived low (high) potential for (higher) profits.

allocation of *hot IPO* shares may not directly affect the market price of the IPO shares, such cooperation between the issuer and the underwriter can motivate analysts working at the underwriter to provide more favorable reports and inflate market prices. The inflated market prices in return allow the officer to flip the IPO shares at higher prices and cause uninformed investors to lose more money in the long run. Furthermore, the allocation practice encourages flipping of allocated shares to make short-term profits, sending the wrong signals to the market and disrupting market pricing of the shares. Such practice can explain the unprecedented high first-day returns for IPO in the late 1990s. Furthermore, since first-day returns are significantly correlated with the post-issuance long-term underperformance of the IPO firms, a study of long-term performance with respect to the inappropriate allocation is warranted. In this paper, we examine the first-day returns, long-term performance, and wealth relative post issuance to understand the impact of underwriter's fraudulent behaviors on IPOs. The rest of the paper is organized as the following. In section 2, we provide a literature review of IPOs. In section 3, data and methodology are provided. In sections 4 and 5, we provide results and conclusions, respectively.

2. Literature Review

Numerous studies have examined the under-pricing of IPOs. Ritter and Welch (2002) find 7.4% average first-day IPO returns between 1980 and 1989 and 14.8% average first-day IPO returns between 1990 and 1998. More surprisingly, they find a sharp jump of the first-day returns to 65% between 1999 and 2000 (during the Internet bubble period) before the sudden drop to 14% in 2001. While several studies have

examined the reasons behind underpricing,[17] we find that underwriter's behaviors may also explain the magnitude of underpricing.

Rock (1986) suggests that underpricing is required by uninformed investors as a form of compensation for trading against informed investors; therefore, the greater the level of perceived information asymmetry, the higher the required returns and greater the IPO underpricing. In addition, while it may seem reasonable that underwriters may demand higher fees for underwriting riskier IPOs, Chen and Ritter (2000), Hansen (2001), and Fernando, and Gatchev, and Spindt (2002) find the underwriter fee of firm commitment IPOs in the United States clusters at around 7%. Since their results are consistent through time, these findings indicate that underwriters are being compensated through other means (Hansen, 2001; Fernando, Gatchev, and Spindt, 2002).

The reputation of underwriters has been found to play a significant role in IPOs (Logue, 1973; Beatty and Ritter, 1986; Titman and Trueman, 1986; and Maksimovic and Unal, 1993; and Dunbar, 2000). Since prestigious underwriters are linked with lower risk offerings, Carter and Manaster (1990) argue low risk firms are more likely to select prestigious underwriters to signal their lower risk to uninformed investors (Beatty and

[17] Tinic (1988) uses implicit insurance hypothesis to explain the under-pricing of IPOs. He believes the under-writers intentionally under-price IPOs to protect themselves from possible litigations and from reputation damages when IPOs under-perform post issuance. This is especially true after the Securities Act of 1933, which increased the likelihood of legal liabilities and damages of under-writers. Rajan and Servaes (1997) find a positive relationship between the magnitude of underpricing and analyst following, after controlling for the post-issuance market value of equity. Brennan and Franks (1997) use U.K. IPOs from 1986 to 1989 and find the size and the amount of subsequent outside large shareholdings are negatively correlated with the magnitude of IPO underpricing. Ritter and Welch (2002) conclude analyst coverage and side payments to CEOs and venture capitalists are the main reasons that contribute to the underpricing. Aggarwal, Krigman, and Womack (2002) argue underpricing is the results of managers intentionally setting lower offer price to attract interest from analysts and media. Smart and Zutter (2003) find dual-class IPOs are less underpriced, have higher early post-IPO institutional ownership than single-class IPOs. Cliff and Denis (2004) find IPO underpricing to be positively correlated with analyst coverage by the lead underwriter and with the presence of an all-star analyst on the research team of the lead underwriter.

Ritter, 1986), while more prestigious underwriters will choose to market low risk IPOs in order to maintain their reputation. Carter, Dark, and Singh (1998) use three different proxies to measure underwriter prestige[18] and find IPOs underwritten by more prestigious underwriters have less underpricing and do not underperform as much post issuance. However, in contrast to those findings, Beatty and Welch (1996) and Cliff and Denis (2004) find a positive correlation between the magnitude of underpricing and underwriter reputation. The inconsistencies across different sample periods and studies mentioned above potentially indicate that it is not underwriter reputation per se, but rather the behavior of underwriters that determines the magnitude of underpricing. For example, as found by the SEC, underwriters allocate more underpriced IPOs to chosen clients in exchange for future businesses. Thus, while underpricing can benefit the chosen clients, the future businesses redirected to the underwriters by the chosen clients serves as an indirect pay off to the underwriters. In addition, since most of the same fraudulent underwriters also manipulated the supply and demand of the IPO stocks in the secondary market to inflate stock prices, such behavior will not only intensify the underpricing, but also worsen long-term performance post issuance.

