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University of St. Thomas, Houston
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University of South Florida St. Petersburg, Florida
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Melissa Rodriguez
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Stephanie Tarr
Cherry Bakaert and Holland, St. Petersburg, Florida

Personal Liability of Corporate Shareholders in New York
Steven Maffei
St. John’s University

Entrepreneurs, Investors, and Equity Financing: A Resource-Economic Analysis
W. David Allen
University of Alabama Huntsville
Thomas W. Hall
Christopher Newport University
# Table of Contents

**Volume 31, Number 2**

**Summer 2011**

From the Editor .............................................................................................................................................. 2  
Igor M. Tomic  

**Research Papers:**

Selling Citigroup: A simulation of the U.S. Treasury’s $37 billion TARP share sale............... 3  
Linus Wilson, *University of Louisiana at Lafayette*

Are Gulf Cooperation Council Stock Markets Special? ................................................................. 15  
Rima Turk Ariss, *Lebanese American University, Lebanon*  
Rasoul Rezvanian, *North Eastern Illinois University, Chicago, Illinois*  
Seyed M. Mehdian, *University of Michigan-Flint, Flint, Michigan*

Impact of Restatement Characteristics and Subsequent Earnings Management on  
Post-Sox Executive Turnover ................................................................................................................... 24  
Ya-Fang Wang, *Providence University*  
Ling-Tai Lynette Chou, *National Chengchi University, Taiwan*

Factors that Impact Customer Loyalty in the Investment Banking Industry ....................... 51  
Juan M. Dempere, *Metropolitan State College of Denver*

Corporate Financial Reporting Complexity:  
Recommendations for Improvement .................................................................................................... 69  
Hassan A. Said, *Austin Peay State University*

“You! Me! Let’s Try to Make Some Mo-Ney!!!” ................................................................................. 88  
Natalya Delcoure, *University of St. Thomas, Houston*  
Joe Ueng, *University of St. Thomas, Houston*

Adding Assurance to the Term “Organic” ........................................................................................ 99  
Katherine Barker, *University of South Florida St. Petersburg*  
Alan Reinstein, *Wayne State University*  
Melissa Rodriguez, *Power Design, St. Petersburg, FL*  
Stephanie Tarr, *Cherry Bakaert and Holland, St. Petersburg, FL*

Personal Liability of Corporate Shareholders in New York .......................................................110  
Steven Maffei, *St. John’s University*

Entrepreneurs, Investors, and Equity Financing: A Resource-Economic Analysis ....................115  
W. David Allen, *University of Alabama Huntsville*  
Thomas W. Hall, *Christopher Newport University*

About the *Review of Business* and Author Submission and Review Guidelines .................... 125  

GLOBAL REVIEW BOARD.................................................................................................................. 127
From the Editor

As a consequence of the financial crisis, our authors responded with articles to deepen our understanding and to ameliorate policies that would add to more stability in the future. Certainly a response to the crisis has energized those in finance and accounting to reanalyze conditions that got us into the present difficulties as well as to question each issue in more detail.

Linus Wilson, in his article “Selling Citigroup: A Simulation of the U.S. Treasury’s $37 Billion TARP Share Sale,” asks if the government would have had less downside and idiosyncratic risk by selling a significant fraction of its holdings of its underwritten offering early in the selling period. Ya-Fang Wang and partner Ling-Tai Lynette Chou, in “Impact of Restatement Characteristics and Subsequent Earnings Management on Post-Sox Executive Turnover,” suggest that since over 10% of publicly traded firms announce restatements, one should wonder what management is doing and what the consequences of restatements are. Hassan A. Said, in “Corporate Financial Reporting Complexity: Recommendations for Improvement,” offers further recommendations to ameliorate the complex environment of financial reporting.

The Review of Business has a close relationship with the Financial Services Institute at the Tobin College of Business, St. John’s University. The Institute organizes a conference in September of each year and the best papers are published in this journal. The winners in 2010 were Natalya Delcoure and Joe Ueng, who presented a paper with the somewhat surprising title “You! Me! Let’s Try to Make Some Money,” which is actually a serious analysis about an investment program on TV, and which shows interesting results. In 2009, the winning paper was co-authored by W. David Allen and Thomas W. Hall and it contributes to a better understanding of interplay among financial agents in “Entrepreneurs, Investors, and Equity Financing: A Resource-Economic Analysis.” The Financial Services Institute is organizing another symposium on September 8-10 this year; for more information contact Prof. Elifoglu at elifogli@stjohns.edu

Other topics covered in this issue are more diverse: Juan M. Dempere examines “Factors that Impact Customer Loyalty in the Investment Banking Industry”; Rima Turk Ariss, Rasoul Rezvanian and Seyed M. Mehdian ask “Are Gulf Cooperation Council Stock Markets Special?” Steven Maffei focuses on personal liability in “Personal Liability of Corporate Shareholders in New York,” and Katherine Barker, Alan Reinstein, Melissa Rodriguez and Stephanie Tarr want to get to the bottom of things in “Adding Assurance to the Term ‘Organic’.”

Igor M. Tomic, Ph.D.
Editor, Review of Business
Selling Citigroup: A simulation of the U.S. Treasury’s $37 billion TARP share sale

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Executive Summary

On April 26, 2010, the U.S. Treasury had 163 trading days to sell a $37 billion dollar stake of 7.7 billion shares in Citigroup. Citigroup’s stock price on April 23rd was well above the U.S. Treasury’s “break even” price of $3.25. The Treasury announced that it planned an at-the-market sale over about six months. This paper uses Monte Carlo simulations to argue that the U.S. Treasury bore a 17% chance of not completing the sale if it refused to sell its shares at a loss and sold no more than 50 million shares per day. The author argues the government could have had less downside and idiosyncratic risk by selling a significant fraction of its holdings in an underwritten offering early in the selling period.

1. Introduction

From August 26, 2010, to December 6, 2010, the U.S. Treasury sold 7.7 billion shares of Citigroup stock at an average price of $4.14 per share. This price was well above the U.S. Treasury’s break-even price of $3.25 per share on the investment. Moreover, the U.S. Treasury kept its promise, made on December 14, 2009, to exit its stake within a year. While most of the stake was sold by slow at-the-market sales, the last 2.4 billion shares was sold in an underwritten secondary offering for a price of $4.35 per share. The U.S. Treasury booked a profit of $6.85 billion on these share sales, but this was far less than the paper profits of $12.38 billion which existed before the share sales began.

This paper looks at the U.S. Treasury’s exit strategy from the 27% common equity stake in Citigroup from the perspective of the eve of the share sales on April 23, 2010. This paper argues that the U.S. Treasury risked either selling shares at a loss, or breaking its promise to exit by December 14, 2010, because it attempted slow at-the-market share sales which might not have been completed before the stock dipped below the break-even price of $3.25 per share. By April 26, 2010, the Treasury had committed to sell this stake, valued at over $37 billion over the course of just 163 trading days. This paper analyzes the risks created by a “dribble out” plan to sell the taxpayers’ 7.7 billion shares. By selling a small fraction of the 7.7 billion share stake each trading day, the U.S. Treasury risked that it would be selling some shares of the overall stake at a loss from its $3.25 conversion price. Thus, the Treasury ran the risk of snatching defeat from the jaws of victory – but it had an even better chance on the eve of the share sale of selling the stake at a large profit.

If the Treasury had been willing to sell some of its shares at a loss and at a pace of 50 million shares per day, the chance that the overall stake would be sold at a loss was 1.2% from the vantage point of April 23, 2010. Alternatively, if the U.S. Treasury had refused to sell its shares for less than $3.25 (as it did in December 2009), and it only liquidated 50 million shares a day, then there was a 17% chance that it would fail to liquidate all its 7.7 billion shares before the deadline of mid-December 2010. Yet, the expected proceeds from a 50 million shares per day at-the-market sale would have been $39.6
million, according to Exhibit 6 of this paper.

The expected price is higher than the April 23, 2010, stock price only because these simulations reflect the expected, but far from guaranteed, reward for bearing the systemic risk associated with Citigroup’s stock. However, the U.S. Treasury was poorly diversified and bore much idiosyncratic risk by its large holding in Citigroup. As the market model regression indicates, 54% of the variation of the Citigroup stock was not rewarded. Thus, by holding a large, undiversified stake in Citigroup, the U.S. Treasury and taxpayers should have expected to get much poorer risk adjusted returns than a well diversified investor. This, by itself, was a strong reason why the U.S. Treasury should have seriously considered an underwritten secondary offering for a large fraction if not all of its Citigroup stake early on in the share sale. By undertaking a slow, at-the-market sale, the U.S. Treasury was speculating on its Citigroup stake instead of locking in a certain profit.

The more conventional way to privatize large government holdings is to sell them in secondary public offerings. The largest privatization and also the largest stock offering in history was the $36.8 billion ($70.4 billion adjusted for inflation) sale by the Japanese government of part of its stake in the telecom giant Nippon Telephone & Telegraph in November 1987. Large, steady, at-the-market sales are time consuming and their impact on the share price prior to this sale were largely unknown since they are rarely publicized by outsider sellers, as the Citigroup sale was. (Corporate managers and other insiders have to disclose their trading.) In contrast, secondary offerings are typically offered at a discount of about 2% to 3% of the share price and cost underwriting fees of 5% of the issue size. See Dunbar et al. (2004) and Kim et al. (2008). Yet it is likely that an underwritten sale would have actually been half that, 2.5% or less, since both Citigroup and Bank of America only charged themselves 2.5% for their huge stock offerings in December 2009. In contrast, the dribble out sale generated per share transaction fees of “$0.003 per share sold by Morgan Stanley using electronic trading systems and $0.0175 per share sold by Morgan Stanley using other means.” The dribble out sale promised much more modest fees of between $23 million and $135 million. Yet, since U.S. Treasury (2010) reports that the underwriting fees for the December 6, 2010, underwritten offering were paid by Citigroup, it seems hard to believe that underwriting fees were a major consideration for the U.S. Treasury. The U.S. Treasury could have conceivably locked in a profit of $11.3 billion had it gone with the underwritten secondary offering on April 26, 2010, assuming that it could have sold its all its shares at a three percent discount from the previous day’s close.

2. The U.S. Treasury’s Investments in Citigroup

Citigroup was one of the largest recipients of taxpayer funds in the financial crisis of 2008 and 2009. The $700 billion Troubled Asset Relief Program (TARP) was created when the Emergency Economic Stabilization Act (EESA) was signed into law on October 3, 2010. The extraordinary legislation was preceded in September 2008 by the seizing credit markets, the failures of Lehman Brothers and Washington Mutual, and exceptional government assistance extended to giant institutions such as American International Group (AIG), Wachovia, Fannie Mae, and Freddy Mac.

The first outlays of the TARP funds were $125 billion in capital infusions into some the largest bank holding companies in exchange for preferred stock and warrants. Citigroup was one of those recipients, receiving $25 billion for Capital Purchase Program (CPP) preferred stock and warrants. On December 31, 2008, Citigroup received an additional $20 billion in TARP
Selling Citigroup: A simulation of the U.S. Treasury’s $37 billion TARP share sale

assistance in exchange for cumulative preferred stock, which paid an eight percent dividend and associated warrants to buy common stock as fears about the bank’s liquidity and solvency circulated. It also received a $301 billion asset guarantee from the U.S. Treasury, Federal Deposit Insurance Corporation (FDIC), and the Federal Reserve in mid-January 2009. In March of 2009, Citigroup’s stock dropped just below $1 per share as unfounded fears that the company would be seized by federal authorities circulated.

In July 2009, Citigroup converted $58 billion of par value of preferred stock to satisfy the Federal Reserve’s requirements that it raise its Tier 1 common equity levels coming out of the Supervisory Capital Assessment Program (SCAP), which is commonly known as the stress test. Wilson (2009) and Wilson and Wu (2010) argue that common, not preferred, equity improves banks’ lending and investment decisions more than preferred equity. Preferred equity is senior to common. Thus, it effectively adds leverage to the common shareholders’ returns because preferred shareholders get paid before common shareholders.

The U.S. Treasury recently stressed to its G20 counterparts that common equity is the highest quality and most important form of capital. Nevertheless, some have had reservations about the U.S. Treasury’s conversion of its preferred interests. Verret (2010) argues that common equity ownership by the government may distort Citigroup’s management from pure profit maximization. $25 billion of that preferred stock came from the U.S. Treasury’s Capital Purchase Program (CPP) stake obtained in October 2008. The other $38 billion came from private investors in Citigroup’s preferred stock. $12.5 billion of the taxpayers’ CPP preferred stock was converted on July 23, 2009, at a conversion price of $3.25 per share. The other $12.5 billion of TARP preferred stock was converted on July 30, 2009.

In total the U.S. Treasury received $25,000,000,000/$3.25 = 7,692,307,692 common shares. Exhibit 1 demonstrates that the U.S. Treasury had ample opportunity to liquidate at least part of its stake at well above the $3.25 conversion price in the late summer and fall of 2009, but it failed do so.

Exhibit 1. Citigroup’s common stock price from the Troubled Asset Relief Program (TARP) preferred stock conversion date to the simulation date

This plots the Citigroup share price, and the $3.25 per share conversion price, from the date of the completion of the first exchange offer for the U.S. Treasury’s Troubled Asset Relief Program (TARP) preferred stock. Half of the $25 billion in preferred stock was exchanged for common stock at a conversion price of $3.25 per common share on July 23, 2009. The other half was converted on July 30, 2009. On April 26, 2010, the U.S. Treasury announced its plans to begin selling its common stock stake of approximately 7.7 billion shares. It had committed to sell its entire common stock stake by December 14, 2010.

Citigroup’s executives feared the impact of executive pay restrictions that would be enforced on banks which had received “exceptional assistance” from U.S. taxpayers. Recipients of exceptional assistance (which included Citigroup) would have to endure pay caps for their 100 highest paid employees. Among other things those restrictions capped cash compensation at $500,000 per year. This was seen as a problem for a major investment bank such as Citigroup. Investment banks routinely pay cash bonuses in excess of $500,000.
To avoid these pay restrictions, Citigroup reached an agreement with the Federal Reserve, which regulated the bank’s capital, to repay the exceptional grant of $20 billion of preferred stock from the Targeted Investment Program (TIP). It repaid those preferred shares on December 23, 2009. In addition, Citigroup reached an agreement with the Federal Reserve, the U.S. Treasury, and the FDIC to cancel an asset guarantee on December 23, 2009. In exchange for cancelling the asset guarantee, part of the preferred stock was cancelled and the remainder was retained by the U.S. Treasury and FDIC.

By undertaking a slow, at-the-market sale, the U.S. Treasury was speculating on its Citigroup stake instead of locking in a certain profit.

To satisfy regulators Citigroup raised $19.8 billion in common equity. It also planned to raise a further $5 billion in common equity to buy out a portion of taxpayers’ 7.7 billion common shares. The Citigroup seasoned equity offering in December was the largest seasoned equity offering (SEO) in U.S. history. Moreover, it took place at a time when two other giant commercial and investment banks, Bank of America and Wells Fargo, were raising $31 billion of common equity to exit TARP. Thus the combination of the December holidays, the unprecedented size of the Citigroup offering, and the other peer banks also doing large offerings may have handicapped the offering.

As you can see in Exhibit 1, Citigroup’s offering price slumped to $3.15, which was below the U.S. Treasury’s conversion price of $3.25. The U.S. Treasury declined to sell $5 billion of its stake at a price of $3.15 per share. To complete the sale, Citigroup had the U.S. Treasury agree to a 90-day lockup from selling that expired on March 16, 2010. Prior to the sale, on December 14, 2009, the U.S. Treasury agreed to sell all 7.7 billion shares to private investors in “six to twelve months.”

The U.S. Treasury, the “Selling Stockholder” below, did not sell any of its stake when the lockup expired on March 16, 2010. Instead, it waited until April 26, 2010, to issue a formal order to sell the shares to its investment banker, Morgan Stanley. Page S-4 of the prospectus states:

“On April 26, 2010, Citigroup, the Selling Stockholder and Morgan Stanley & Co. Incorporated entered into an agreement, under which the Selling Stockholder may offer and sell up to 7,692,307,692 shares of Common Stock from time to time through Morgan Stanley as sales agent or as principal. The agented sale of shares of Common Stock, if any, will be made by means of ordinary brokers’ transactions, in block transactions or as otherwise agreed with the Selling Stockholder. The Selling Stockholder may also enter into a separate agreement to sell shares of Common Stock to Morgan Stanley as principal at a price agreed at the time of sale. Citigroup will not receive any proceeds from the sale of shares of Common Stock by the Selling Stockholder.”

In this paper, we estimate the likelihood that the U.S. Treasury would have exited its position prior to its self-imposed deadline of December 14, 2010, from the vantage point of April 26, 2010, without selling at a loss or with an overall profit. In fact, the U.S. Treasury never faced the prospect of selling shares at a loss, which was only predicted to happen with a 23% chance, according to Exhibit 6. Yet, the U.S. Treasury was ultimately unable to exit the stake without undertaking an underwritten secondary offering about a week before the December 14, 2010, exit deadline.

3. Methods

The author uses a geometric Brownian motion model of the stock price to estimate the distribution of stock prices over the U.S.
Treasury’s selling period of April 26, 2010, and December 14, 2010.

To use the geometric Brownian motion model, the expected return to equity must be estimated. The author used the capital asset pricing model (CAPM) of Sharpe (1964) and Lintner (1965) in order to estimate the expected return to Citigroup’s stock. The market model or the CAPM says that the expected return on equity, \( R_e \), is proportional to a stocks’ covariance with the market. This co-movement is captured by the stock’s beta, \( \beta \). To estimate the beta of Citigroup, which goes by the ticker C, the author obtained closing stock prices and dividends from Yahoo! Finance. He looked at the monthly returns of the stock in relation to an exchange traded fund SPY, which tracks the S&P 500 index. Weekly returns for the \( i \)-th stock, where \( i = C \) or SPY, in the month \( t \) are calculated below. \( P \) denotes the stock price at the start of the month, and \( D \) denotes the dividend if the ex-dividend day falls in month \( t \). On or after the ex-dividend day, the share can no longer be sold with rights to the next dividend.

\[
R_{i,t} = \frac{P_{i,t} + D_{i,t} - P_{i,t-1}}{P_{i,t-1}} \quad (1)
\]

The results of the CAPM regression are below:

\[
R^2 = 0.4600, \quad N = 59
\]

Standard errors for the coefficients are in parentheses. The p-values for the coefficients are in square brackets. Over the sixty months there were \( N = 59 \) returns. The beta coefficient 2.771 is significant while the intercept coefficient is not statistically different from zero. \( R_{SPY,t} \) is the daily returns of the exchange traded fund that tracks the S&P 500 index. \( R^2 \) measures the goodness of fit of the regression. This regression explains about 46% of the variation of the Citigroup’s stock. Thus, the remaining 54% of unexplained variance of the stock is due to idiosyncratic risk. Since investors can easily diversify away idiosyncratic risk, the market will not reward investors (taxpayers) who bear a lot of idiosyncratic risk by holding a lot of one stock (Citigroup).

The CAPM says that the expected return, \( R_e \), is \( R_e = R_f + \beta \times MRP \) on an annualized basis, where \( R_f \) is the risk-free rate and \( MRP \) is the market risk premium over T-bills. The six month T-bill rate reported by the Federal Reserve Bank of St. Louis’ FRED data site on April 23, 2010, was 0.26%. According to Brealey and Myers (2006, p. 149), the historic nominal market risk premium (MRP) of stocks over T-bills from 1900 to 2003 was 7.6%. Thus, the expected return is \( R_e = 0.26\% + 2.771(7.6\%) = 21.32\% \).

The geometric Brownian motion model says that the stock price is a random walk plus a drift. Over a small time period, \( dt \), the percent instantaneous return, \( r \), of the stock is the following:

\[
r = \mu dt + \sigma \varepsilon \sqrt{dt} \quad (3)
\]

Let us define \( \mu \) as the expected instantaneous return over the year. Here that is \( \ln(1.2132) = 0.1933 = 19.33\% \). \( \varepsilon \) is the standard normal random shock with mean zero and variance of unity which we randomly choose for each of the 163 trading days between and including April 26, 2010, to December 14, 2010. There are 163 random draws for each of the 1,100 simulations. Following the advice of Hull (2003), each day is \( 1/252 \) of a year because there are approximately 252 trading days per year. The annual instantaneous volatility or standard deviation of the stock price is \( \sigma \). \( \sigma = 46.07\% \), which is the weighted average implied volatility of call options expiring within 180 calendar days reported by IVolatility.com for April 23, 2010.
The next day’s stock price $S_t$ is defined below as function of previous day’s stock price, $S_{t-1}$, the stock price drift, $\mu$, the time interval, $dt$ and the random shock, $\epsilon$:

$$S_t = S_{t-1} \left(1 + \mu dt + \sigma \epsilon \sqrt{dt}\right)$$

(4)

There are a couple of reasons why this simulation may make it seem too likely that the U.S. Treasury can sell its stake without ever selling shares below its conversion price of $3.25. First, we have not taken into account the negative effects that the U.S. Treasury’s selling will have on the traded prices of Citigroup. That could be modeled as a lower expected equity return over the selling period. Nevertheless, since the author has no way to quantify this, he has assumed that the U.S. Treasury’s sales will exert no downward pressure on the stock price over this period.

Second, it is well known that the geometric Brownian motion model underestimates the probability of extreme negative stock price movements. The thin tails of the normal distribution underestimates the chances of market turmoil. Berliant et. al (2005) argue that a negative 25% log return, which occurred on the stock market crash of October 19, 1987, should only occur once every 1053 years, according to the log-normal distribution. By comparison, it is believed that the Big Bang, which according to some theories created the universe, happened 1.5*10^9 years ago. Thus, this is strong evidence that the lognormal distribution on which the geometric Brownian motion model is based underestimates large stock price drops. For this reason, we should suspect that the results of these simulations underestimate the chances that the U.S. Treasury could have been forced to sell its stake at a loss.

Even with the shortcomings of this analysis, which probably underestimates the downside risks, these simulations show there was a significant possibility that the U.S. Treasury would have not been able to avoid selling a significant fraction of their stake at a loss. While this analysis indicates that the most likely scenario was that the Citigroup stock price will be higher on December 14, 2010, than it was on April 23, 2010, these simulations show that that the U.S. Treasury ran the risk of selling at a loss because it attempted to sell its huge stake at-the-market over a hundred or more trading days.

4. Results

The results of the 1,100 simulations are summarized in Exhibits 2 through 5.

Exhibit 2. The highest, lowest, and expected simulated stock price path

This plots over time the average stock price from the 1,100 simulations, the simulation with the highest ending stock price, and the simulation with the lowest ending stock price. The arithmetic stock price drift based on the CAPM was 21.32%. The annualized volatility was 46.07% based on the 180-day IV index call from IVolatility.com for April 23, 2010. The 180-day IV index call is a weighted average of implied volatilities of call options expiring in the next 180 calendar days. The simulation begins on April 26, 2010 and ends on December 14, 2010. On December 14, 2009, the U.S. Treasury promised Citigroup to sell the taxpayers’ 7.7 billion common shares in six to twelve months. On April 26, 2010, the U.S. Treasury announced that it had not yet begun to sell the taxpayers’ 7.7 billion shares. The beginning stock price was $4.86 based on Citigroup’s closing share price on April 23, 2010. The expected ending stock price was $5.53 per share, the maximum simulated ending stock price was $16.54, and the minimum simulated ending stock price was $1.30.
Exhibit 2 plots the highest ending stock price simulation, the lowest ending stock price simulation, and the average stock price in the simulations from April 26, 2010, to December 14, 2010. The highest simulated stock price on December 14, 2010, is $16.54 and the lowest simulated ending stock price is $1.30. On average, that stock price is $5.53.

The left axis measures the histogram of the one-dollar intervals of the simulated stock price on December 14, 2010. The right axis measures the cumulative probability distribution function of the stock price on that date. The average stock simulated price was $5.52. The median simulated stock price on that date was $5.19. The standard deviation was $2.05. The 10th and 90th percentile stock prices were $3.19 and $8.17, respectively.

In Exhibit 3, the histogram of simulated stock prices on December 14, 2010, is plotted in one dollar intervals. The histogram takes on the assumed log-normal shape of stock prices. The most likely one dollar range of stock prices is where the stock price lies at or below $5 dollars, but below six dollars. 258 simulations or 23.45% of all trials end with stock prices in the five dollar range. Approximately 58% of simulations put the stock price at or above $3 to just below $6 per share. 88% of simulations ending on December 14, 2010, are at or above $2 but below $8 per share. The cumulative probability distribution function is plotted on the right vertical axis. Over 79.27% of the simulations end with a stock price below $7 per share. 7.55% of the simulations end with a stock price below $3 per share by mid-December.

The more conventional way to privatize large government holdings is to sell them in secondary public offerings.

Exhibit 3. Histogram of simulated stock prices and cumulative probability distribution function of simulated stock prices on December 14, 2010

The shaded area denotes the observations where the stock price dips below the U.S. Treasury’s breakeven price of $3.25. There were on average 8.56 days where the share price dipped below $3.25. In 251 simulations, or 22.82% of the 1,100 simulations, there were between 1 and 128 days out of 163 trading days where the share price closed below $3.25.

Exhibit 4. Simulations where the stock price falls below $3.25

The shaded area denotes the observations where the stock price dips below the U.S. Treasury’s breakeven price of $3.25. There were on average 8.56 days where the share price dipped below $3.25. In 251 simulations, or 22.82% of the 1,100 simulations, there were between 1 and 128 days out of 163 trading days where the share price closed below $3.25.
Exhibit 3 focuses on prices at the end of the selling window. Yet, the primary obstacle for the U.S. Treasury to exit with a profit from its conversion price would have been if there were many days that closed below $3.25. In Exhibit 4, 22.87% of the 1,100 simulations had at least one day below U.S. Treasury’s conversion price of $3.25. 5.45% of the simulations had more than 40% of the trading days (67 trading days or more) that closed below $3.25.

Exhibit 5 demonstrates that the percent of simulations with closing stock prices below the $3.25 per share conversion price is climbing over time. Thus, the risk that the U.S. Treasury would have found itself selling its stake at a loss increased if it chose to sell its stake more slowly. The first simulation to dip below $3.25 does not do so until about a month from the start date on May 25, 2010. Yet the number of simulations with prices below $3.25 rises over time. By December 14, 2010, 121 of 1,100 simulations, 11% of simulations, have stock prices below $3.25.

The total proceeds of the Citigroup sale and the chances of its successful execution were probably of primary importance to policy makers. Exhibit 6 considers the success rate of five simple alternative trading rules summarized below:

(1) Sell 50 million shares a day if the share price is greater than or equal to $3.25.

(2) Sell 100 million shares a day if the share price is greater than or equal to $3.25.

(3) Sell 50 million shares a day regardless of the share price.

(4) Sell 100 million shares a day regardless of the share price.

(5) Sell half of the shares in a secondary offering on April 26, 2010. Then, sell the remaining shares at a pace of 50 million a day at the prevailing market price.
Exhibit 6: The simulated proceeds and success rates of four alternative selling strategies

<table>
<thead>
<tr>
<th></th>
<th>(1) Selling 50 million Shares Per Day if the Citigroup Share Price &gt;= $3.25</th>
<th>(2) Selling 100 Million Shares Per Day if Citigroup Share Price &gt;= $3.25</th>
<th>(3) Selling 50 million Shares Per Day</th>
<th>(4) Selling 100 million Shares Per Day</th>
<th>(5) Secondary Offering &amp; Selling 50 million Shares Per Day</th>
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<td>$40.6</td>
<td>$38.1</td>
<td>$38.7</td>
<td>$38.0</td>
<td>$36.7</td>
</tr>
<tr>
<td>Minimum Proceeds (Billions)</td>
<td>$28.8</td>
<td>$27.4</td>
<td>$27.4</td>
<td>$25.3</td>
<td>$30.3</td>
</tr>
<tr>
<td>Maximum Proceeds (Billions)</td>
<td>$79.6</td>
<td>$63.0</td>
<td>$63.0</td>
<td>$63.0</td>
<td>$49.2</td>
</tr>
<tr>
<td>90th Percentile (Billions)</td>
<td>$51.7</td>
<td>$46.0</td>
<td>$45.9</td>
<td>$45.9</td>
<td>$40.6</td>
</tr>
<tr>
<td>10th Percentile (Billions)</td>
<td>$33.1</td>
<td>$31.7</td>
<td>$31.2</td>
<td>$31.1</td>
<td>$33.2</td>
</tr>
<tr>
<td>Standard Dev. (Billions)</td>
<td>$7.6</td>
<td>$6.7</td>
<td>$6.1</td>
<td>$5.9</td>
<td>$3.0</td>
</tr>
</tbody>
</table>

This exhibit summarizes the success rates and proceeds in billion of U.S. dollars of five alternative simple selling strategies. In the first strategy the U.S. Treasury would have sold 50 million shares a day up to 7.7 billion shares at-the-market price, as long as it never sold its shares for less than $3.25. 83% of the time with this strategy the U.S. Treasury would have succeeded in unloading all 7.7 billion shares before December 14, 2010. 17% of the time in strategy (1) the U.S. Treasury would have had some unsold shares after December 14, 2010. Since this strategy would have taken 154 trading days and there were only 163 trading days inclusive of April 26, 2010, and December 14, 2010, there was a good chance the sale will not be completed in time.

In the second strategy, the U.S. Treasury would have sold 100 million shares a day as long as it never sold for less than its conversion price of $3.25 per share. Since strategy (2) only required 77 trading days with stock prices at or above $3.25, it would have had only a 2.3% chance of leaving the U.S. Treasury with unsold shares.

In strategies (3) and (4) the U.S. Treasury would have sold 50 million shares or 100 million shares a day at whatever the prevailing market price was until all 7.7 billion shares are sold. Interestingly, the U.S. Treasury in these simulations always sold its stake for above $25 billion, the amount of the U.S. Treasury’s initial investment, in scenario (4). Nevertheless, since scenario (4) requires that the U.S. Treasury sell at a pace of nearly 20% of average the daily volume of Citigroup shares, it may not have been sustainable without having a negative impact on the price at which the shares were sold. The author assumed no negative price impact from the U.S. Treasury’s selling in all four scenarios.

In scenario (5) half the U.S. Treasury’s stake would have been sold on April 26, 2010, at a 3% discount from the previous day’s close with 2.5% underwriter fees. This generated net proceeds of $17.7 billion. The remaining shares were sold at a pace of 50 million per day regardless of the market price.
On April 23, 2010, Rule (1) would have led to a 17% chance that the U.S. Treasury would not fulfill its promise to liquidate its stake by December 14, 2010. Rule (2) would have led to a 2.3% chance that the U.S. Treasury would hold some Citigroup common shares at the end of the trading period. Rules (3) and (4) would always have the U.S. Treasury liquidating its entire stake. Nevertheless, there would have been a chance that the U.S. Treasury sold some share for less than the $3.25 conversion price.

Interestingly, in the worst simulation for rule (4), the U.S. Treasury would have sold its common shares for a higher price than the $25 billion price at which they were bought. Yet, selling strategies (2) and (4) may not always be possible. For example, in Citigroup’s lowest volume day in 2010 prior to April 26, 2010, only approximately 156 million shares changed hands. Thus, it is not inconceivable that the U.S. Treasury could have made up between two-fifths or two-thirds of the trading volume on a slow day if it had sold 100 million shares per day.

With selling strategy (3), there are 13 simulations out of 1,100, or 1.2% of the total, in which the U.S. Treasury would have raised proceeds of less than $25 billion for the 7.7 billion shares sold.

Rule (5) is most similar to rule (4), but it does not contain the risks of selling 100 million shares a day. Instead, only 50 million shares would be sold over 77 trading days. The other 3.85 billion shares would have been sold at a 3% discount from the April 23, 2010, price of $4.86. Deduct a 2.5% underwriter discount, and this works out to about $4.59 per share on April 26, 2010, or net proceeds of $17.7 billion. Clearly this was not the path taken, but it could have been. Moreover, a similar underwritten offering of shares may still be done, especially if the at-the-market sales prove to depress prices in large quantities, such as 50 million per day.

Even if U.S. taxpayers had to pay the underwriting fees, scenario (5) has the most attractive worst case scenario of all the proposed trading rules. Its worst case scenario predicted net proceeds of $30.3 billion and a healthy $5.3 billion profit on top of dividends and warrants associated with the $25 billion investment.

5. Conclusion

This paper explores the risks in U.S. Treasury’s at-the-market sale of its 27% sale of Citigroup stock. The author uses Monte Carlo simulations from a geometric Brownian motion model of the stock price to estimate the downside risks of the U.S. Treasury’s sale of its Citigroup stake between April 26, 2010, and December 14, 2010.

Since the common stake was worth substantially above its conversion price of $3.25 when the U.S. Treasury proposed to begin its sale on April 26, 2010, the risks of selling at a loss increase with time, as Exhibit 5 indicates. While the expected profit rises with slower sales because the U.S. Treasury could have expected some rewards for bearing risk, so does the probability of turning a healthy profit into a loss. Moreover, the U.S. Treasury was a poorly diversified investor. Thus, it could not have expected ex ante to be compensated for most of the risks it was taking in the form of higher expected returns.

The author explores five simple trading rules summarized in Exhibit 6. The rule that locks in the highest profit, $5.3 billion profit, in the worst case simulation involves selling half the 7.7 billion shares in an underwritten secondary offering. The other four rules are exclusively “dribble out” sales that generate higher expected profit, but involve the U.S. Treasury’s speculating on the fortunes of a single stock. Those other four trading rules ran the risk of having the U.S. Treasury selling many of its shares at a loss or being unable to complete the divestiture of its stake by its promised deadline of December 14, 2010.
References


Endnotes

1  There were 163 trading days inclusive of April 26, 2010, and December 14, 2010. On December 14, 2009, a press release by Citigroup said “The [U.S. Treasury] has also announced that it plans to sell the remainder of its [common] shares in an orderly fashion over the next 6-12 months.” The words in square brackets are added by the author. See Exhibit 99.1 of the SEC form 8-K dated December 14, 2009, accessed online on May 2, 2010, at http://www.sec.gov/Archives/edgar/data/831001/000095012309070361/y80976exv99w1.htm.