To fully understand the impact of the fraudulent behaviors of the underwriters, we also examine the long-term post-issuance performance of the IPOs. If the larger magnitude of underpricing found in the fraudulent IPO sample is driven by the quality or reputation of the underwriters or if such fraudulent behaviors do not affect the wealth of the uninformed investors, the fraudulent IPO sample should not underperform the non-fraudulent IPO sample in the long run. However, if the fraudulent sample underperforms the non-fraudulent sample, the result is consistent with the hypothesis that fraudulent

[18] Please check Logue (1973), Beatty and Ritter (1986), and Carter and Manaster (1990) for more details.

behaviors of the underwriters can have significant and negative impact on the wealth of uninformed investors.

Long-term performance post IPO issuance is well documented.[19] Ritter (1991) finds that IPO firms have an average of 34.47% return in the three-year period after going public, compared with industry-match firms' 61.86% return during the same time period. Loughran and Ritter (1995) report a 7.4% (7%) underperformance per year during the three-year (five-year) holding period. Teoh, Welch, and Wong (1998) find that managers often manipulate earnings prior to IPOs, while firms with higher abnormal accruals have worse long-term performance. Carter, Dark, and Singh (1998) examine IPOs issued during 1979 ~ 1991 and find IPOs underwritten by more prestigious underwriters have less underpricing and do not underperform as much in the three-year holding period post issuance. Michaely and Shaw (1994) also find similar results in their long-term study by using a different proxy for underwriter prestige. Note that while the majority of fraudulent underwriters are well-known investment bankers with good reputations, the worse long-term performance predicted by the hypotheses are the opposite from those found and predicted in Michaely and Shaw (1994) and Carter, Dark, and Singh (1998). Therefore, the results in this study are in fact driven by the fraudulent behaviors per se rather than the reputation of underwriters.

[19] Brav and Gompers (1996) find ventured-capital-backed IPOs to outperform non-venture-backed offerings in the five-year period post issuance when equal-weighting returns are used. Fields (1995) finds IPOs with higher institutional shareholdings to outperform those with lower institutional shareholdings in the long run. Decharme, Malatesta, and Sefcik (2002) use the SEO and IPO data between April 1988 and February 2001 to examine managers' pre-offering earnings manipulation and its effects. After controlling for the firm size, they find that firms tend to manipulate earnings around stock offerings to provide investors with higher growth expectations of the firms and cause the long-term under-performance of SEOs and IPOs. In addition, they find that the manipulation of working capital accruals around stock offerings is positively and significantly related to the occurrence of lawsuits and the amount of settlements. However, they do not find a direct relation between the number of lawsuits and stock returns after the offerings. Perhaps firms that practice earnings management may also utilize other tactics to avoid litigation regarding to the stock offering.

3. Data and Methodology

All IPO data from 1973 to 2002 are obtained from SDC, even though the primary focus of the fraudulent IPOs occurs between 1998 and 2001. Return data are obtained from CRSP, and accounting data are obtained from COMPUSTAT. All unit offers, REITs, closed-end funds, banks and S&Ls, ADRs (with SIC between 6000 and 7000), and IPOs not listed on CRSP are all excluded from the study.

Next, we identify IPOs that are involved in misappropriate allocations. Since the true scope of misappropriate allocation is difficult to determine, we rely on the SEC's litigation case files to identify the wrongfully allocated IPOs. Specifically, we first identify the list of underwriters convicted by the SEC for their inappropriate underwriting practices and the time period of their found inappropriate behaviors. Next, among the IPOs issued by the convicted underwriters, we match the issuance date of each of the IPOs with the convicted time period of the specific underwriters. If the issuance date falls within the time period when the underwriter is found with inappropriate behavior by the SEC, the IPO is classified as a fraudulent IPO; otherwise, the IPO is classified as a non-fraudulent IPO.

Market size is calculated annually on June 30 while book value is calculated using the book value of equity (data 60 on COMPUSTAT) before January 31 of the most recent year. The first-day return is computed as the percentage change from the offering price to the closing price, while the amount of money left on the table is computed as the first-day return times the number of shares issued (Ritter and Welch (2002)). In addition,

when SDC data has missing prices, we use CRSP prices to supplement for the missing prices. When price on the first day is missing, we substitute it with price of the next day.