3  50 million shares per day was about 10% of the median, 499 million, or average, 579 million, share volume from January 4, 2010, to April 23, 2010. Such a sale would have taken 154 of the 163 possible trading days to complete. Any slower pace would almost certainly mean missing the mid-December deadline to exit the investment. See Martin Crutsinger and Christopher S. Rugaber, April 26, 2010 “Treasury announces plans for first Citigroup sale,” Associated Press, accessed online on May 2, 2010, at http://www.washingtonpost.com/wp-dyn/content/article/2010/04/26/AR2010042601162.html and Micheal J. Moore and Rebecca Christie, March 29, 2010, “U.S. Treasury Plans to Sell Citigroup Stake in 2010 (Update3),”


12 See Citigroup, December 23, 2009, “Press Release: Citi Completes $20 Billion TARP Repayment, Terminates Loss-Sharing Agreement,” exhibit 99.1 SEC form 8-K dated December 24, 2009, accessed online on April 29, 2010, at http://www.sec.gov/Archives/edgar/data/831001/000095012309073343/y81154exv99w1.htm. $5.3 billion of the preferred stock which was originally issued to the U.S. government was retained by the U.S. Treasury. The other $1.8 billion of the total of $7.1 billion in preferred stock and accrued dividends outstanding was cancelled because the loss sharing agreement was cancelled early.


Abstract

The Gulf Cooperation Council (GCC) stock markets have received increased attention from international investors recently. We examine whether a day-of-the-week effect is present in those markets, and investigate whether the occurrence of the month of Ramadan has a special bearing on returns and on the day-of-the-week anomaly. We find a calendar effect that occurs on the last trading day of the week, which occurs on Wednesdays in the leading market of the GCC region. We call this a “Wednesday effect”, and we find that it is more pronounced in the period leading up to the month of Ramadan rather than afterwards. This return pattern may be consistent with the explanation provided by the “Investors’ Mood Hypothesis.” However, we do not find that investor behavior is significantly altered during the month of Ramadan and relative to other months of the lunar calendar year.

I. Introduction

The Efficient Market Hypothesis in its weak form claims that security prices reflect all market-related information, and current market prices are the best estimate of the intrinsic value of the stocks and, as such, no daily patterns or anomalies exist or can be employed to obtain abnormal returns. Despite this claim, calendar anomalies in equity markets have attracted a lot of attention in the finance literature. One of these anomalies is the day-of-the-week or Monday effect. The Monday effect happens when returns are lower or negative on Mondays in comparison with the returns on other days of the week.

While these calendar effect anomalies have been extensively investigated in the literature and are generally documented in the context of developed and other emerging countries, the capital markets of the Gulf Cooperation Countries (GCC) have received limited attention. However, interest in the GCC region has increased over the past decades, due to the rise in petrodollars resulting from the oil boom, the high levels of economic growth achieved, and following the gradual opening up of markets to foreigners.

The GCC stock markets do not observe the same trading days or religious holidays relative to international markets, and they have unique structures, thus questioning whether previously-reported calendar anomalies for other markets hold for this region. For instance, the last working day of the week falls on Thursday in all GCC countries except for Saudi Arabia (the leading market of the GCC region), where Wednesday is the last day of the week. It follows that Monday does not represent the first day of the week in any GCC country and it is possible that the negative Monday returns documented for international markets do not hold for these markets.
The GCC stock markets do not observe the same trading days or religious holidays relative to international markets. Further, religious holidays are based on the Hijri or lunar calendar year and do not coincide with other Gregorian calendar-based religious holidays. The month of Ramadan\(^2\) bears a special significance to the GCC region because it is the month during which the Koran was revealed to the Prophet Muhammad. Muslims are required to fast during this month and to show care for the less fortunate in society, in addition to exercising spirituality by the recitation of prayers, because it is believed that Ramadan is the month of mercy and forgiveness. Therefore, it is legitimate to assume that the occurrence of Ramadan may influence the trading behavior of investors as well.


The conflicting results on seasonalties for individual GCC markets, and the lack of a comprehensive study of calendar anomalies for all GCC markets combined, motivate our study. We find that, across all GCC markets, market returns are positive and significant on Wednesdays, which is the last trading day of the week in the leading market of the region, suggesting the presence of a Friday-type effect similar to that reported for Western equity markets in the literature. The average positive returns on Wednesday may be the result of the optimistic mood of investors just before the weekend begins, because it generates excess demand on this day, an outcome that is consistent with the explanation of the “Investors’ Mood Hypothesis.”

The rest of the paper is organized as follows: Section II presents the data and methodology. Section III overviews the empirical findings, and we interpret the results in Section IV. Section V presents our conclusion.

II. Data and Methods

We retrieve the daily closing values of all six major GCC market indices from inception until June 2008 and prior to the global financial crisis from Global Financial Data, to compute the daily stock returns \(R_t\) for all market indices as follows:

\[
R_t = \ln \left( \frac{I_t}{I_{t-1}} \right) * 100
\]

where \(R_t\) is the daily percentage return of stock index \(i\) on day \(t\), and \(I_t\) and \(I_{t-1}\) are the closing values of the index on day \(t\) and \(t-1\) respectively. We also test for stationarity in the data using the Dickey-Fuller unit root tests on each GCC stock market return series. Exhibit 1 shows the results, which reject the presence of unit roots and show that all stock price indexes are stationary in their first differences.

We use the following regression model to examine whether there is a day-of-the-week effect in GCC markets:

\[
R_t = \alpha_{i1} D_{1i} + \alpha_{i2} D_{2i} + \alpha_{i3} D_{3i} + \alpha_{i4} D_{4i} + \alpha_{i5} D_{5i} + \epsilon_{ti}
\]

\(^1\) The GCC countries include Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates (UAE).

\(^2\) In 2011, Ramadan will start on the 1st of August and continue for thirty days. The starting date varies by approximately eleven days every year in the solar-based Gregorian calendar, which does not coincide with the Islamic calendar.
where \( R_{it} \) is the daily return of stock index \( i \), \( D_{1i} \) through \( D_{5i} \) are dummy variables for each of the five trading days of the week for index \( i \) and \( \varepsilon_t \) is a random error term. We estimate equation (2) using Ordinary Least Squares (OLS) with robust standard errors. In the presence of a Monday effect, the estimated coefficient \( \alpha_{1i} \) is expected to be negative and significant or at least significantly lower than the coefficients for the rest of the week.

Since the month of Ramadan bears a special significance to GCC investors, we investigate whether average market returns are significantly different during this month and relative to other months of the Hijri lunar calendar year. To that end, we estimate a variety of equation (2) that includes dummy variables that correspond to the 12 months of the lunar calendar year instead of five dummy variables for the trading days of the week. These months are: Muharram, Safar, Rabi’ Al-Awwal, Rabi’ Al-Thani, Jamadi Al-Awwal, Jamadi Al-Thani, Rajab, Sha’aban, Ramadan, Shawwal, Dhu Al-Qi’dah, and Dhu Al-Hijjah.

We also exclude the month of Ramadan from our sample, and re-estimate equation (2) separately for pre-Ramadan days and for post-Ramadan days, to assess the extent to which the mood of investors may affect their pricing behavior outside the month of Ramadan.

### For Bahrain, Qatar, Saudi Arabia, and the United Arab Emirates (UAE), Wednesday returns are not only positive, but they are also the highest among all returns for other days of the week.

### III. Empirical Findings

In order to test for the presence of a possible day-of-the-week effect in GCC stock markets, we estimate equation (2) for each market index using ordinary least squares. The results are displayed in Exhibit 2. It shows that Wednesday returns are statistically significant and positive across all markets. For Bahrain, Qatar, Saudi Arabia, and the United Arab Emirates (UAE), Wednesday returns are not only positive, but they are also the highest among all returns for other days of the week. Further, Wednesday returns are next to the highest returns compared to the other days of the week in the case of Kuwait and Oman. Finally, in the case of Kuwait, Qatar, and the UAE, where Thursday is last day of trading, Wednesday returns continue to be positive and statistically significant on Thursday.
Monday does not represent the first day of the week in any GCC country and it is possible that the negative Monday returns documented for international markets do not hold for these markets.

The results revealed in Exhibit 2 suggest that there exists a sort of daily anomaly at the end of the week in all GCC countries. This daily anomaly can be viewed as a form of the Friday effect that is documented in the literature for Western equity markets.

The similarity between Western and GCC market regarding investors’ reactions to days of the week and pricing behavior at the end of the week is very interesting. In fact, the present paper is the first study that documents a similar end-of-the-week anomaly in returns among Western and GCC stock markets.

In order to support our empirical result regarding the presence of a “Wednesday effect” in GCC countries, we compute normalized average daily returns, and the results are presented in Exhibit 3. Among all GCC countries, the Qatar stock market index has generated the highest normalized daily mean return, whereas the Saudi Arabia market index has produced the lowest normalized mean return.

More importantly for our study, we find that the average normalized returns on Wednesdays are the highest compared to the mean normalized returns for other days of the week across all six GCC stock markets. This finding is consistent with what was reported earlier based on OLS results, thus reinforcing the presence of a “Wednesday effect” in this part of the world.

### Exhibit 2: Day-of-the-week effect regression results

<table>
<thead>
<tr>
<th>Day</th>
<th>Bahrain</th>
<th>Kuwait</th>
<th>Oman</th>
<th>Qatar</th>
<th>Saudi Arabia</th>
<th>UAE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>0.043 (0.019)**</td>
<td>0.052 (0.1550)</td>
<td>0.04 (0.0370)</td>
<td>0.07 (0.0620)</td>
<td>0.071 (0.0640)</td>
<td>0.134 (0.1760)</td>
</tr>
<tr>
<td>Tuesday</td>
<td>0.041 (0.019)**</td>
<td>0.1075 (0.1550)</td>
<td>0.158 (0.037)**</td>
<td>0.153 (0.062)**</td>
<td>0.096 (0.0640)</td>
<td>0.142 (0.1750)</td>
</tr>
<tr>
<td>Wednesday</td>
<td>0.085 (0.019)**</td>
<td>0.363 (0.156)**</td>
<td>0.14 (0.037)**</td>
<td>0.187 (0.063)**</td>
<td>0.175 (0.064)**</td>
<td>0.377 (0.175)**</td>
</tr>
<tr>
<td>Thursday</td>
<td>0.016 (0.0190)</td>
<td>2.089 (0.409)**</td>
<td>0.05 (0.0500)</td>
<td>0.167 (0.063)**</td>
<td></td>
<td>0.34 (0.183)*</td>
</tr>
<tr>
<td>Saturday</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.03 (0.0650)</td>
</tr>
<tr>
<td>Sunday</td>
<td>-0.011 (0.0200)</td>
<td>0.092 (0.1580)</td>
<td>0.002 (0.0370)</td>
<td>0.012 (0.0630)</td>
<td>0.021 (0.0650)</td>
<td>0.199 (0.2490)</td>
</tr>
</tbody>
</table>

We estimate OLS with robust p-values; applying the Huber-White sandwich estimator to correct for heteroscedasticity. Standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01.
Are Gulf Cooperation Council Stock Markets Special?

Exhibit 3: Average daily normalized returns for GCC markets

<table>
<thead>
<tr>
<th></th>
<th>Bahrain</th>
<th>Kuwait</th>
<th>Oman</th>
<th>Qatar</th>
<th>Saudi Arabia</th>
<th>UAE</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>0.0755</td>
<td>0.0228</td>
<td>0.0448</td>
<td>0.0526</td>
<td>0.0273</td>
<td>0.0969</td>
<td>0.0533</td>
</tr>
<tr>
<td>Tuesday</td>
<td>0.0667</td>
<td>0.1096</td>
<td>0.1576</td>
<td>0.1221</td>
<td>0.0784</td>
<td>0.0829</td>
<td>0.1029</td>
</tr>
<tr>
<td>Wednesday</td>
<td>0.1571</td>
<td>0.1480</td>
<td>0.1794</td>
<td>0.1783</td>
<td>0.1261</td>
<td>0.1243</td>
<td>0.1522</td>
</tr>
<tr>
<td>Thursday</td>
<td>0.0293</td>
<td>0.1180</td>
<td>0.0482</td>
<td>0.1316</td>
<td>0.0979</td>
<td>0.0850</td>
<td></td>
</tr>
<tr>
<td>Saturday</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.0210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunday</td>
<td>-0.0192</td>
<td>0.0545</td>
<td>0.0018</td>
<td>0.0087</td>
<td>0.0166</td>
<td>0.1129</td>
<td>0.0292</td>
</tr>
<tr>
<td>Average</td>
<td>0.0619</td>
<td>0.0906</td>
<td>0.0864</td>
<td>0.0986</td>
<td>0.0455</td>
<td>0.0798</td>
<td>0.0771</td>
</tr>
</tbody>
</table>

As discussed previously, the month of Ramadan bears a special significance to GCC investors, and it is possible that investor behavior is modified during this month. To assess whether the investors modify their market behavior during this month, we estimate equation (2) replacing weekday dummies with month dummy variables denoting each of the 12 months of the lunar calendar year and report the results in Exhibit 4.

Exhibit 4: Month-of-the-year effect following the Hijri calendar year

<table>
<thead>
<tr>
<th></th>
<th>Bahrain</th>
<th>Kuwait</th>
<th>Oman</th>
<th>Qatar</th>
<th>Saudi Arabia</th>
<th>UAE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Muharram</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.05</td>
<td>0.089</td>
<td>0.047</td>
<td>0.182</td>
<td>0.043</td>
<td>0.264</td>
</tr>
<tr>
<td></td>
<td>(0.0560)</td>
<td>(0.2420)</td>
<td>(0.0570)</td>
<td>(0.097)*</td>
<td>(0.0890)</td>
<td>(0.2790)</td>
</tr>
<tr>
<td><strong>Safar</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.047</td>
<td>0.304</td>
<td>0.023</td>
<td>0.275</td>
<td>0.16</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>(0.0540)</td>
<td>(0.2390)</td>
<td>(0.0570)</td>
<td>(0.096)**</td>
<td>(0.091)*</td>
<td>(0.2800)</td>
</tr>
<tr>
<td><strong>Rabi' Al-Awwal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.087</td>
<td>0.223</td>
<td>0.203</td>
<td>-0.11</td>
<td>-0.04</td>
<td>0.174</td>
</tr>
<tr>
<td></td>
<td>(0.0530)</td>
<td>(0.2350)</td>
<td>(0.056)**</td>
<td>(0.0920)</td>
<td>(0.0890)</td>
<td>(0.2710)</td>
</tr>
<tr>
<td><strong>Rabi' Al-Thani</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.052</td>
<td>0.064</td>
<td>0.098</td>
<td>0.278</td>
<td>0.11</td>
<td>0.511</td>
</tr>
<tr>
<td></td>
<td>(0.0530)</td>
<td>(0.2340)</td>
<td>(0.056)**</td>
<td>(0.094)***</td>
<td>(0.0900)</td>
<td>(0.262)**</td>
</tr>
<tr>
<td><strong>Jumada Al-Awwal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.1</td>
<td>0.867</td>
<td>0.079</td>
<td>0.136</td>
<td>0.149</td>
<td>0.459</td>
</tr>
<tr>
<td></td>
<td>(0.052)**</td>
<td>(0.231)***</td>
<td>(0.0550)</td>
<td>(0.0920)</td>
<td>(0.089)*</td>
<td>(0.255)**</td>
</tr>
<tr>
<td><strong>Jumada Al-Thani</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.004</td>
<td>0.077</td>
<td>0.017</td>
<td>0.17</td>
<td>0.025</td>
<td>-0.308</td>
</tr>
<tr>
<td></td>
<td>(0.0530)</td>
<td>(0.2370)</td>
<td>(0.0570)</td>
<td>(0.093)**</td>
<td>(0.0910)</td>
<td>(0.2580)</td>
</tr>
<tr>
<td><strong>Rajab</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0.259</td>
<td>-0.068</td>
<td>-0.031</td>
<td>0.102</td>
<td>0.163</td>
</tr>
<tr>
<td></td>
<td>(0.0530)</td>
<td>(0.2430)</td>
<td>(0.0570)</td>
<td>(0.0960)</td>
<td>(0.0910)</td>
<td>(0.2810)</td>
</tr>
<tr>
<td><strong>Sha'aban</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.034</td>
<td>0.096</td>
<td>0.089</td>
<td>0.138</td>
<td>-0.039</td>
<td>0.104</td>
</tr>
<tr>
<td></td>
<td>(0.0540)</td>
<td>(0.2490)</td>
<td>(0.0570)</td>
<td>(0.0950)</td>
<td>(0.0920)</td>
<td>(0.2710)</td>
</tr>
<tr>
<td><strong>Ramadan</strong></td>
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<tr>
<td></td>
<td>0.008</td>
<td>0.185</td>
<td>0.153</td>
<td>0.18</td>
<td>0.084</td>
<td>0.324</td>
</tr>
<tr>
<td></td>
<td>(0.0530)</td>
<td>(0.2410)</td>
<td>(0.057)**</td>
<td>(0.096)**</td>
<td>(0.0940)</td>
<td>(0.2660)</td>
</tr>
<tr>
<td><strong>Shawwal</strong></td>
<td></td>
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<tr>
<td></td>
<td>-0.014</td>
<td>-0.029</td>
<td>-0.061</td>
<td>-0.016</td>
<td>-0.077</td>
<td>0.292</td>
</tr>
<tr>
<td></td>
<td>(0.0570)</td>
<td>(0.2630)</td>
<td>(0.0630)</td>
<td>(0.1070)</td>
<td>(0.0990)</td>
<td>(0.2820)</td>
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<tr>
<td><strong>Dhu Al-Qi'dah</strong></td>
<td></td>
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<tr>
<td></td>
<td>-0.024</td>
<td>-0.027</td>
<td>0.073</td>
<td>0.016</td>
<td>-0.009</td>
<td>0.156</td>
</tr>
<tr>
<td></td>
<td>(0.0530)</td>
<td>(0.2370)</td>
<td>(0.0560)</td>
<td>(0.0950)</td>
<td>(0.0920)</td>
<td>(0.2690)</td>
</tr>
<tr>
<td><strong>Dhu Al-Hijjah</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.09</td>
<td>0.161</td>
<td>0.14</td>
<td>0.156</td>
<td>0.144</td>
<td>-0.002</td>
</tr>
<tr>
<td></td>
<td>(0.0570)</td>
<td>(0.2610)</td>
<td>(0.061)**</td>
<td>(0.1050)</td>
<td>(0.1090)</td>
<td>(0.2950)</td>
</tr>
</tbody>
</table>
The figures in Exhibit 4 do not show a Ramadan effect consistently across all markets. The parameter estimates are only significant for the Oman and Qatar, which are among the smallest markets in the GCC region. Thus, the estimation results appearing in Exhibit 4 do not provide evidence to suggest that investor behavior is significantly altered by the occurrence of the month of Ramadan.

Alternatively, we investigate further whether our previously documented “Wednesday effect” is maintained outside the month of Ramadan. We re-estimate equation (2) for two sub-periods separately, partitioning our data into two sets, pre-Ramadan days and post-Ramadan days. We present the results in Exhibit 5 for pre-Ramadan days and in Exhibit 6 for post-Ramadan days. The figures in Exhibit 5 strongly support our earlier finding reported in Exhibit 3 regarding the presence of a statistically significantly positive Wednesday effect for GCC countries, suggesting that this effect is very strong in the days leading up to the occurrence of the month of Ramadan. In testing for the day-of-the-week effect after the month of Ramadan in Exhibit 6, we again detect a statistically significant positive Wednesday effect, but only in three out of the six examined markets. For the markets of Kuwait, Qatar, and UAE, the coefficient on Wednesday is positive, though not statistically significant.

**Exhibit 5: Day-of-the-week effect regression results, pre-Ramadan**

<table>
<thead>
<tr>
<th></th>
<th>Bahrain</th>
<th>Kuwait</th>
<th>Oman</th>
<th>Qatar</th>
<th>Saudi Arabia</th>
<th>UAE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>0.046 (0.0300)</td>
<td>0.092 (0.0910)</td>
<td>0.000 (0.0420)</td>
<td>0.09 (0.0700)</td>
<td>-0.009 (0.0920)</td>
<td>0.003 (0.0890)</td>
</tr>
<tr>
<td>Tuesday</td>
<td>0.022 (0.019)***</td>
<td>0.1111 (0.1550)</td>
<td>0.134 (0.037)***</td>
<td>0.155 (0.062)**</td>
<td>0.135 (0.0640)</td>
<td>0.12 (0.1750)</td>
</tr>
<tr>
<td>Wednesday</td>
<td>0.082 (0.030)***</td>
<td>0.476 (0.091)***</td>
<td>0.116 (0.042)***</td>
<td>0.167 (0.070)**</td>
<td>0.222 (0.092)**</td>
<td>-0.217 (0.089)***</td>
</tr>
<tr>
<td>Thursday</td>
<td>-0.027 (0.0300)</td>
<td>0.273 (0.2870)</td>
<td>0.76 (0.044)*</td>
<td>0.146 (0.069)**</td>
<td>-0.169 (0.101)*</td>
<td></td>
</tr>
<tr>
<td>Saturday</td>
<td></td>
<td></td>
<td></td>
<td>-0.091 (0.0940)</td>
<td>-0.083 (0.0910)</td>
<td></td>
</tr>
<tr>
<td>Sunday</td>
<td>-0.036 (0.0300)</td>
<td>0.206 (0.093)***</td>
<td>0.0402 (0.0420)</td>
<td>-0.002 (0.0700)</td>
<td>0.059 (0.0940)</td>
<td>0.065 (0.0910)</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01.

To sum up, these results reveal the presence of a Friday-type effect taking place on Wednesdays in the GCC region, and this effect is more pronounced during the period leading up to the occurrence of the month of Ramadan as compared to the less prevalent Wednesday effect in the period following it. This result might be not so surprising after all, since the major Muslim holiday occurs two months and ten days after the end of Ramadan every year, and this holiday corresponds with the period of the pilgrimage.
IV. Interpretation of Results

In the literature on calendar anomalies, several hypotheses have been set forth to explain the presence of a day-of-the-week effect. One of these hypotheses is the “Short Selling Hypothesis,” which argues that the source of daily anomalies in the form of the traditional “Friday effect” is the behavior of short sellers on the last trading day of the week. According to this hypothesis, short sellers attempt to close their short positions before weekends, causing excess demand for equity securities, and hence generating positive returns on Fridays (Chen and Singal, 2003). It follows that short sellers’ attempt to create short positions after the weekend (particularly on Mondays) causes an excess supply of securities, and results in negative returns on the first trading day of the week or on Monday. In the case of the GCC stock markets, however, this explanation for the end-of-the-week anomaly has to be rejected on the ground that short selling activities are forbidden in these countries. The reason is closely tied to the religious underpinnings of the Islamic law that one cannot sell what one does not own.

Another hypothesis that attempts to explain the market anomaly related to the last trading day of the week is known as the “Settlement Procedure Hypothesis” (Gibbons and Hess, 1981). This hypothesis postulates that the cause of the end-of-the-week anomaly is the relatively long settlement period in advanced stock markets that provides an opportunity for traders to get hands-on interest free funds for several days. However, this hypothesis is also not valid in the case of the GCC market because the settlement cycles in these countries are relatively shorter relative to those applicable in advanced economies. They vary from none in the case of Kuwait, to one day for Saudi Arabia, two days for Bahrain, and three days for Oman and the UAE (Source: national websites).

One may speculate that the behavior of investors in GCC markets during the last trading day of the week is in line with the explanation provided by the “Investors’ Mood Hypothesis” (Gondhalekar and Mehdian, 2003). This hypothesis posits that the statistically significant and positive returns experienced on the last trading day of the week are caused by the optimistic mood of investors just before the weekend begins. This prevailing “mood” makes investors more enthusiastic to...
buy and less eager to sell on the last trading day of the week. In the case of the GCC stock markets, one may cautiously accept the predictions of this hypothesis. It could be that the psychological state of mind of investors prevailing right before the weekend results in an excess demand for stock investments. This hypothesis can also be used to explain the lessened “Wednesday effect” in the period following the month of Ramadan, because this is the period in which GCC market participants generally prepare themselves for their major religious holiday which coincides with the period of the pilgrimage, and they might be less geared toward stock market investing during this period.

This effect is more pronounced during the period leading up to the occurrence of the month of Ramadan.

V. Conclusion

Over the past few years, GCC stock markets have witnessed unprecedented economic growth fueled by high oil prices and resulting in excess petrodollars liquidity, which soon found its way back to the regional stock markets. In parallel, market trading activity increased tremendously with a rise in the number of market participants and listed firms. Further, all GCC member countries have become members of the World Trade organization, and they are meeting accession requirements by opening up their markets to foreign investors. The latter recognize an opportunity for international diversification, especially in light of the relative resilience of the GCC markets to the global financial crisis when compared to other economies.

In this paper, we investigate whether a previously reported daily calendar anomaly for other markets is applicable in the context of the GCC stock markets. Prior literature for the region is limited to single country analyses and only reports declining volatility during the month of Ramadan.

We extend our coverage to the entire GCC region and gather data on market indexes for all six exchanges, from their inception up to the middle of 2008. We then test for the presence of a day-of-the-week effect, and investigate whether the occurrence of the month of Ramadan has a special bearing on market investing behavior.

In line with prior literature for other international markets, we find that average market returns are positive and significant on the last trading day of the week, which predominantly occurs on Wednesdays in the GCC region and not on Fridays. This calendar anomaly, however, is more pronounced during the pre-Ramadan period, since after Ramadan investors generally prepare themselves for their major religious holiday that corresponds with the period of the pilgrimage. We also do not find that market returns are significantly different in the month of Ramadan relative to other months of the lunar calendar year.

All in all, these findings reveal the presence of a Friday-type effect taking place on Wednesdays (the last trading day of the week) in the Gulf Cooperation Council region over the entire sample, in the pre-Ramadan sub-sample, and to a lesser extent in the post-Ramadan sub-sample, notwithstanding an insignificant return effect during the month of Ramadan and as compared to other months of the year.

We explain our findings using the “Investors’ Mood Hypothesis” rather than the “Short selling Hypothesis” or the “Settlement Procedure Hypothesis”.
References


Impact of Restatement Characteristics and Subsequent Earnings Management on Post-Sox Executive Turnover

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Executive Summary

Understanding whether the likelihood of management turnover related to financial restatements changes after SOX is especially important because restatements have become much more common, with over 10% of publicly traded companies announcing restatements in 2006 (Johnson 2008). By surveying post-SOX company restatements, this study focuses on restatement characteristics as well as related management behavior, and provides insights into their consequences. Our findings provide evidence that the likelihood of CEO or CFO turnover increases for companies with higher restatement severity. Specifically, restatement characteristics, including core-earnings and magnitude of amounts, significantly affect the likelihood of management turnover. Additionally, when restatements are prompted by companies, management turnover is associated with the magnitude of overstated amount on income and/or restatements affecting core earnings. In addition, after controlling for the restatement severity, our empirical results provide strong evidence that when post-SOX executives window-dress earnings to portray a more favorable earnings picture, they are more likely to be terminated following financial restatements.

1. Introduction

Although SOX initiated a series of regulations to improve corporate financial reporting quality, the consequences of the resultant regulatory changes have not yet been fully studied. More importantly, understanding whether the likelihood of management turnover changes after SOX is especially important because restatements have become much more common, with more than 10% of publicly traded companies announcing restatements in 2006 (Johnson 2008). Thus, we focus on surveying post-SOX company restatements and provide analyses regarding their consequences by investigating specific restatement characteristics and management behavior.

This study examines three important issues. First, prior literature on the likelihood of managerial turnover after restatements has been mixed (Beneish 1999; Jayaramnan et al. 2004; Arthaud-Day et al. 2006; Desai et al. 2006; Land 2006; Collins et al. 2009, Hennes et al. 2008; and Burks 2010), and there is no consistent evidence on the association between management turnover and financial restatements. A recent survey done by the Audit Analytics (2008) finds that companies that filed financial restatements during the years 2005 to 2007 were significantly more
likely to be associated with C-level executive (i.e., CEO and CFO) departures.\(^1\)

This raises the question of whether executive turnover following restatements may be more likely in the current regime than in prior periods due to new or more stringent penalties imposed on companies and executives. Additionally, are restatement characteristics really important when companies decide to fire executives? Second, prior studies use the prompter as a measure of restatement severity and find mixed results (Palmrose et al. 2004; Desai et al. 2006; Arthaud-Day et al. 2006). We question the appropriateness of using prompters as a measure of restatement severity by prior research. Third, Kim (2008) finds that the board of directors became less tolerant of underperformance after SOX. Richardson et al. (2006) and Richardson et al. (2003) also indicate that restating companies have been attempting to maintain a string of consecutive positive earnings growth and/or quarterly earnings surprises.

Thus, managers who face a high likelihood of termination have strong incentives to select income-increasing earnings management. Are these managers who select aggressive accounting practices to window-dress earnings more likely to be retained in their jobs?

Our results provide evidence that the likelihood of CEO or CFO turnover significantly increases for companies with higher restatement severity. Specifically, restatement characteristics including core-earnings accounts and magnitude of amounts significantly affect the likelihood of management turnover. When a restatement is prompted by the company, management turnover appears to be associated with the dollar amount of overstated income and/or whether the restatement affects core earnings. After controlling for the restatement severity, our empirical results provide evidence that when executives window-dress earnings to portray a more favorable earnings picture, they are more likely to be terminated following financial restatements.

Our findings contribute to the literature in several ways. First, this research examines management turnover within the context of restatement characteristics. We argue that prior research ignores the fact that restatements have different characteristics and may make various impacts on companies. Our hand-collected restatement characteristics including core-earnings, magnitude of amounts, scope of accounts affected and duration can provide a good opportunity to re-examine and extend prior mixed empirical findings.

**After SOX, managers have strong incentives to window-dress earnings to avoid underperformance.**

Second, prior research has shown inconsistent results on using the prompter\(^2\) as a measure of restatement severity (Palmrose et al. 2004; Desai et al. 2006; Arthaud-Day et al. 2006). Our empirical results find that when restatements are prompted by companies, two restatement characteristics (core-earnings and amounts) are associated with the replacement of executives. The results imply that using the prompter as a measure of restatement severity by prior research may have oversimplified the issues.

Third, prior studies suggest that SOX is effective in mitigating earnings management behavior, and board members react more unfavorably to post-SOX earnings management behavior based on aggressive accounting because it is interpreted as a signal of non-compliance with SOX or poor quality of financial reporting. This study takes a step further and finds that company boards are more likely to terminate executives who, via restatements, adjust prior period earnings downward and in the meantime continue to massage current period earnings upward. Board members are becoming less tolerant
to executives who, following restatements, continue practicing aggressive accounting and/or window-dressing earnings.

Finally, our findings suggest that the power of tests on the consequences of restatements can be greatly enhanced by singling out Post-Post observations from the pooled Post-SOX samples. The examination of individual restatement characteristics and composite severity measures proves to be fruitful. Our focus on the investigation of income-decreasing restatements also helps provide powerful test results for the research issues.

The remainder of this paper is organized as follows. Section 2 discusses prior studies in restatements that are most relevant to our study and presents the hypotheses development. Section 3 describes the sample selection procedure and research design. Section 4 reports the empirical results together with their implications. The sensitivity analyses are presented in Section 5. Section 6 provides our concluding remarks.

2. Literature review and hypotheses development

By imposing more stringent civil and criminal penalties for issuing misstated financial statements, SOX lifted the accountability of CEOs and CFOs to certify financial reports to the SEC (Section 302). This raised the question of whether executive turnover around restatements may be more likely in the current regime than in the past. Given executives’ primary responsibility for the financial reporting quality, we focus our research on the consequences faced by CEOs and CFOs in the post-SOX period. Prior studies have shown that turnover of corporate executives increases after restatements or other accounting problems (Jayaramnan et al. 2004; Arthaud-Day et al. 2006; Desai et al. 2006; Land 2006; Collins et al. 2009, Hennes et al. 2008; and Burks 2010). However, there is no systematic evidence on the association between management turnover and financial restatements. One possible reason for mixed results may be due to the fact that prior studies ignore restatement characteristics and subsequent management behavior.

2.1 Restatement characteristics

In this study, we focus on whether restatement characteristics are associated with management turnover, because we argue that restatements have different characteristics and may cause various influences on companies. Hence, we conjecture that companies will consider different characteristics and impacts of restatements when they decide to discharge executives. In this study, we include four restatement characteristics:

1. whether or not the restatement involves core earnings,
2. the number of accounts affected,
3. the magnitude of amounts, and
4. the number of years restated.

These restatement characteristics have received some research attention. For example, prior studies (Palmrose et al. 2004; Palmrose and Scholz 2004; Romanus et al. 2008) suggest that investors regard restatements of core accounts as more serious. Palmrose et al. (2004) capture the pervasiveness of restatements (measured by the number of accounts affected) within the income statement.

Regarding restatement duration and restatement amounts, Srinivasan (2005) indicates that restatement duration measures the length of time the quality of accounting was compromised, whereas higher restatement magnitude indicates poorer prior representation of the true numbers. In addition, empirical evidence suggests that there were significant positive changes made to both internal and external monitoring mechanisms after the SOX (Krishnan 2005; Richardson 2005).
Therefore, we assume that the impact of SOX will affect the association between restatement characteristics and management turnover. For example, we expect a higher management turnover following restatements affecting core earnings after SOX because companies are now facing more stringent civil and criminal penalties for untruthful financial reporting under SOX. Thus, our hypothesis is stated as follows:

\[ H_1: \text{Restatement characteristics are associated with management turnover after SOX.} \]

To extend our research issues, restatement prompters are used as an alternative proxy for restatement severity in this study. Prior researches use the prompter as a measure of restatement severity, but their results are mixed (Palmrose et al. 2004; Desai et al. 2006; Arthaud-Day et al. 2006). They predict that restatements prompted by external parties (SEC and auditors) are more severe and should thus increase the likelihood of CEO turnover, but they find no such evidence.

Compared with auditor- and SEC-prompted restatements, company-prompted restatements are more susceptible to SOX provisions regarding top management’s misconducts and financial reporting responsibility (e.g. §304). This raises a question of whether executive turnover following a restatement prompted by the company is less likely as Palmrose et al. (2004) propose.