Examining long-run performance can be problematic. Long-term abnormal return estimation can be very sensitive to the model choice and methodology used because a small imprecision in the short-horizon studies can be compounded in the long term and cause mis-specified results. Lyon, Barber, and Tsai (1999) specifically address three biases: the new listing bias, the rebalancing bias, and the skewness bias. They find that bootstrapping buy-and-hold abnormal returns (BHARs) using size and book-to-market equity matched control firms can provide reliable statistics.

Therefore, to accurately measure investors' experience in returns, we use a bootstrapping methodology (Brock, Lakonishok, and LeBaron, 1992; Ikenberry, Lakonishok, and Vermaelen, 1995) to generate BHARs to measure the long-term performance of the IPO firms. BHARs are used for the long-term study instead of Cumulative abnormal returns (CARs), because BHARs can measure investors' actual investment experience, while CARs often inflate the long-term performance.

Following Loughran and Ritter (1995), all CRSP AMEX/NYSE/NASDAQ firms that have not issued stocks in the last five years are ranked by their market size of equity on Dec. 31 of each year. Each IPO firm is randomly matched with a firm in the same size and book-to-market portfolio. The random matching is repeated 1,000 times to create the pseudo-sample. The buy-and hold return (BHR) for each IPO firm and matched firm is calculated, and the buy-and-hold abnormal return (BHAR) for each firm is computed as the following:

$$\text{BHAR}_{it} = \prod_{t=1}^{t}[1+R_{it}] \; - \; \prod_{t=1}^{t}[1+R_{benchmark,\,t}] \qquad (1)$$

where BHAR_{it} represents buy-and-hold abnormal return for firm i at time t, while R_{it} represents return on the sample firm i at time t and $R_{benchmark}$ represents benchmark return at time t. CRSP value-weighted and equal weighted returns are also used as additional benchmarks to calculate BHARs.

A one-year window (252 trading days), three-year window (756 trading days), and five-year window (1,260 trading days) are used, even though many IPO studies only examine the first two event windows in their long-term studies. We use the first day closing price listed in the CRSP file as the beginning price to calculate the long-term returns, both equal and value weighted. The first-day return is not included in the buy-and-hold return calculation because, according to Loughran and Ritter (1995), it is very difficult for investors to purchase shares at the offering price, and the issue-day return calculated is not based on the market price in the open market.

Since the results in long-term studies are prone to model misspecification problems (Brock, Lakonishok, and LeBaron, 1992; Fama and French, 1993; Ikenberry, Lakonishok, and Vermaelen, 1995; and Lyon, Barber, and Tsai, 1999), we also use calendar-time approach factor models to examine the long-term performance as a robustness check. Mitchell and Stafford (2000) find the bootstrapping procedure ignores event-time clustering by assuming event-firm abnormal returns are independent. In addition, Brav, Geczy, and Gompers (2000) find that the Fama and French (1992) three-factor model captures the joint covariation of IPO returns, while Carhart's (1997) four-factor model can capture the covariation of SEO returns. Fama (1998) argues that the

calendar-time approach factor model is superior because monthly returns suffer less bad model problem than daily returns do. Monthly calendar-time portfolios can account for all cross-correlations of event-firm abnormal returns in the portfolio variance, and the calendar-time approach can better approximate the normal distribution, and therefore provide more reliable statistical inference.

Therefore, we follow the Fama (1998) approach to classify stocks into different size and book-to-market portfolios, using NYSE stocks to create the breakpoints. However, because of the small sample restriction of the fraudulent IPOs, the two by three, size and book-to-market classification is used instead of the five by five classification. Since the hypothesis predicts that non-fraudulent IPOs outperform fraudulent IPOs in the long run, we construct the zero-investment portfolio by buying non-fraudulent and selling fraudulent IPOs as the following:

$$r_{\text{non-fraud, t}} - r_{\text{fraud, t}} = \alpha_{iT} + b_i RMRF_t + s_i SMB_t + h_i HML_t + p_i PR1YR_t + e_{it} \quad (2)$$

where $r_{\text{non-fraud, t}}$ and $r_{\text{fraud, t}}$ represent the monthly return in excess of the T-bill rate for the non-fraudulent and the fraudulent IPOs, respectively at month t, starting at t = 1, the month following the IPO issuance date. RMRF represents the excess monthly return on the value-weighted market proxy at time t. SMB and HML represent monthly returns on value-weighted zero-investment portfolios, which are calculated as the small portfolio return minus the large portfolio return and the high book-to-market return minus the low book-to-market return, respectively. Lastly, PR1YR is the one-year momentum factor only used in the four-factor model (Carhart, 1997), and it is calculated as the equal-

weighted return average of firms with the highest 30 percent return in the past eleven months minus firms with the lowest 30 percent return during the same time period.

To make sure the results are robust and consistent, we also use wealth relative (Ritter, 1991) to examine the relative wealth change of the IPO firms. If the investors are in fact worse off by investing in IPOs issued by fraudulent underwriters, the wealth relative of fraudulent IPOs should be lower than that of non-fraudulent IPOs. Wealth relative between issuing firms and the benchmarks as the following:

$$\text{Wealth Relative} = \frac{(1 + AverageBuy - and - Hold\ \text{Re}turnOfIPO)}{(1 + AverageBuy - and - Hold\ \text{Re}turnOfBenchMark)} \quad (3)$$

4. Results

In Table 1, we examine the distributions of money left on the table and first-day returns by year, from 1973 to 2002. While Ritter and Welch (2002) examine the aggregate sum of total money left on the table, we examine the mean and median of the amount of money left on the table in Table 1.[20] Since the distribution is highly skewed, we follow the common empirical approach to winsorize the sample at 1 and 99 percentiles. In Table 1, we find that the amount of money left on the table and first-day returns are statistically significant primarily after 1978, potentially due to the small sample problem in earlier years. In this table, we also find that IPOs issued in 1999 and 2000 leave the most money on the table and have the highest first-day returns.

[20] The minor differences between the results in this paper and those in Ritter and Welch (2002) may be the results of different sample selection criteria and winsorization.

In Table 2, we examine the fraudulent and non-fraudulent IPOs separately between 1998 and 2001 since the fraudulent IPOs mainly occur during this period. During the fraudulent sample period, we have a total of 733 (522) IPOs underwritten by fraudulent (non-fraudulent) underwriters. The distributions of the amount of money left on the table and first-day returns for both classifications of IPOs are still skewed after the sample is winsorized. In Panel A, while both fraudulent and non-fraudulent IPOs leave significant amount of money on the table, the fraudulent sample leaves more money on the table than the non-fraudulent sample, based on either the mean or median, in three out of the four event years from 1998 to 2002 and in the overall sample period based on t-test and Wilcoxon ranked sum test.

In Panel B, fraudulent IPOs have higher first-day returns in 1999, 2000 and in the overall sample period, based on both the t-test and Wilcoxon ranked sum test. The result of inflated first-day returns is consistent with the hypothesis that the fraudulent allocation behavior and underwriters' withholding of *hot IPO* stocks from the market artificially inflate the stock price and cause higher first-day returns. While the results in1998 are inconsistent with the hypothesis, the inconsistence may be the result of the small sample problem.

In Table 3, we examine the size of IPO issuance and post-issuance buy-and-hold returns based on two benchmarks. The first benchmark is the size- and book-to-market-matched returns while the other is CRSP value-weighted returns. Fraudulent IPOs have larger issuance size than non-fraudulent IPOs, based on the market capitalization measure in Table 3. The one-year, three-year, and five-year BHARs are examined from Panels A to C, respectively. Despite the event window used, the results always show that the

fraudulent IPOs underperform their non-fraudulent counterparts in the long run. The difference is always significant in the overall period, while the results are more robust with the bootstrapping BHAR results.

In Table 4, the zero-investment portfolio and calendar-time approach factor models are used to examine the long-term performance. Three-factor and four-factor models are both used, and the results are similar. Zero-investment portfolios are constructed by taking a long position of non-fraudulent IPOs and a short position of fraudulent IPOs. If the factor models can accurately explain IPO firms' long-term performance found in previous studies, the intercept should be zero. However, a positive intercept would represent an arbitrage profit which is consistent with the hypothesis. Consistent with Brav and Gompers (1997), Brav, Geczy, and Gompers (2000) and Eckbo , Masulis, and Norli (2000) who find IPO underperformance exists primarily in small growth stocks, we find the zero-investment portfolio can provide significantly positive abnormal returns in the small size, mid and higher book-to-market portfolios. In addition, the three-year zero-investment intercept is higher than the five-year zero-investment intercept. Therefore, the monthly abnormal returns peak in the three-year event window.

In Table 5, we examine the three-year and five-year wealth relatives of the IPO firms. Both fraudulent and non-fraudulent IPOs have wealth relative of less than one in most cases. The results are consistent with IPO firms' long-term underperformance found in Tables 3 and 4 and in other empirical studies. While the difference between the two samples is in most cases insignificant when the sample is examined separately from 1998 to 2001, t-test results always show that the fraudulent sample has a lower wealth relative than the non-fraudulent sample. More importantly, the wealth relative results in

the overall period sample also confirm the hypothesis that fraudulent behavior by the underwriters can have significantly negative impact on the investors' wealth.