Thus, we examine the relation between restatement characteristics and the probability of management turnover following a company-prompted restatement. The following hypothesis is developed:

\[ H_{1a}: \text{Restatement characteristics are associated with management turnover following a post-SOX company-prompted restatement.} \]

2.2 Management behavior

Because a primary internal disciplinary mechanism in a company is the dismissal of management by the board (Menon and Williams 2008), poor performance of a company may trigger its board to replace the top managers. It is reported that some boards of directors became more intense in replacing managers after SOX (Kaplan and Minton 2006; Kim 2008). Thus, after SOX, managers have strong incentives to window-dress earnings to avoid underperformance. Prior studies also find that some executives falsely restate their companies’ earnings to make them appear profitable (Ettredge et al. 2010; Richardson et al. 2006; Richardson et al. 2003). If such executives keep portraying a favorable financial picture by window-dressing earnings, we question whether they are more likely to be terminated by the board. After controlling for the restatement severity, we investigate the association between the likelihood of management turnover and management behavior after SOX. Additionally, we focus on the restatement in the post-post group because market participants may consider such restatements a signal of non-compliance with SOX. Hence, this leads to our hypothesis 2:

\[ H_2: \text{In the post-post group, earnings management following restatements is associated with subsequent executive turnover.} \]

3. Research design

We investigate financial accounting restatements announced between August 1, 2002 and December 31, 2005, using a probit model to examine our research issues. In this section, we first detail the data sources and sample selection used to generate the research sample. Second, we introduce the research models, followed by a discussion of the test and control variables.
Company boards are more likely to terminate executives who, via restatements, adjust prior period earnings downward and in the meantime continue to massage current period earnings upward.

3.1 Data and sample selection

To control for the homogeneity to comply with the SEC disclosure rules and avoid any exchange-market effect, we restrict our sample to companies listed on the NASDAQ and NYSE only.

Restatement announcements and characteristics

We hand-collect data about the dates of initial restatement announcements and the characteristics of these restatements from the Lexis-Nexis News Library, covering all interim and annual restatements announced from August 1, 2002, through December 31, 2005. Identifying exact announcement dates related to restatements is challenging. Thus, we only consider each company's first release of its restatement announcement in a given year. Similar to Palmrose et al. (2004) and Kinney et al. (2004), our search uses several key words for restatements, such as “restate,” “restatement,” “revise,” “revision,” “adjust,” and “error.” The event day is determined by the first restatement announcement date identified in the Lexis-Nexis News Library. We also search the EDGAR database to cross-check whether these event days are correct. Finally, we add restating companies mentioned in other sources discussing restatements such as GAO’s (2006) report, SEC Filing Library, Accounting Today News, BNET Today News, CFO.com News and WebCPA News. All hand-collected data about the dates of initial restatement announcements and characteristics are available from public filings and databases.

Management turnover

Following Desai et al. (2006), Collins et al. (2009) and Hennes et al. (2008), we identify the CEO and CFO of the restatement company by reading proxy statements (Form DEF-14A) as well as press releases. If the proxy statement is not available, then we search 10-Ks and 8-Ks. To enhance the power of tests and improve the generality of results, we also hand-collect data about CEO and CFO turnover from the Lexis-Nexis News Library, CFO.com News and WebCPA News. We define management turnover as the turnover of a person or persons holding titles of Chairman, CEO, CFO, and/or President. A company is said to have turnover if an individual holding the title of Chairman, CEO, CFO, or President leaves the company within 24 months around the restatement announcement (from 6 months before to 18 months after). In addition, if the company merges or is acquired within 24 months, and as long as the manager does not leave the company prior to the merger, we do not consider it as turnover.

Corporate governance

Information on board size, audit committee size, board independence and audit committee independence is also hand-collected from the appointing companies’ proxy statements (Form DEF-14A). If the Form DEF-14A was not available, then we search 10-Ks. Form DEF-14A requires companies to state whether they have standing audit, compensation, or nominating board committees. If such committees exist, then companies must disclose their functions, responsibilities, and their members.

Others

Company-level accounting data are obtained from the Standard and Poor’s COMPUSTAT Annual Industrial, Research, and Full Coverage files. The Compustat database includes not only data found in balance sheets, income statements, and statements of cash flow, but also industry classification, and audit opinions for U.S. companies. For most variables of interest in this study, they are available from the database.
3.2 Research models

3.2.1 H1 Restatement characteristics

We investigate the reputational penalties to managers of companies for restatements announced in the post-SOX period. Prior literature on managerial turnover after restatements has been mixed in the post-SOX period (Collins et al. 2009; Hennes et al. 2008; Burks 2010). Thus, we re-examine the association between restatement and management turnover, controlling for other factors that are known to influence managerial turnover. More importantly, we include four restatement characteristics to investigate the consequences to managers for restating financial statements. The primary specification model is:

\[ TURNOVER_{i,t} = \alpha_0 + \alpha_1 \text{CORE}_{i,t} + \alpha_2 \text{AMOUNT}_{i,t} + \alpha_3 \text{ACCOUNTS}_{i,t} + \alpha_4 \text{RYEARS}_{i,t} \\
+ \alpha_5 \text{GC}_{i,t} + \alpha_6 \text{GROWTH}_{i,t} + \alpha_7 \text{ROA}_{i,t} + \alpha_8 \text{LNASSET}_{i,t} + \alpha_9 \text{BOARD}_{i,t} \\
+ \alpha_{10} \text{INDBOARD}_{i,t} + \alpha_{11} \text{[Fixed Effects]} + \epsilon_{i,t} \quad (1-1) \]

We also use a composite index that combines four characteristics (CORE, AMOUNT, ACCOUNTS, RYEARS) of the restatement into a single comprehensive variable (SEVERITY) that captures the company’s overall restatement severity.

\[ TURNOVER_{i,t} = \alpha_0 + \alpha_1 \text{SEVERITY}_{i,t} + \alpha_2 \text{GC}_{i,t} + \alpha_3 \text{GROWTH}_{i,t} + \alpha_4 \text{ROA}_{i,t} \\
+ \alpha_5 \text{LNASSET}_{i,t} + \alpha_6 \text{BOARD}_{i,t} + \alpha_7 \text{INDBOARD}_{i,t} \\
+ \alpha_8 \text{[Fixed Effects]} + \epsilon_{i,t} \quad (1-2) \]

where

\[ TURNOVER = 1 \] if the CEO leaves the company within 24 months around the restatement announcement (from 6 months before to 18 months after), and 0 otherwise;

\[ \text{CORE} = 1 \] if a restatement involves revenue, cost of sales or on-going operating expenses, and 0 otherwise;

\[ \text{AMOUNT} = \] The cumulative amount of net income overstatement scaled by total assets in the year prior to the restatement announcement;

\[ \text{ACCOUNTS} = \] Number of account groups affected in a restatement. The seven account groups are revenue, cost of sales, operating expenses, onetime/special items, merger-related, non-operating expenses, and other items;

\[ \text{RYEARS} = \] Sum of years restated, where a fiscal year = 1 and each additional quarter = 0.25;

\[ \text{SEVERITY} = \] Combines four characteristics of restatements (CORE, AMOUNT, ACCOUNTS, RYEARS) into a single comprehensive variable;

\[ \text{GC} = 1 \] if the company receives a going concern opinion at announcement year, and 0 otherwise;

\[ \text{GROWTH} = \] One-year percentage change in sales reported at announcement year;

\[ \text{ROA} = \] Net income divided by book value of total assets reported at announcement year;

\[ \text{LNASSET} = \] Natural log of book value of total assets reported at announcement year;

\[ \text{BOARD} = \] Number of directors on the board at announcement year;

\[ \text{INDBOARD} = \] Number of independent directors on the board divided by the total board size at announcement year;

\[ \text{Fixed Effects} = \] Dummy variables controlling for fixed effects of industries and calendar years; \( \epsilon = \) the residual term.
Following Desai et al. (2006) and Balsam and Miharjo (2007) we use the same process to select management turnover cases. Our classification of turnover is more conservative according to a number of criteria.\textsuperscript{22} We estimate a probit regression model where the dependent variable, \textit{TURNOVER}, equals one if the company experiences turnover in at least one of the top four positions (Chairman, CEO, CFO, or President) within 24 months around the restatement announcement.

### 3.2.2 H\textsubscript{1a} Company-prompted restatement

In this section, to consider the effects of restatement prompter, we use equation (2) to examine the question whether executive turnover following restatements may be less likely when companies had high restatement severity but had prompted these restatements by themselves to reap the benefit. The primary specification model is;

$$
TURNOVER_{i,t} = \alpha_0 + \alpha_1 \text{CORE}_{i,t} + \alpha_2 \text{CORE}_{i,t} \times \text{ATTCOMP}_{i,t} + \alpha_3 \text{AMOUNT}_{i,t} + \alpha_4 \text{AMOUNT}_{i,t} \times \text{ATTCOMP}_{i,t} + \alpha_5 \text{ACCOUNTS}_{i,t} + \alpha_6 \text{ACCOUNTS}_{i,t} \times \text{ATTCOMP}_{i,t} + \alpha_7 \text{RYEARS}_{i,t} + \alpha_8 \text{RYEARS}_{i,t} \times \text{ATTCOMP}_{i,t} + \alpha_9 \text{GROWTH}_{i,t} + \alpha_{10} \text{ROA}_{i,t} + \alpha_{11} \text{LNASSET}_{i,t} + \alpha_{12} \text{BOARD}_{i,t} + \alpha_{13} \text{INDBOARD}_{i,t} + \alpha_{14} [\text{Fixed Effects}] + \epsilon_{i,t} \tag{2}
$$

where \text{ATTCOMP} = 1 for companies having restatements prompted by themselves, and 0 otherwise.

This model allows us to determine the incremental relation\textsuperscript{23} between restatement characteristics and executive turnover following a company-prompted (\text{ATTCOMP}) restatement (relative to a non company-prompted restatement), which, in turn, enables us to address one potential alternate explanation for our results — restatement characteristics could be associated with executive turnover, not just whether executives are terminated because of a company-prompted restatement. The coefficients associated with the main effects of each of the four restatement characteristics (\(\alpha_1, \alpha_3, \alpha_5, \alpha_7\)) measure the relation between restatement characteristics and executive turnover for non company-prompted restatements. However, we are mainly interested in the association between restatement characteristics and executive turnover for company-prompted restatements. Thus, we use the joint test to examine this issue.\textsuperscript{24} By focusing on company-prompted restatements, we examine whether executive turnover increases when a restatement involves core earnings (\(\alpha_1 + \alpha_3\)), the overstated amount grows (\(\alpha_3 + \alpha_4\)), more account groups are affected (\(\alpha_5 + \alpha_6\)), and more quarters are restated (\(\alpha_7 + \alpha_8\)).

*When executives window-dress earnings to portray a more favorable earnings picture, they are more likely to be terminated following financial restatements.*
3.2.3 H2 Management behavior

Several studies find that poor financial performance often leads to CEO turnover (e.g., Weisbach 1988; Denis et al. 1997; Furtado and Rozeff 1987; Kaplan and Minton 2006; Kim 2008). When executives window-dress earnings and portray a more favorable earnings picture in the period a restatement is announced, the question is whether they are more likely to be retained in their jobs. Thus, we estimate equation (3-1) and (3-2) to investigate the association between management turnover and earnings management.

\[ TURNOVER_{i,t} = \alpha_0 + \alpha_1 \text{PMDA}_{i,t} + \alpha_2 \text{PostPost}_{i,t} + \alpha_3 \text{PMDA}_{i,t} \times \text{PostPost}_{i,t} + \alpha_4 \text{CORE}_{i,t} + \alpha_5 \text{AMOUNT}_{i,t} + \alpha_6 \text{ACCOUNTS}_{i,t} + \alpha_7 \text{RZEARS}_{i,t} + \alpha_8 \text{GC}_{i,t} + \alpha_9 \text{GROWTH}_{i,t} + \alpha_{10} \text{ROA}_{i,t} + \alpha_{11} \text{LNASSET}_{i,t} + \alpha_{12} \text{BOARD}_{i,t} + \alpha_{13} \text{INDBOARD}_{i,t} + \alpha_{14} [\text{Fixed Effects}] + \varepsilon_{i,t} \] (3-1)

Additionally, this study also follows Wang and Yu (2008) by partitioning the sample years into two distinct groups: restatements announced in the post-SOX period restating financial statements issued in the pre-SOX period (denoted by PostPre), and restatements announced in the post-SOX period restating financial statements issued in the post-SOX period (denoted by PostPost).

\[ TURNOVER_{i,t} = \alpha_0 + \alpha_1 \text{PMDA}_{i,t} + \alpha_2 \text{PostPost}_{i,t} + \alpha_3 \text{PMDA}_{i,t} \times \text{PostPost}_{i,t} + \alpha_4 \text{SEVERITY}_{i,t} + \alpha_5 \text{GC}_{i,t} + \alpha_6 \text{GROWTH}_{i,t} + \alpha_7 \text{ROA}_{i,t} + \alpha_8 \text{LNASSET}_{i,t} + \alpha_9 \text{BOARD}_{i,t} + \alpha_{10} \text{INDBOARD}_{i,t} + \alpha_{11} [\text{Fixed Effects}] + \varepsilon_{i,t} \] (3-2)

Our PMDA variable as a measure of earnings management is the performance-matched discretionary accrual (Kothari et al. 2005). The Kothari et al. (2005) performance-matched discretionary accrual is obtained by matching on the basis of two-digit SIC code, year and current ROA. The performance-matched discretionary accrual is defined as the accrual for company i in year t from the Jones-model discretionary accrual in year t minus the matched company’s Jones-model discretionary accrual in year t.

3.3 Variables of restatement characteristics

The first test variable is an indicator variable for core-earnings (denoted by CORE), which equals one if a restatement involves core earnings, and zero otherwise. According to Penman (2001), core earnings in an income statement include sales revenue, cost of sales, and on-going operating expenses. Prior studies indicate that core earnings are of particular importance to financial statement users (Palmrose et al., 2004; Palmrose and Scholz, 2004; Gleason et al., 2008; and Ettredge et al. 2010) because they consist of primary operating earnings generated by repetitive business. Market participants regard restatements of core earnings as more serious due to potential litigation, and therefore react negatively (Palmrose and Scholz 2004; Palmrose et al. 2004). In our models, we include CORE as a test variable and expect that executives are more likely to be terminated when the restatement involves core earnings.
Second, the magnitude of a restatement is positively associated with the probability of a lawsuit (Palmrose and Scholz 2004), and restatements of greater magnitudes are more of a concern to investors (Palmrose and Scholz 2004; Palmrose et al. 2004; Lev et al. 2008). Thus, we include a measure of the magnitude effect (AMOUNT) as a restatement characteristic. Following Palmrose et al. (2004), Srinivasan (2005), Lev et al. (2008), Collins et al. (2009) and Hennes et al. (2008), we compute AMOUNT as the restated income (loss) less originally reported income (loss), scaled by the book value of total assets at the year-end immediately preceding the restatement announcement. We also expect that executives are more likely to be terminated if restatements involve greater overstatement amounts.

Third, because a restatement may involve several accounts and cause more negative reactions (Palmrose et al. 2004), we measure the number of account groups affected (denoted by ACCOUNTS) to capture the pervasiveness of the restatement. In a word, CORE captures the overall impact of accounting numbers whereas the variable ACCOUNTS indicates whether market participants consider the detailed line items (within the income statement) involved in a restatement. We follow Palmrose et al. (2004) by focusing on seven account groups in the income statement (i.e., revenue, cost of sales, operating expenses, one-time/special items, merger-related, non-operating expenses, and other items) and expect ACCOUNTS (which range from one to seven) to be positively associated with executive turnover.

Fourth, like Palmrose et al. (2004) and Srinivasan (2005) we also include the number of years restated as one restatement characteristic. Duration of the misstatement (denoted by RYEARS) is measured by the number of years financial statements are restated in a single restatement (where a fiscal year = 1 and a quarter = 0.25). Therefore, RYEARS captures the “cumulative compromise” of financial reporting quality over a specific length of time. We also expect a positive association between this variable and the executive turnover.

... the CEO/CFO certification requirement in Section 302 of SOX has made managers more conservative.

Fifth, similar to DeFond et al. (2005), we develop a composite index that combines the aforementioned characteristics of the restatement (CORE, AMOUNT, ACCOUNTS, RYEARS) into a single comprehensive severity measurement (SEVERITY) to capture the company’s overall restatement severity. We code company characteristics equal to 1 if a company’s AMOUNT, ACCOUNTS or RYEARS is above the median of the samples, and 0 otherwise. Then, we construct our comprehensive restatement severity (SEVERITY) measure by summing the three dichotomous measures for each sample observation and the CORE variable. We also expect SEVERITY (ranging from zero to four) to be positively associated with executive turnover.
3.4 Control variables

Similar to previous studies (e.g., Dechow et al. 1996; Richardson et al. 2003; Desai et al. 2006), we control for company’s size effect (denoted by $LNASSET$) because company size might capture company-specific risk (Fama and French 1992), and mitigate the problem of correlated omitted variables (Ahmed and Goodwin 2007). Additionally, Denis et al. (1997) and Desai et al. (2006) find that the incidence of top management turnover is negatively associated with company size. Prior studies have documented a negative relationship between financial performance and executive turnover (Hennes et al. 2008). Therefore, consistent with DeFond and Jiambalvo (1991), we consider two proxies for a company’s financial condition: company’s profitability (denoted by $ROA$) and sales growth rate (denoted by $GROWTH$).