5. Conclusions

Consistent with the hypothesis, we find that fraudulent IPOs tend to leave more money on the table and experience higher first-day returns than non-fraudulent IPOs do. In addition, IPOs issued by fraudulent underwriters are more likely to have larger issuance size and worse long-term post-issuance performance than non-fraudulent IPOs. The larger issuance size is consistent with the underwriter's intent to take advantage of the uninformed investors. The more money left on the table is consistent with the hypothesis that fraudulent underwriters in anticipating poor long-term performance post issuance have the incentive to leave more money on the table in order to avoid lawsuits. The results of higher first-day returns is consistent with the inappropriate withholding of the supply of stock by the underwriter to artificially inflate the stock price, while the underperformance post issuance manifests the fact that such misconduct by underwriters can have a significantly negative impact on the wealth of IPO investors.

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Table 1
Distribution of Money Left on the Table and First-Day Return by Year 1973 – 2002

The amount of money left on the table is computed as the first-day return times the number of shares issued, while the first-day return is computed as the percentage change from the offering price to the closing price (Ritter and Welch, 2002). When SDC data has missing prices, we use CRSP prices to supplement for the missing prices. Sample distribution is winsorized at 1 and 99 percentiles. T-test is used, while ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

Year	*No. of IPOs*	*Money Left on the Table Mean*	*Money Left on the Table Median*	*Mean of 1st- Day % Return*	*Median of 1st-Day % Return*
1973	6	1,315,250	56,250	18.67%	0.86%
1974	2	28,125	28,125	1.17	1.17
1975	5	614,583	656,250	10.12	11.36
1976	22	500,923	43,531	2.97	0.45
1977	18	245,644	93,193	8.73*	1.53
1978	16	1,275,627**	700,000	23.40***	19.13
1979	37	698,391	229,500	8.96***	4.43
1980	59	2,329,003	450,000	25.50***	13.13
1981	181	736,534***	212,500	10.22***	3.13
1982	70	1,884,831***	350,781	10.85***	3.75
1983	415	2,253,912***	312,500	10.85***	3.57
1984	196	414,162***	93,750	3.52***	1.30
1985	206	1,457,661***	421,875	8.34***	3.13
1986	612	1,719,908***	204,704	14.12***	1.73
1987	477	2,672,318***	208,000	12.63***	1.44
1988	239	1,806,550***	104,000	10.29***	1.16
1989	216	3,872,437***	572,500	14.56***	2.60
1990	191	3,815,448***	695,500	13.38***	3.45
1991	367	4,832,017***	1,178,740	13.64***	6.90
1992	528	3,589,918***	487,500	9.87***	2.78
1993	735	5,965,944***	825,000	10.71***	3.57
1994	568	3,809,437***	647,500	10.20***	3.04
1995	535	9,455,656***	3,000,000	22.55***	12.52
1996	784	8,509,482***	2,318,750	17.99***	10.47
1997	547	10,591,505***	272,600	13.88***	8.90
1998	355	13,358,030***	1,698,750	16.96***	6.63
1999	470	45,721,719***	17,000,000	50.82***	27.41
2000	322	44,839,527***	20,254,500	51.05***	26.80
2001	108	22,105,846***	3,966,250	10.17***	4.06
2002	121	11,428,260***	150,000	3.95***	0.07
Overall	8406	9,314,350***	843,750	16.84***	5.0

Table 2
Distribution of Money Left on the Table and First-day under-pricing

The amount of money left on the table is computed as the first-day return times the number of shares issued, while the first-day return is computed as the percentage change from the offering price to the closing price (Ritter and Welch, 2002). When SDC data has missing prices, we use CRSP prices to supplement for the missing prices. The sample distribution is winsorized at 1 and 99 percentiles. T-tests are used, while ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

Panel A: The Amount of Money Left on the Table

	Fraudulent IPOs			**Non-Fraudulent IPOs**				
Year	***No. of IPOs***	***Money Left on the Table Mean***	***Money Left on the Table Median***	***No. of IPOs***	***Money Left on the Table Mean***	***Money Left on the Table Median***	***T-test***	***Wilcoxon Ranked Sum Test***
1998	22	16,310,636	0	333	13,162,962***	1,815,103	**0.7859**	**0.1326**
1999	359	52,111,719***	29,177,500	111	25,054,960***	2,880,000	**<.0001**	**<.0001**
2000	259	51,142,199***	25,350,000	63	18,926,896***	1,875,000	**<.0001**	**<.0001**
2001	93	25,157,037***	6,100,000	15	3,188,467**	1,240,000	**<.0001**	**0.0122**
Overall	733	47,274,869***	21,125,000	522	16,100,744***	2,089,050	**<.0001**	**<.0001**

Panel B: First-day Return of IPOs

	Fraudulent IPOs			**Non-Fraudulent IPOs**				
Year		***1st-day Return (Mean)***	***1st-Day Return (Median)***		***1st-day Return (Mean)***	***1st-Day Return (Median)***	***T-test***	***Wilcoxon Ranked Sum Test***
1998	22	8.64%**	0%	333	17.56%***	6.82%	**0.0561**	**0.0279**
1999	359	54.50***	33/69	111	38.52***	16.96	**0.0188**	**0.0026**
2000	259	55.24***	28.57	63	31.34***	11.20	**0.0005**	**0.0222**
2001	93	10.26***	3.93	15	9.51*	6.20	**0.8643**	**0.5426**
Overall	733	47.63%***	23.49%	522	23.37%***	8.33%	**<.0001**	**<.0001**

Table 3
Long-Term Performance based on Buy-and-Hold Abnormal Return

Market capitalization, measured in millions of dollars, and buy-and-hold abnormal returns are provided below. Mean and median ( ) are both examined, while the {p-value} for t-tests are provided to show the difference between the fraudulent and non-fraudulent samples. The bootstrapping method is repeated 1,000 times based on size and book-to-market matching. The CRSP value-weighted return and equal-weighted returns are also used as benchmarks. The sample distribution is winsorized at 1 and 99 percentiles. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

Panel A. One-year Buy-and-Hold Abnormal Returns

	Fraudulent IPOs				**Non-Fraudulent IPOs**			
	Market capitalization	***Bootstrapping BHAR***	***CRSP VW BHAR***	***CRSP EW BHAR***	***Market capitalization***	***Bootstrapping BHAR***	***CRSP VW BHAR***	***CRSP EW BHAR***
1998	1,116.01 (451.50)	-6.70*** (0.00)	6.37 (0.00)	-8.69 (-1.95)	458.31 (126.70) {<.0001}	2.38*** (0.00) {<.0001}	61.86*** (31.05) {0.0001}	-11.01** (-29.36) {0.8609}
1999	2,161.01 (796.19)	-16.38*** (-19.46)	14.16*** (0.00)	-6.54 (-34.04)	612.26 (164.49) {<.0001}	-24.24*** (-24.05%) {0.7110}	5.68 (-20.18) {0.6194}	-10.80 (-29.76) { 0.7192}
2000	642.36 (274.14)	-35.70*** (-31.85)	-30.01*** (-48.51)	-42.28*** (-60.72)	163.31 (97.31) {<.0001}	-41.69*** (-36.59) {0.5253}	-50.83** (-57.53) {0.2663}	-51.41*** (-64.82) {0.2784}
2001	1,184.67 (487.06)	-5.65*** (0.00)	-9.22*** (-7.45)	-3.79 (-6.85)	112.55 (112.55) {<.0001}	6.59*** (-0.00) {0.4039}	-39.44 (-0.00) {0.5762}	-5.65 (-18.31) {0.7555}
1998 ~ 2001	**1,447.38 (496.33)**	**-21.89*** (-20.75)**	**-1.57*** (0.00)**	**-20.60*** (-39.64)**	**443.11 (119.96) {<.0001}**	**0.44*** (-0.00) {<.0001}**	**13.25*** (0.00) {0.0001}**	**-9.45*** (-17.18) { 0.0004}**

Table 3 - Continued

Panel B. Three-year Buy-and-Hold Abnormal Returns

	Fraudulent IPOs			**Non-Fraudulent IPOs**		
	Bootstrapped BHAR	***CRSP VW BHAR***	***CRSP EW BHAR***	***Bootstrapped BHAR***	***CRSP VW BHAR***	***CRSP EW BHAR***
1998	-40.82**	-1.79	-30.52*	-10.76***	-13.32***	-22.22**
	(-34.76)	(0.00)	(-53.97)	(-20.05)	(-39.70)	(-69.82)
				{0.0008}***	{0.3562}	{0.6907}
1999	-55.18***	-49.52***	-46.42***	-53.57 ***	-45.16***	-37.53***
	(-47.90)	(-69.51)	(-68.47)	(-49.34)	(-57.63)	(-67.94)
				{0.2953}	{0.7360}	{0.4960}
2000	-60.10***	-31.73***	-38.84***	-61.98***	-50.53***	-44.87***
	(-49.29)	(-47.09)	(63.48)	(-48.64)	(-57.60)	(-63.47)
				{0.0016}***	{0.4231}	{0.5781}
2001	-11.02***	3.23	12.50	-34.20***	-0.36	-30.92
	(-8.07)	0.79	(-1.83)	(-50.39)	(1.43)	(-43.92)
				{<.0001}***	{0.9650}	{0.1634}
1998 ~ 2001	**-53.06*** (-45.36)**	**-34.40*** (-49.19)**	**-38.42*** (-64.01)**	**-8.75*** (-14.57) {<.0001}*** **	**2.97*** (0.00) {0.0001}*** **	**-36.66*** (-67.67) {0.6049}**