We include the going concern opinion as an indicator variable (denoted by $GC$) following DeFond and Jiambalvo (1991), and expect $GC$ to be positively related to management turnover (Lennox 2005). Corporate boards are responsible for monitoring managerial performance in general (Yermack 1996), but Dechow et al. (1996) find that outside independent directors are effective monitors of managerial actions. Accordingly, we follow Yermack (1996) and Weisbach (1988) to include two measures to proxy for a company’s governance environment: board size (denoted by $BOARD$) and board independence (denoted by $INDBOARD$). Weisbach (1988) finds that boards dominated by outside directors are more likely to respond to poor performance by replacing the CEO. Thus, we expect $BOARD$ and $INDBOARD$ to be positively related to management turnover.

4. Empirical results

4.1 Sample selection

As reported in Table 1, Panel A, a number of companies are excluded from our sample for the following reasons. First, we exclude 12 companies lacking identifying information, such as perm number, cusip, gvkey, or cnum. Second, we cannot find 8-K, 10-K/A, 10-Q/A or restatement data for 183 companies. Third, the restatements of 554 companies do not decrease net income and are deleted. Fourth, 57 companies are merged or acquired within 24 months of the restatement. Fifth, 40 companies are excluded because of missing Compustat financial data. Our final sample is composed of 512 companies that overstated earnings and announced income-decreasing restatements in the post-SOX period.
Table 1
Sample selection for the sample of management turnover

<table>
<thead>
<tr>
<th>Panel A: Number of observations lost due to data requirements</th>
<th>n a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample of 10-K or 10-Q restatements</td>
<td>1,358</td>
</tr>
<tr>
<td>Observations without perm number, cusip, gvkey, cnum, etc.</td>
<td>(12)</td>
</tr>
<tr>
<td>Observations with missing restatement data</td>
<td>(183)</td>
</tr>
<tr>
<td>Observations not income-decreasing restatements</td>
<td>(554)</td>
</tr>
<tr>
<td>Observations merged or acquired</td>
<td>(57)</td>
</tr>
<tr>
<td>Observations not on Compustat or with missing Compustat data</td>
<td>(40)</td>
</tr>
<tr>
<td>Final Sample</td>
<td>512</td>
</tr>
</tbody>
</table>

| Panel B: Distributions of CEO turnover by industry |
|-----------------------------------------------|-------------------|-------------------|-------------------|
| Industry b                                    | Turnover          | No Turnover       | Total             |
|                                               | Obs.   | %         | Obs.   | %         | Obs.   | %         |
| Agriculture                                  | 0      | 0.00      | 1      | 0.28      | 1      | 0.20      |
| Mining & construction                         | 4      | 2.67      | 3      | 0.83      | 7      | 1.37      |
| Food                                         | 3      | 2.00      | 2      | 0.55      | 5      | 0.98      |
| Textiles & printing / publishing             | 5      | 3.33      | 10     | 2.76      | 15     | 2.93      |
| Chemicals                                    | 0      | 0.00      | 4      | 1.10      | 4      | 0.78      |
| Pharmaceuticals                               | 7      | 4.67      | 11     | 3.04      | 18     | 3.52      |
| Extractive                                   | 2      | 1.33      | 10     | 2.76      | 12     | 2.34      |
| Durable manufacturers                         | 24     | 16.00     | 55     | 15.19     | 79     | 15.43     |
| Transportation                               | 1      | 0.67      | 31     | 8.56      | 32     | 6.25      |
| Utilities                                    | 3      | 2.00      | 15     | 4.14      | 18     | 3.52      |
| Retail                                       | 38     | 25.33     | 71     | 19.61     | 109    | 21.29     |
| Financial services                           | 22     | 14.67     | 68     | 18.78     | 90     | 17.58     |
| Services                                     | 16     | 10.67     | 41     | 11.33     | 57     | 11.13     |
| Computers                                    | 25     | 16.67     | 40     | 11.05     | 65     | 12.70     |
| Total                                        | 150    | 100       | 362    | 100       | 512    | 100       |

Table 1, Panel B, details the industry composition of restatement companies. The industry that is most heavily represented (21.29% of sample companies) is retailing. Restatements are also relatively common among companies involved in the financial services and durable goods manufacturers, with 17.58% and 15.43% of the sample, respectively, coming from these two industries. Panel B also shows that retailing, computers and durable goods manufacturing industries have the highest percentages of restatements in the CEO turnover subsample (25.33%, 16.67% and 16%, respectively). In addition, Panel C also shows that retailing, durable goods manufacturing, computers and services industries have the highest percentages of restatements in the CFO turnover subsample (22.29%, 22.29%, 14.01% and 14.01%, respectively). When CEO and CFO turnover are combined, Panel D shows that retailing, durable goods manufacturing, and computer industries have the highest percentages of restatements in the CEO or CFO turnover subsample (23.61%, 18.89%, and 14.59%, respectively).
### Panel C: Distributions of CFO turnover by industry

<table>
<thead>
<tr>
<th>Industry b</th>
<th>Turnover</th>
<th>No Turnover</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Obs.</td>
<td>%</td>
<td>Obs.</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0</td>
<td>0.00</td>
<td>1</td>
</tr>
<tr>
<td>Mining &amp; construction</td>
<td>0</td>
<td>0.00</td>
<td>7</td>
</tr>
<tr>
<td>Food</td>
<td>1</td>
<td>0.64</td>
<td>4</td>
</tr>
<tr>
<td>Textiles &amp; printing / publishing</td>
<td>4</td>
<td>2.55</td>
<td>11</td>
</tr>
<tr>
<td>Chemicals</td>
<td>0</td>
<td>0.00</td>
<td>4</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>4</td>
<td>2.55</td>
<td>14</td>
</tr>
<tr>
<td>Extractive</td>
<td>2</td>
<td>1.27</td>
<td>10</td>
</tr>
<tr>
<td>Durable manufacturers</td>
<td>35</td>
<td>22.29</td>
<td>44</td>
</tr>
<tr>
<td>Transportation</td>
<td>7</td>
<td>4.46</td>
<td>25</td>
</tr>
<tr>
<td>Utilities</td>
<td>7</td>
<td>4.46</td>
<td>11</td>
</tr>
<tr>
<td>Retail</td>
<td>35</td>
<td>22.29</td>
<td>74</td>
</tr>
<tr>
<td>Financial services</td>
<td>18</td>
<td>11.46</td>
<td>72</td>
</tr>
<tr>
<td>Services</td>
<td>22</td>
<td>14.01</td>
<td>35</td>
</tr>
<tr>
<td>Computers</td>
<td>22</td>
<td>14.01</td>
<td>43</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100</td>
<td>355</td>
</tr>
</tbody>
</table>

### Panel D: Distributions of CEO or CFO turnover by industry

<table>
<thead>
<tr>
<th>Industry b</th>
<th>Turnover</th>
<th>No Turnover</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Obs.</td>
<td>%</td>
<td>Obs.</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0</td>
<td>0.00</td>
<td>1</td>
</tr>
<tr>
<td>Mining &amp; construction</td>
<td>4</td>
<td>1.72</td>
<td>3</td>
</tr>
<tr>
<td>Food</td>
<td>3</td>
<td>1.29</td>
<td>2</td>
</tr>
<tr>
<td>Textiles &amp; printing / publishing</td>
<td>6</td>
<td>2.58</td>
<td>9</td>
</tr>
<tr>
<td>Chemicals</td>
<td>0</td>
<td>0.00</td>
<td>4</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>9</td>
<td>3.86</td>
<td>9</td>
</tr>
<tr>
<td>Extractive</td>
<td>3</td>
<td>1.29</td>
<td>9</td>
</tr>
<tr>
<td>Durable manufacturers</td>
<td>44</td>
<td>18.89</td>
<td>35</td>
</tr>
<tr>
<td>Transportation</td>
<td>7</td>
<td>3.00</td>
<td>25</td>
</tr>
<tr>
<td>Utilities</td>
<td>8</td>
<td>3.43</td>
<td>10</td>
</tr>
<tr>
<td>Retail</td>
<td>55</td>
<td>23.61</td>
<td>54</td>
</tr>
<tr>
<td>Financial services</td>
<td>31</td>
<td>13.30</td>
<td>59</td>
</tr>
<tr>
<td>Services</td>
<td>29</td>
<td>12.45</td>
<td>28</td>
</tr>
<tr>
<td>Computers</td>
<td>34</td>
<td>14.59</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>233</td>
<td>100</td>
<td>279</td>
</tr>
</tbody>
</table>

a Number of restatements identified in our searches. Summary statistics are provided only for observations with available data.

b Industry membership is determined by SIC code as follows: agriculture (0100-0999), mining and construction (1000-1999, excluding 1300-1399), food (2000-2111), textiles and printing/publishing (2200-2799), chemicals (2800-2824, 2840-2899), pharmaceuticals (2830-2836), extractive (1300-1399, 2900-2999), durable manufacturers (3000-3999, excluding 3570-3579 and 3670-3679), transportation (4000-4899), utilities (4900-4999), retail (5000-5999), financial services (6000-6999), services (7000-8999, excluding 7370-7379), and computers (3570-3579, 3670-3679, 7370-7379).
4.2 Descriptive statistics and univariate tests

Table 2 presents the descriptive statistics for all the variables used in our analyses, partitioned by two subsamples: CEO terminated following restatements (n = 150), and CEO not terminated following restatements (n = 362). As such, comparing two subsamples provides evidence as to whether restatement characteristics affect the probability of CEO turnover.

**Table 2**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Turnover Companies (N=150)</th>
<th>No Turnover Companies (N=362)</th>
<th>Differences b</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>Std. Dev.</td>
</tr>
<tr>
<td>CORE</td>
<td>0.780</td>
<td>1.000</td>
<td>0.416</td>
</tr>
<tr>
<td>AMOUNT</td>
<td>0.026</td>
<td>0.006</td>
<td>0.067</td>
</tr>
<tr>
<td>ACCOUNTS</td>
<td>1.210</td>
<td>1.000</td>
<td>0.453</td>
</tr>
<tr>
<td>RYEARS</td>
<td>2.085</td>
<td>2.000</td>
<td>1.483</td>
</tr>
<tr>
<td>SEVERITY</td>
<td>1.970</td>
<td>2.000</td>
<td>0.926</td>
</tr>
<tr>
<td>GC</td>
<td>0.450</td>
<td>0.000</td>
<td>0.499</td>
</tr>
<tr>
<td>GROWTH</td>
<td>0.082</td>
<td>0.062</td>
<td>0.268</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.034</td>
<td>0.012</td>
<td>0.213</td>
</tr>
<tr>
<td>LNASSET</td>
<td>6.912</td>
<td>7.133</td>
<td>2.287</td>
</tr>
<tr>
<td>BOARD</td>
<td>8.790</td>
<td>9.000</td>
<td>3.203</td>
</tr>
<tr>
<td>INDBOARD</td>
<td>0.797</td>
<td>0.826</td>
<td>0.159</td>
</tr>
</tbody>
</table>

a The definitions of the variables reported in this table are: TURNOVER = 1 if the CEO leaves the company within 24 months around the restatement announcement (from 6 months before to 18 months after), and 0 otherwise; CORE = 1 if a restatement involves revenue, cost of sales or on-going operating expenses, and 0 otherwise; AMOUNT = The cumulative amount of net income overstatement scaled by total assets in the year prior to the restatement announcement; ACCOUNTS = Number of account groups affected in a restatement. The seven account groups are revenue, cost of sales, operating expenses, one-time/special items, merger-related, non-operating expenses, and other items; RYEARS = Sum of years restated, where a fiscal year = 1 and each additional quarter = 0.25; SEVERITY = Combines four restatement characteristics (CORE, AMOUNT, ACCOUNTS, RYEARS) into a single comprehensive variable; GC = 1 if the company receives a going concern opinion at announcement year, and 0 otherwise; GROWTH = One-year percentage change in sales reported at announcement year; ROA = Net income divided by book value of total assets reported at announcement year; LNASSET = Natural log of book value of total assets reported at announcement year; BOARD = Number of directors on the board at announcement year; INDBOARD = Number of independent directors on the board divided by the total board size at announcement year.

b Asterisks *, **, *** indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.

The mean (median) of CORE reported in the CEO turnover subsample is significantly larger than those reported in the no CEO turnover subsample, at least at the 0.01 level for both tests. The medians of AMOUNT and RYEARS reported in the CEO turnover subsample are significantly larger than those reported in the no CEO turnover subsample at the 0.05 level. Univariate comparisons indicate that CEO turnover companies have larger overstatement value (AMOUNT), longer duration (RYEARS), and are more likely to affect core earnings accounts (CORE) than no CEO turnover companies. In addition, the mean (median) of SEVERITY reported in the CEO turnover subsample is also significantly larger than those reported in the no CEO turnover
Impact of Restatement Characteristics and Subsequent Earnings Management on Post-Sox Executive Turnover

Table 3 reports the Pearson correlations for the test and control variables to be used in the probit models. As depicted in this Table, most explanatory variables are not significantly correlated with each other. Correlations between restatement characteristics and TURNOVER are in the predicted direction. Table 3 shows that TURNOVER is positively correlated with CORE (0.108), and SEVERITY (0.093), statistically significant at the 0.05 level, implying that the probability of CEO turnover is associated with higher restatement severity, and core earnings affected in a restatement. Also, TURNOVER is negatively correlated with ROA (-0.078) and statistically significant at the 0.10 level, suggesting that companies having better performance are associated with lower probability of CEO turnover.

Table 3

<table>
<thead>
<tr>
<th>Variable</th>
<th>CORE</th>
<th>AMOUNT</th>
<th>ACCOUNTS</th>
<th>RYEARS</th>
<th>SEVERITY</th>
<th>GC</th>
<th>GROWTH</th>
<th>ROA</th>
<th>LNASSET</th>
<th>BOARD</th>
<th>INDBOARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>TURNOVER</td>
<td>0.108</td>
<td>0.064</td>
<td>0.047</td>
<td>0.069</td>
<td>0.093</td>
<td>-0.008</td>
<td>-0.040</td>
<td>-0.078</td>
<td>-0.002</td>
<td>0.021</td>
<td>-0.000</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
<td>(0.149)</td>
<td>(0.285)</td>
<td>(0.119)</td>
<td>(0.034)</td>
<td>(0.850)</td>
<td>(0.366)</td>
<td>(0.878)</td>
<td>(0.964)</td>
<td>(0.627)</td>
<td>(0.995)</td>
</tr>
<tr>
<td>CORE</td>
<td>0.028</td>
<td>0.231</td>
<td>0.056</td>
<td>0.588</td>
<td>0.025</td>
<td>-0.030</td>
<td>-0.086</td>
<td>-0.132</td>
<td>-0.120</td>
<td>0.034</td>
<td>0.034</td>
</tr>
<tr>
<td></td>
<td>(0.534)</td>
<td>(0.000)</td>
<td>(0.206)</td>
<td>(0.000)</td>
<td>(0.577)</td>
<td>(0.502)</td>
<td>(0.052)</td>
<td>(0.003)</td>
<td>(0.006)</td>
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<td>-0.138</td>
<td>-0.036</td>
<td>0.047</td>
<td>-0.129</td>
<td>-0.196</td>
<td>-0.108</td>
<td>0.109</td>
<td>0.109</td>
<td>0.081</td>
</tr>
<tr>
<td></td>
<td>(0.158)</td>
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<td>(0.420)</td>
<td>(0.286)</td>
<td>(0.002)</td>
<td>(0.000)</td>
<td>(0.015)</td>
<td>(0.014)</td>
<td>(0.014)</td>
<td>(0.067)</td>
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<td>-0.018</td>
<td>-0.045</td>
<td>-0.076</td>
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<td>-0.006</td>
<td>0.081</td>
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<td>(0.009)</td>
<td>(0.000)</td>
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<td>(0.310)</td>
<td>(0.884)</td>
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<td>(0.361)</td>
<td>(0.956)</td>
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<td>(0.361)</td>
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<td>0.099</td>
<td>-0.108</td>
<td>0.047</td>
<td>0.024</td>
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<td>(0.000)</td>
<td>(0.026)</td>
<td>(0.026)</td>
<td>(0.075)</td>
<td>(0.025)</td>
<td>(0.583)</td>
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<td>(0.361)</td>
<td>(0.884)</td>
<td>(0.361)</td>
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<tr>
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<td>-0.099</td>
<td>0.224</td>
<td>0.097</td>
<td>0.099</td>
<td>-0.051</td>
<td>0.532</td>
<td>0.172</td>
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<td>-0.151</td>
</tr>
<tr>
<td></td>
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<td>(0.026)</td>
<td>(0.000)</td>
<td>(0.028)</td>
<td>(0.680)</td>
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<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.001)</td>
<td>(0.001)</td>
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<tr>
<td>GC</td>
<td>-0.019</td>
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<td>-0.039</td>
<td>-0.039</td>
<td>-0.051</td>
<td>-0.051</td>
<td>0.532</td>
<td>0.172</td>
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<td>-0.151</td>
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<td>(0.287)</td>
<td>(0.374)</td>
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<td>(0.002)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>GROWTH</td>
<td></td>
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<tr>
<td>ROA</td>
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<td></td>
</tr>
<tr>
<td>LNASSET</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>BOARD</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

The definitions of the variables reported in this table are: TURNOVER = 1 if the CEO leaves the company within 24 months around the restatement announcement (from 6 months before to 18 months after), and 0 otherwise; CORE = 1 if a restatement involves revenue, cost of sales or on-going operating expenses, and 0 otherwise; AMOUNT = The cumulative amount of net income overstatement scaled by total assets in the year prior to the restatement announcement; ACCOUNTS = Number of account groups affected in a restatement. The seven account groups are revenue, cost of sales, operating expenses, one-time/special items, merger-related, non-operating expenses, and other items; RYEARS = Sum of years restated, where a fiscal year = 1 and each additional quarter = 0.25; SEVERITY = Combines four restatement characteristics (CORE, AMOUNT, ACCOUNTS, RYEARS) into a single comprehensive variable; GC = 1 if the company receives a going concern opinion at announcement year, and 0 otherwise; GROWTH = One-year percentage change in sales reported at announcement year; ROA = Net income divided by book value of total assets reported at announcement year; LNASSET = Natural log of book value of total assets reported at announcement year; BOARD = Number of directors on the board at announcement year; INDBOARD = Number of independent directors on the board divided by the total board size at announcement year.
4.3 Multivariate analysis

4.3.1 Management turnover and restatement characteristics

To examine the association between the management turnover (CEO, CFO, and combined CEO/ CFO turnover) and restatement characteristics, we estimate model (1) using four restatement characteristics (CORE, AMOUNT, ACCOUNTS, RYEARS) and model (2) using a composite index that combines four restatement characteristics into a single comprehensive variable (SEVERITY) that captures the company’s overall restatement severity. We regress restatement severity variables and control variables on management turnover using a probit model with the standard errors corrected for heteroskedasticity (White 1980). Table 4 presents estimates from a probit regression of equation (1-1) and (1-2).

\[ \text{TURNOVER}_i = \alpha_0 + \alpha_1 \text{SEVERITY}_i + \alpha_2 \text{GC}_i + \alpha_3 \text{GROWTH}_i + \alpha_4 \text{ROA}_i + \alpha_5 \text{LNASSET}_i + \alpha_6 \text{BOARD}_i + \alpha_7 \text{INDBOARD}_i + \alpha_8 [\text{Fixed Effects}] + \epsilon_i \]

\[ \text{TURNOVER}_i = \alpha_0 + \alpha_1 \text{CORE}_i + \alpha_2 \text{AMOUNT}_i + \alpha_3 \text{ACCOUNTS}_i + \alpha_4 \text{RYEARS}_i + \alpha_5 \text{GC}_i + \alpha_6 \text{GROWTH}_i + \alpha_7 \text{ROA}_i + \alpha_8 \text{LNASSET}_i + \alpha_9 \text{BOARD}_i + \alpha_{10} \text{INDBOARD}_i + \alpha_{11} [\text{Fixed Effects}] + \epsilon_i \]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pred. Sign</th>
<th>CEO Turnover</th>
<th>CEO Turnover</th>
<th>CEO or CFO Turnover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>+</td>
<td>-1.76***</td>
<td>-180.***</td>
<td>-1.00***</td>
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<tr>
<td></td>
<td></td>
<td>3.48</td>
<td>(3.65)</td>
<td>(2.12)</td>
</tr>
<tr>
<td>CORE</td>
<td>+</td>
<td>0.27*</td>
<td>0.23</td>
<td>0.31**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.81)</td>
<td>(1.54)</td>
<td>(2.30)</td>
</tr>
<tr>
<td>AMOUNT</td>
<td>+</td>
<td>1.90*</td>
<td>2.41***</td>
<td>2.46**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.92)</td>
<td>(2.74)</td>
<td>(2.30)</td>
</tr>
<tr>
<td>ACCOUNTS</td>
<td>+</td>
<td>0.02</td>
<td>-0.16</td>
<td>-0.08</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.16)</td>
<td>(1.07)</td>
<td>(0.56)</td>
</tr>
<tr>
<td>RYEARS</td>
<td>+</td>
<td>0.05</td>
<td>-0.00</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
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<td>(1.31)</td>
<td>(0.04)</td>
<td>(0.41)</td>
</tr>
<tr>
<td>SEVERITY</td>
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<td>0.07</td>
<td>0.14**</td>
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<td>(1.23)</td>
<td>(2.41)</td>
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<td>(0.67)</td>
<td>(1.56)</td>
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<tr>
<td>GROWTH</td>
<td>-</td>
<td>-0.13</td>
<td>-0.44*</td>
<td>-0.44*</td>
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<td>(0.78)</td>
<td>(1.92)</td>
<td>(1.92)</td>
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<tr>
<td>ROA</td>
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<td>-0.79**</td>
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<td>0.37</td>
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<tr>
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<td>(1.99)</td>
<td>(0.91)</td>
<td>(0.91)</td>
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<tr>
<td>LNASSET</td>
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<td>-0.04</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.35)</td>
<td>(1.14)</td>
<td>(1.14)</td>
</tr>
<tr>
<td>BOARD</td>
<td>+</td>
<td>0.03</td>
<td>0.01</td>
<td>0.01</td>
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<tr>
<td></td>
<td></td>
<td>(1.24)</td>
<td>(0.21)</td>
<td>(0.26)</td>
</tr>
<tr>
<td>INDBOARD</td>
<td>+</td>
<td>0.06</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.16)</td>
<td>(0.07)</td>
<td>(0.07)</td>
</tr>
<tr>
<td>Fixed Effect</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>Pseudo-R² (%)</td>
<td>9.61</td>
<td>12.65</td>
<td>12.65</td>
<td>7.58</td>
</tr>
<tr>
<td>n</td>
<td>512</td>
<td>512</td>
<td>512</td>
<td>512</td>
</tr>
</tbody>
</table>

a Outliers are winsorized using the 1% and 99% percentiles.

b Please refer to Table 2 for variable definitions.

c Asterisks *, **, *** indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels respectively.
Table 4 reports results for our management turnover (CEO, CFO, and combined CEO/ CFO turnover) regressions in the post-SOX period. Consistent with our prediction, in column (1), the coefficient on CORE is 0.27 (significant at p < 0.10), and AMOUNT is 1.90 (significant at p < 0.10). These results suggest that a CEO is more likely to be terminated if restatements involve core earnings accounts as well as larger overstatement values. In addition, we use a comprehensive variable of the restatement severity in column (2). The coefficient on SEVERITY is 0.21 (significant at p < 0.01). These results are consistent with the idea that the probability of CEO turnover significantly increases for companies with higher restatement severity. The coefficient on ROA is significant in expected direction (p < 0.05), suggesting that higher probability of CEO turnover is more likely for unprofitable companies.

Results for CFO turnover are very similar to our CEO turnover results. The coefficient on CORE is 0.23 (marginally significant at p < 0.10) and AMOUNT is 2.41 (significant at p < 0.01), suggesting that, a CFO is more likely to be terminated if restatements involve core earnings accounts as well as larger overstatement values. In column (4), the coefficient on SEVERITY is positive and insignificant. Overall, these results are consistent with the idea that the probability of CFO turnover significantly increases for companies with higher restatement severity. The coefficient on GROWTH is also significantly negative in the CFO regression (p < 0.10), suggesting that higher probability of CFO turnover is more likely for unprofitable companies.

When CEO turnover and CFO turnover are combined, results are very similar to respective CEO or CFO turnover results. Overall, these results suggest that in all of our models the likelihood of CEO or CFO turnover significantly increases for companies with higher restatement severity. To further explore the association between management turnover and restatement severity in different sample groups, we partition the sample into two distinct periods: restatements announced in the post-SOX period restating financial statements issued in the pre-SOX period (post-pre), and restatements announced in the post-SOX period restating financial statements issued in the post-SOX period (post-post). Untabulated results for different sample groups are very similar to Table 4, suggesting that the probability of management turnover significantly increases for companies with high restatement severity, no matter whether these restating financial statements are issued in the post-pre group or in the post-post group.

4.3.2 Management turnover and company-prompted restatement

Compared with auditor- and SEC-prompted restatements, company-prompted restatements are more susceptible to SOX provisions (e.g. §304) regarding top management’s misconduct and financial reporting responsibility. This raises a question of whether executive turnover following a restatement prompted by the company is less likely, even if the company may actually suffer higher restatement severity. Table 5 displays the distribution of restating companies by the prompter and shows that the CEO and CFO have the highest percentages of retention turnover in the company-prompted subsample (37.11% and 35.55%, respectively). Although there is no requirement for companies to reveal this information, about 68.16 percent of our sample observations provide reasonably clear prompter data in their press releases or subsequent amended filings.
Thus, in this section, we examine the relation between restatement characteristics and the probability of management turnover for company-prompted restatements. The coefficients associated with the main effects of each of the four restatement characteristics ($\alpha_1$, $\alpha_3$, $\alpha_5$, $\alpha_7$) measure the relation between the characteristics and the probability of management turnover for non company-prompted restatements. Since we are primarily interested in the relation between restatement characteristics and the probability of management turnover for company-prompted restatements, for each restatement characteristic, as suggested by Carcello and Neal (2003), we sum the coefficient on the main effect of that characteristic plus the coefficient on the term that interacts the characteristic with the ATTCOMP indicator variable. Table 6 reports the results.

By focusing on company-prompted restatements, the likelihood that the company terminated its management (CEO, CFO, and CEO or CFO) increases if core earnings accounts are affected in a restatement ($\alpha_1 + \alpha_2 > 0$), and when the amount of net income overstatement grows ($\alpha_3 + \alpha_4 > 0$; except the CEO turnover subsample). However, we find no significant relation between the likelihood of CEO turnover and the number of account groups and quarters restated ($\alpha_5 + \alpha_6$ and $\alpha_7 + \alpha_8$ are not significantly different from 0). Results for CFO turnover and CEO or CFO turnover are very similar to our CEO turnover results. The results show when restatements are prompted by companies, management turnover appears to be more associated with dollar amounts of the overstated income and/or restatements affecting core earnings.

In addition, we use a comprehensive variable of the restatement severity to rerun Table 6 (results are not tabled). The result reports that there is a significant positive relation between restatements severity and management turnover (CEO, CFO, and CEO or CFO) for company-prompted restatements.

---

Table 5
Management turnover by prompter

<table>
<thead>
<tr>
<th>Prompter</th>
<th>CEO Turnover</th>
<th>No Turnover</th>
<th>CFO Turnover</th>
<th>No Turnover</th>
<th>CEO or CFO Turnover</th>
<th>No Turnover</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Company-Prompted</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>91</td>
<td>190</td>
<td>99</td>
<td>182</td>
<td>140</td>
<td>141</td>
</tr>
<tr>
<td>Percentage b</td>
<td>17.78</td>
<td>37.11</td>
<td>19.35</td>
<td>35.55</td>
<td>27.34</td>
<td>27.54</td>
</tr>
<tr>
<td><strong>SEC-Prompted</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>26</td>
<td>8</td>
<td>31</td>
<td>16</td>
<td>23</td>
</tr>
<tr>
<td>Percentage</td>
<td>2.54</td>
<td>5.08</td>
<td>1.56</td>
<td>6.05</td>
<td>3.13</td>
<td>4.49</td>
</tr>
<tr>
<td><strong>Auditor-Prompted</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>25</td>
<td>8</td>
<td>21</td>
<td>10</td>
<td>19</td>
</tr>
<tr>
<td>Percentage</td>
<td>0.78</td>
<td>4.88</td>
<td>1.56</td>
<td>4.10</td>
<td>1.95</td>
<td>3.71</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
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<td>121</td>
<td>42</td>
<td>121</td>
<td>67</td>
<td>96</td>
</tr>
<tr>
<td>Percentage</td>
<td>8.20</td>
<td>23.63</td>
<td>8.20</td>
<td>23.63</td>
<td>13.09</td>
<td>18.75</td>
</tr>
</tbody>
</table>

a Following Palmrose et al. (2004), a restatement can be prompted by a company’s disclosure of correcting previously issued financial statements, the SEC’s request after reviewing the company’s annual or quarterly filings, the auditor’s advice due to material misstatements in the financial statements and others.

b The percentage computes for the subsample are scaled by final samples.
Table 6
Management turnover analysis: Company-promoted restatement

\[
\text{TURNOVER}_{i,t} = \alpha_0 + \alpha_1 \text{CORE}_{i,t} + \alpha_2 \text{CORE}_{i,t} \times \text{ATTCOMP}_{i,t} + \alpha_3 \text{AMOUNT}_{i,t} + \alpha_4 \text{AMOUNT}_{i,t} \times \text{ATTCOMP}_{i,t} \\
+ \alpha_5 \text{ACCOUNTS}_{i,t} + \alpha_6 \text{ACCOUNTS}_{i,t} \times \text{ATTCOMP}_{i,t} + \alpha_7 \text{RYEARS}_{i,t} \\
+ \alpha_8 \text{RYEARS}_{i,t} \times \text{ATTCOMP}_{i,t} + \alpha_9 \text{GC}_{i,t} + \alpha_{10} \text{GROWTH}_{i,t} + \alpha_{11} \text{ROA}_{i,t} + \alpha_{12} \text{LNASSET}_{i,t} \\
+ \alpha_{13} \text{BOARD}_{i,t} + \alpha_{14} \text{INDBOARD}_{i,t} + \alpha_{15} [\text{Fixed Effects}] + \epsilon_{i,t}
\]  

(2)

<table>
<thead>
<tr>
<th>Variable b</th>
<th>Pred. Sign</th>
<th>CEO Turnover c</th>
<th>CEO Turnover</th>
<th>CEO or CFO Turnover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>+</td>
<td>-1.55*** (2.88)</td>
<td>-1.42*** (2.66)</td>
<td>-1.41*** (2.93)</td>
</tr>
<tr>
<td>CORE</td>
<td>+</td>
<td>0.02 (0.07)</td>
<td>0.05 (0.21)</td>
<td>0.08 (0.42)</td>
</tr>
<tr>
<td>CORE X ATTCOMP</td>
<td>+</td>
<td>0.46 (1.64)</td>
<td>0.28 (0.99)</td>
<td>0.39 (1.49)</td>
</tr>
<tr>
<td>Joint Test ((\alpha_1 + \alpha_2))</td>
<td>+</td>
<td>0.48** (5.71)</td>
<td>0.33* (3.02)</td>
<td>0.47*** (7.06)</td>
</tr>
<tr>
<td>AMOUNT</td>
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<td>3.74** (2.04)</td>
<td>1.22 (0.65)</td>
<td>2.04 (1.11)</td>
</tr>
<tr>
<td>AMOUNT X ATTCOMP</td>
<td>*</td>
<td>-2.57 (1.21)</td>
<td>1.76 (0.84)</td>
<td>0.69 (0.30)</td>
</tr>
<tr>
<td>Joint Test ((\alpha_3 + \alpha_4))</td>
<td>+</td>
<td>1.17 (1.05)</td>
<td>2.98*** (9.40)</td>
<td>2.73* (3.61)</td>
</tr>
<tr>
<td>ACCOUNTS</td>
<td>+</td>
<td>0.16 (0.80)</td>
<td>0.17 (0.79)</td>
<td>0.01 (0.07)</td>
</tr>
<tr>
<td>ACCOUNTS X ATTCOMP</td>
<td>+</td>
<td>-0.17 (0.81)</td>
<td>-0.01 (0.05)</td>
<td>-0.15 (0.75)</td>
</tr>
<tr>
<td>Joint Test ((\alpha_5 + \alpha_6))</td>
<td>+</td>
<td>-0.01 (0.00)</td>
<td>-0.18 (1.12)</td>
<td>-0.14 (0.73)</td>
</tr>
<tr>
<td>RYEARS</td>
<td>+</td>
<td>0.03 (0.47)</td>
<td>0.16 (0.27)</td>
<td>0.00 (0.05)</td>
</tr>
<tr>
<td>RYEARSXATTCOMP</td>
<td>*</td>
<td>0.04 (0.55)</td>
<td>-0.03 (0.34)</td>
<td>0.02 (0.32)</td>
</tr>
<tr>
<td>Joint Test ((\alpha_7 + \alpha_8))</td>
<td>+</td>
<td>0.07 (1.77)</td>
<td>-0.01 (0.04)</td>
<td>0.03 (0.27)</td>
</tr>
<tr>
<td>GC</td>
<td>+</td>
<td>0.14 (0.96)</td>
<td>0.22 (1.59)</td>
<td>0.12 (0.94)</td>
</tr>
<tr>
<td>GROWTH</td>
<td>-</td>
<td>-0.14 (1.11)</td>
<td>-0.43* (0.84)</td>
<td>-0.20 (1.34)</td>
</tr>
<tr>
<td>ROA</td>
<td>-</td>
<td>-0.78* (1.82)</td>
<td>-0.04 (1.10)</td>
<td>0.39 (0.95)</td>
</tr>
<tr>
<td>LNASSET</td>
<td>-</td>
<td>0.02 (0.60)</td>
<td>0.01 (0.19)</td>
<td>-0.01 (0.16)</td>
</tr>
<tr>
<td>BOARD</td>
<td>+</td>
<td>0.03 (1.23)</td>
<td>0.01 (0.02)</td>
<td>0.03 (1.43)</td>
</tr>
<tr>
<td>INBOARD</td>
<td>*</td>
<td>0.05 (0.13)</td>
<td>0.01 (0.102)</td>
<td>0.26 (0.71)</td>
</tr>
<tr>
<td>Fixed Effect</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td></td>
</tr>
<tr>
<td>Pseudo-R² (%)</td>
<td>10.51</td>
<td>13.18</td>
<td>9.09</td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>512</td>
<td>512</td>
<td>512</td>
<td></td>
</tr>
</tbody>
</table>

a Outliers are winsorized using the 1% and 99% percentiles.
b The definitions of the variables reported in this table are: TURNOVER = 1 if the CEO leaves the company within 24 months around the restatement announcement (from 6 months before to 18 months after), and 0 otherwise; CORE = 1 if a restatement involves revenue, cost of sales or ongoing operating expenses, and 0 otherwise; AMOUNT = The cumulative amount of net income overstatement scaled by total assets in the year prior to the restatement announcement; ACCOUNTS = Number of account groups affected in a restatement. The seven account groups are revenue, cost of sales, operating expenses, one-time/special items, merger-related, non-operating expenses, and other items; RYEARS = Sum of years restated, where a fiscal year = 1 and each additional quarter = 0.25; ATTCOMP = 1 for companies having restatements prompted by themselves, and 0 otherwise; GC = 1 if the company receives a going concern opinion at announcement year, and 0 otherwise; GROWTH = One-year percentage change in sales reported at announcement year; ROA = Net income divided by book value of total assets reported at announcement year; LNASSET = Natural log of book value of total assets reported at announcement year; BOARD = Number of directors on the board at announcement year; INDBOARD = Number of independent directors on the board divided by the total board size at announcement year.

c Asterisks *, **, *** indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.

d For all joint tests in this table, the numerals in parentheses represent respective 2 values.
4.3.3 Management turnover and management behavior

Table 7 documents the results of management turnover regressed on earnings management. Then we further explore the association between management turnover and earnings management in different sample periods. As discussed above, the sample is partitioned into two distinct periods: restatements announced in the post-SOX period restating financial statements issued in the pre-SOX period (post-pre), and restatements announced in the post-SOX period restating financial statements issued in the post-SOX period (post-post).