Panel C: Five--year Buy-and-Hold Abnormal Returns

	Fraudulent IPOs			**Non-Fraudulent IPOs**		
	Bootstrapped BHAR	***CRSP VW BHAR***	***CRSP EW BHAR***	***Bootstrapped BHAR***	***CRSP VW BHAR***	***CRSP EW BHAR***
1998	-23.64***	0.41	-2.34	-26.68***	3.21	-12.42
	(26.98)	(0.00)	(-5.51)	(-25.76)	(-36.25)	(-58.62)
				{0.0192}**	{0.8982}	{0.7719}
1999	-72.43***	-50.82***	-47.67***	-68.63***	-55.69***	-41.24***
	(-58.82)	(-81.26)	(-75.47)	(-58.56)	(67.54)	(-71.15)
				{<.0001}***	{0.7484}	{0.6375}
2000	-89.28***	-43.50***	-55.23***	-79.30***	-60.34***	-46.34***
	(-65.06)	(-69.30)	(-74.80)	(-62.32)	(-85.06)	(-75.08)
				{<.0001}***	{0.5381}	{0.6472}
2001	-8.43***	-1.08	24.21	-43.85***	45.48	75.08
	(-4.92)	(-14.73)	(-1.24)	(-62.55)	(0.00)	(-65.72)
				{<.0001}***	{0.6884}	{0.6539}
1998 ~ 2001	**-70.86*** (-56.14)**	**-44.56*** (-67.38)**	**-43.60*** (-73.19)**	**-37.28*** (-34.44) {<.0001}*** **	**-15.80*** (0.00) {<.0001}*** **	**-58.16*** (-95.46) {0.0016}*** **

Table 4
Calendar-Time Approach Factor Models

NYSE stocks are used to create the size and book-to-market breakpoints each year. The Zero-investment portfolio is constructed as below:

$$r_{\text{non-fraud, t}} - r_{\text{fraud, t}} = \alpha_{iT} + b_i RMRF_t + s_i SMB_t + h_i HML_t + p_i PR1YR_t + e_{it}$$

where $r_{\text{fraud, t}}$ represents the value-weighted monthly return in excess of T-bill rate on the fraudulent IPOs, respectively, at month t, starting at t = 1, the month following the IPO issuance date. RMRF represents the excess monthly return on the value-weighted market proxy at time t. SMB represents the small portfolio return minus the large portfolio return, while HML represents the high book-to-market return minus low book-to-market return. PR1YR is only used in the four-factor model, and it represents the one-year price momentum return. Note that the number in { } represents the p-value of the t-test, where Ho: mean = 0. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

Pane A: α

	One Year	Three Year	Five Year
3-factor	-2.67**	-0.94	-0.62
	{0.0298}	{0.1826}	{0.2592}
4-factor	-2.31*	-0.70	-0.53
	{0.0565}	{0.3166}	{0.3361}

Panel B: Three-Factor α

One-Year α based on Size and Book-to-Market Portfolio

	BTM1	BTM2	BTM3
Size1	-1.35	7.40***	1.17
	{0.3468}	{0.0007}	{0.4464}
Size2	-2.43	4.19	-3.61
	{0.3728}	{0.2405}	{0.2919}

Three-Year α based on Size and Book-to-Market Portfolio

	BTM1	BTM2	BTM3
Size1	-0.43	6.25***	4.36***
	{0.6181}	{<.0001}	{<.0001}
Size2	-0.97	1.81	-0.86
	{0.4279}	{0.3885}	{0.6565}

Five-Year α based on Size and Book-to-Market Portfolio

	BTM1	BTM2	BTM3
Size1	-0.42	4.18***	3.30***
	{0.5228}	{<.0001}	{<.0001}
Size2	-0.54	0.76	-0.12
	{0.5446}	{0.6228}	{0.9395}

Panel C: Four-Factor α

One-Year α based on Size and Book-to-Market Portfolio

	BTM1	BTM2	BTM3
Size1	-1.37	7.56***	1.53
	{0.3554}	{0.0008}	{0.2980}
Size2	-2.46	3.93	-3.58
	{0.3714}	{0.2826}	{0.3077}

Three-Year α based on Size and Book-to-Market Portfolio

	BTM1	BTM2	BTM3
Size1	-0.39	6.03***	4.22***
	{0.6558}	{<.0001}	{0.0001}
Size2	-0.69	2.15	-1.12
	{0.5778}	{0.3119}	{0.5611}

Five-Year α based on Size and Book-to-Market Portfolio

	BTM1	BTM2	BTM3
Size1	-0.44	3.93***	3.09***
	{0.5077}	{<.0001}	{0.0003}
Size2	-0.44	1.06	-0.22
	{0.6299}	{0.4968}	{0.8948}

Table 5
Wealth Relative Post IPO Issuance

$$\text{Wealth Relative} = \frac{(1 + Average Buy - and - Hold \text{ Return Of IPOs})}{(1 + Average Buy - and - Hold \text{ Return Of Bench Mark})}$$

Average and median ( ) of wealth relative for fraudulent and non-fraudulent IPOs are provided. The value in the bracket { } is the p-value for a t-test between the fraudulent and non-fraudulent IPOs' wealth relative. Sample distribution is winsorized at 1 and 99 percentiles. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

Panel A. Three-Year Wealth Relative

	Fraudulent IPOs			**Non-Fraudulent IPOs**		
Year	***Based on Size- and BTM-Matched Firms***	***Based on CRSP Value-Weighted Returns***	***Based on CRSP Equal Weighted Returns***	***Based on Size- and BTM-Matched Firms***	***Based on CRSP Value-Weighted Returns***	***Based on CRSP Equal Weighted Returns***
1998	82.11***	99.69***	87.70***	95.06***	134.67***	94.24***
	(65.85)	(100.00)	(76.86)	(76.01)	(93.56)	(69.97)
				{0.1739}	{0.0046}	{0.5131}
1999	72.40***	76.03***	78.23***	75.20***	75.47***	83.48***
	(61.05)	(64.83)	(64.07)	(63.61)	(69.52)	(66.94)
				{0.6210}	{0.9412}	{0.4518}
2000	71.51***	82.69***	77.99***	70.29***	74.23***	77.07***
	(59.94)	(72.63)	(64.03)	(60.47)	(71.27)	(66.01)
				{0.8202}	{0.4941}	{0.8733}
2001	95.21***	102.61***	106.67***	88.53***	99.37***	82.49***
	(86.02)	(100.81)	(99.15)	(67.28)	(1.04)	(72.92)
				{0.7527}	{0.9345}	{0.0976}*
1998 ~ 2001	**74.72*** (62.06)**	**82.33*** (74.63)**	**81.11*** (66.27)**	**87.73*** (68.75) {<.0001}*** **	**121.16*** (79.75) {<.0001}*** **	**89.37*** (68.82) {0.0225}** **

Table 5 - Continued

Panel A. Five-Year Wealth Relative

	Fraudulent IPOs			**Non-Fraudulent IPOs**		
Year	***Based on Size- and BTM-Matched Firms***	***Based on CRSP Value-Weighted Returns***	***Based on CRSP Equal Weighted Returns***	***Based on Size- and BTM-Matched Firms***	***Based on CRSP Value-Weighted Returns***	***Based on CRSP Equal Weighted Returns***
1998	89.51 (80.18)	101.13*** (100.00)	102.01*** (99.67)	87.58*** (0.7150) {0.8817}	102.50*** (81.32) {0.8943}	96.45*** (73.57) {0.7432}
1999	67.99*** (55.71)	73.69*** (59.38)	79.70*** (63.27)	70.26*** (55.25) {0.6612}	73.64*** (71.32) {0.9951}	83.19*** (66.88) {0.6190}
2000	64.62*** (55.51)	79.40*** (65.56)	73.68*** (60.89)	69.62*** (54.46) {0.4967}	72.34*** (63.51) {0.5514}	78.95*** (63.51) {0.5698}
2001	95.90*** (84.43)	101.38*** (95.48)	111.91*** (99.15)	85.24*** (53.56) {0.5400}	120.23*** (100.00) {0.7107}	126.73*** (66.18) {0.7533}
1998 ~ 2001	**70.03*** **(56.64)**	**79.87*** **(69.00)**	**80.96*** **(63.52)**	**83.99*** **(67.14)** **{<.0001}*** **	**93.32*** **(72.34)** **{<.0001}*** **	**92.22*** **(68.41)** **{0.0116}** **