Table 7

Management turnover analysis: Earnings management

\[ \begin{align*}
\text{TURNOVER}_i &= \alpha + \gamma \text{PMDA}_i + \alpha \text{PostPost}_i + \alpha \text{PMDA}_i \times \text{PostPost}_i + \alpha \text{CORE}_i + \alpha \text{AMOUNT}_i + \alpha \text{ACCOUNTS}_i + \alpha \text{RYEARS}_i + \alpha \text{GC}_i + \\
&+ \alpha \text{GROWTH}_i + \alpha \text{ROA}_i + \alpha \text{LNASSET}_i + \alpha \text{INDBOARD}_i + \alpha \text{Fixed Effects}_i + \epsilon_{i,t} \\
\text{TURNOVER}_i &= \alpha + \gamma \text{PMDA}_i + \alpha \text{PostPost}_i + \alpha \text{PMDA}_i \times \text{PostPost}_i + \alpha \text{SEVERITY}_i + \alpha \text{GC}_i + \alpha \text{GROWTH}_i + \alpha \text{ROA}_i + \alpha \text{LNASSET}_i + \alpha \text{BOARD}_i + \\
&+ \alpha \text{INDBOARD}_i + \alpha \text{Fixed Effects}_i + \epsilon_{i,t}
\end{align*} \]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pred. Sign</th>
<th>CEO Turnover</th>
<th>CEO Turnover</th>
<th>CEO Turnover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-1.67*** (2.39)</td>
<td>-1.99** (2.87)</td>
<td>-0.69 (1.15)</td>
<td></td>
</tr>
<tr>
<td>PMDA</td>
<td>?</td>
<td>-1.53** (2.50)</td>
<td>0.51 (0.91)</td>
<td></td>
</tr>
<tr>
<td>PostPost</td>
<td>?</td>
<td>-0.25 (0.78)</td>
<td>0.73 (1.52)</td>
<td></td>
</tr>
<tr>
<td>PMDA \times PostPost</td>
<td>?</td>
<td>1.64*** (2.61)</td>
<td>-0.55 (0.96)</td>
<td></td>
</tr>
<tr>
<td>CORE</td>
<td>+</td>
<td>0.38** (2.06)</td>
<td>0.33 (1.82)</td>
<td></td>
</tr>
<tr>
<td>AMOUNT</td>
<td>+</td>
<td>1.79 (1.37)</td>
<td>2.80*** (2.98)</td>
<td></td>
</tr>
<tr>
<td>ACCOUNTS</td>
<td>+</td>
<td>0.04 (0.23)</td>
<td>0.05 (0.31)</td>
<td></td>
</tr>
<tr>
<td>RYEARS</td>
<td>+</td>
<td>0.05 (1.11)</td>
<td>0.01 (0.25)</td>
<td></td>
</tr>
<tr>
<td>SEVERITY</td>
<td>+</td>
<td>0.24*** (3.21)</td>
<td>0.13* (1.73)</td>
<td></td>
</tr>
<tr>
<td>GC</td>
<td>+</td>
<td>0.07 (0.46)</td>
<td>0.22 (1.37)</td>
<td></td>
</tr>
<tr>
<td>GROWTH</td>
<td>-</td>
<td>-0.11 (0.89)</td>
<td>-0.63** (2.12)</td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>-</td>
<td>-0.60 (1.29)</td>
<td>0.80* (1.67)</td>
<td></td>
</tr>
<tr>
<td>BOARD</td>
<td>+</td>
<td>0.03 (0.60)</td>
<td>-0.04 (0.91)</td>
<td></td>
</tr>
<tr>
<td>INBOARD</td>
<td>+</td>
<td>0.04 (1.10)</td>
<td>0.01 (0.41)</td>
<td></td>
</tr>
<tr>
<td>LNASSET</td>
<td>-</td>
<td>0.23 (0.51)</td>
<td>-0.05 (0.11)</td>
<td></td>
</tr>
<tr>
<td>Fixed Effect</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td></td>
</tr>
<tr>
<td>Pseudo-R2 (%)</td>
<td>13.55</td>
<td>13.67</td>
<td>13.24</td>
<td></td>
</tr>
<tr>
<td>(n)</td>
<td>391</td>
<td>391</td>
<td>391</td>
<td></td>
</tr>
</tbody>
</table>

* Outliers are winsorized using the 1% and 99% percentiles.
* The definitions of the variables reported in this table are: TURNOVER = 1 if the CEO leaves the company within 24 months around the restatement announcement (from 6 months before to 18 months after); and 0 otherwise; \text{CORE} = 1 if a restatement involves revenue, cost of sales or on-going operating expenses, and 0 otherwise; \text{AMOUNT} = The cumulative amount of net income overstatement scaled by total assets in the year prior to the restatement announcement; \text{ACCOUNTS} = Number of account groups affected in a restatement. The seven account groups are revenue, cost of sales, operating expenses, one-time/special items, merger-related, non-operating expenses, and other items; \text{RYEARS} = Sum of years restated, where a fiscal year = 1 and each additional quarter = 0.25; \text{SEVERITY} = Combines four restatement characteristics (\text{CORE}, \text{AMOUNT}, \text{ACCOUNTS}, \text{RYEARS}) into a single comprehensive variable; \text{PMDA} = The performance matched discretionary accrual; PostPost = Restatements announced in the post-SOX period restating financial statements issued in the post-SOX period; \text{GC} = 1 if the company receives a going concern opinion at announcement year, and 0 otherwise; \text{GROWTH} = One-year percentage change in sales reported at announcement year; \text{ROA} = Net income divided by book value of total assets reported at announcement year; \text{LNASSET} = Natural log of book value of total assets reported at announcement year; \text{BOARD} = Number of directors on the board at announcement year; \text{INDBOARD} = Number of independent directors on the board divided by the total board size at announcement year.

Asterisks *, **, *** indicate two-tailed significance at the 0.10, 0.05, and 0.01 levels, respectively.
The CEO turnover column of Table 7 indicates that the coefficient of PMDA is significantly negative (p < 0.05), whereas the coefficient of PMDA x PostPost is significantly positive (p < 0.01). These findings suggest that when executives window-dress earnings to portray a more favorable earnings picture in the post-post group, they are more likely to be terminated following financial restatements. In the past, a negative association between corporate performance and CEO turnover was found (e.g., Weisbach 1988; Denis et al. 1997; Furtado and Rozell 1987; Kaplan and Minton 2006; Kim 2008). For the same reason, in income-decreasing restatements, our empirical results indicate that in the post-pre group, if companies have more income-increasing accounting accruals, CEOs are less likely to be fired for income-decreasing restatements.

In addition, the reversal from negative CEO turnover in the PostPre period to positive CEO turnover in the post-post group implies that companies indeed take into consideration the years being restated in reacting to CEOs’ earnings management behavior after SOX. Lobo and Zhou (2006) also document that the CEO/CFO certification requirement in Section 302 of SOX has made managers more conservative. These empirical results imply that SOX is effective in mitigating CEOs’ earnings management behavior. Board actions react more unfavorably to earnings management behavior in the post-post group because aggressive accounting is interpreted as signals of non-compliance with SOX or poor quality of financial reporting. When CEO and CFO turnover are combined, as reported in column (5) and (6), results are very similar. Finally, our results concerning the relations among (1) CEO turnover, (2) earnings management and (3) the years being restated, are unique to the income-decreasing restatement context and do not generalize to the more common situation.

5. Sensitivity analyses

This section examines the sensitivity of the reported empirical results by exploring whether the evidence persists for a series of variables, sample re-specifications and alternate estimation techniques.

5.1 Alternative definitions of turnover window

In our primary analysis, we use a 24 month turnover window around the restatement announcement (from 6 months before to 18 months after). However, prior studies lack consensus on the appropriate measurement window for management turnover around restatements. Following Desai et al. (2006), Arthaud-Day et al. (2006), and Collins et al. (2009), we also consider a company experiencing management turnover if the top manager leaves the company within 24 months after the restatement announcement. The empirical results are similar to those reported in previous sections.

5.2 Alternative definitions of earnings management

Cohen et al. (2008) and Roychowdhury (2006) use real activity measures to investigate companies’ earnings management behavior before and after SOX and find that, while managers tend to use traditional accruals to manage earnings before SOX, they switch to the real activities earnings management after SOX. To ensure that our results are not sensitive to the measure of earnings management, we replicate the previous tests using Roychowdhury’s (2006) definition of abnormal production costs. In general, the empirical results are similar to those reported in previous sections.

5.3 Alternative definitions of the post-SOX period

In our primary tests, we define the post-SOX period as announced restatements after
August 1, 2002. To ensure that our results are not sensitive to the definitions of the post-SOX period, we re-define the post-SOX period using January 1, 2003 as the cutoff point. Our empirical results are unaffected by this alternative definition.

5.4 Exclude Arthur Andersen clients and restatements announced in 2002

We exclude Arthur Andersen’s clients who made restatements in 2002 to eliminate any potential “Andersen effect” that may bias our empirical analyses. Since SOX was signed into law on July 30, 2002, we also exclude restatements announced from August 1 to December 31 in 2002 to eliminate any “Act effect.” The empirical results are similar to those reported in previous sections.

5.5 Exclude financial services industry

We exclude companies in the financial services industry because their financial ratios differ from other companies, and their corporate governance is subject to different regulatory oversight. The empirical results are similar to those reported in previous sections.

5.6 Alternative measure of test variable CORE

Following Hribar and Jenkins (2004), we also re-define CORE as equal to one if the restatement is categorized as affecting revenue recognition, cost of sales, operating expenses, or loan-loss provisions, and zero otherwise. The results and conclusions remain unchanged.

5.7 Include control variables

Corporate boards are responsible for monitoring managerial performance in general, and in particular financial reporting, a task that is delegated to the audit committees. Beasley and Salterio (2001) and Klein (2002a) show that audit committee independence is positively associated with board size and board independence. Klein (2002b) further indicates that audit committee independence is negatively associated with the level of earnings management. Thus, we also consider two additional control variables: audit committee size and audit committee independence. The results and conclusions remain unchanged.

5.8 Exclude technical restatement

Following Palmrose and Scholz (2004), Agrawal and Chadha (2005), and Hennes et al. (2008), we exclude the companies with technical restatements because no financial reporting failures are involved (e.g., restatements for mergers, discontinued operations, accounting rule changes, changes in accounting method). The empirical results are similar to those reported in previous sections.

6. Conclusions:

Aiming to make widespread governance and financial reporting improvements, a major emphasis of SOX is to enhance the role of the CEOs and CFOs in corporate financial reporting. Thus, the increased criminal and civil sanctions codified by SOX suggest that more severe penalties will be imposed on CEOs and CFOs in the post-SOX environment. However, professional institutions and the press have reported a dramatic increase in restatements in the post-SOX period (e.g., Baldwin and Yoo 2005; GAO 2006; Grothe et al. 2006; Audit Analytics 2007; PCAOB 2007; Scholz 2008). This raises the concern of whether executives should be responsible for restatements. Hence, we investigate the restatement content and management behavior to determine the consequences of restating financial statements for executives.

This study provides evidence that the likelihood of CEO/CFO turnover increases for companies with higher restatement severity. Specifically, restatement characteristics, including core-earnings and magnitude of amounts, significantly affect the likelihood of management turnover. The results also
indicate that for restatements prompted by companies, management turnover is associated with the magnitude of income overstatement and restatements affecting core earnings. After controlling for restatement severity, our empirical findings provide evidence that when CEOs who face a high likelihood of termination pressure have incentives to select income-increasing accounting accruals to portray a more favorable earnings picture in the post-Sox period, they are more likely to be terminated following financial restatements.

References


Audit Analytics, 2008. CEO and CFO departures briefing. Ives Group Inc.


Endnotes

1 The SEC does require companies to disclose the departure of CEO/CFO, but reasons are provided only if disagreements or litigation claims exist.

2 Usually, a restatement can be prompted by (or attributed to) a company’s voluntary disclosure of correcting previously issued financial statements, the SEC’s requests after reviewing companies’ annual or quarterly filings, and the auditors’ advice due to material misstatements in the financial statements. In some cases, however, the restatements may not be attributed to any party. See Palmrose et al. (2004) for detailed discussions about the promotion of restatements.

3 Recently, Wang and Yu (2008) base their argument on a game perspective and posit that, if SOX is effective, companies will be less willing to restate financial statements issued after SOX because market participants may consider such restatements signals of non-compliance with SOX. In contrast, companies may be more willing to restate financial statements issued before SOX because market participants may regard such restatements as signals of enhanced internal controls and improved corporate governance. Thus, this study follows Wang and Yu (2008) to partition the post-SOX sample into two distinct groups: restatements announced in the post-SOX period restating financial statements issued in the pre-SOX period (denoted by PostPre), and restatements announced in the post-SOX period restating financial statements issued in the post-SOX period (denoted by PostPost).

4 For example, Section 304 requires management to return bonuses or profits from stock sales received within 12 months of a restatement resulting from material non-compliance with financial reporting requirements as a result of misconduct. Section 305 also sets standards for imposing officer and director bars and penalties. In addition, Section 804 increases the statute of limitations for private securities fraud lawsuits. The limitations period for proceedings...
commenced on or after the date of enactment is the earlier of two years after the discovery of the facts constituting the violation or five years after such violation. Section 805 also contains several emergency directives to the United States Sentencing Commission generally pertaining to fraud and obstruction of justice offenses.

Section 302 requires the CEOs and CFOs to certify that quarterly and annual financial reports fairly present the company's financial condition and operating performance.

For example, Beneish (1999) finds no significantly higher management turnover following violations of generally accepted accounting procedures or revelations of corporate frauds. Similarly, Land (2006) argues that not all restatement companies experience higher likelihood of CEO turnover. However, recent work shows more significant associations between financial reporting failure and management turnover. For instance, Desai et al. (2006), Collins et al. (2009), Hennes et al. (2008), and Burks (2010) find that top management turnover is higher for companies that restate earnings.

For example, Palmrose et al. (2004) predict positive effects of company-prompted restatements on stock returns. Contrary to their prediction, however, they find that company-prompted restatements give rise to the second largest negative stock returns (-13 percent). Desai et al. (2006) also use the prompter to proxy for restatement severity but choose a different partition. They argue that company-prompted and auditor-prompted restatements are likely to be more severe than SEC-initiated restatements and find evidence that company- and auditor-prompted restatements are associated with higher levels of management turnover. In sum, in the management turnover context, results using the restatement prompter to gauge the severity of restatements are mixed.

Prior research on management turnover can be broadly divided into three categories: (1) factors contributing to turnover, (2) immediate market reactions to the management turnover event, and (3) evaluation of subsequent company performance. See Furtado and Karen (1990) for a detailed discussion of the literature concerning CEO turnover.

The post-post group includes restatements made in the post-SOX period for post-SOX misstatements.

Identifying exact announcement dates related to restatements is challenging. Similar to Palmrose et al. (2004) and Kinney et al. (2004), our restatement announcement date is determined by the first restatement announcement date identified in the Lexis-Nexis News Library.

Following Srinivasan (2005) and Hennes et al. (2008), we also narrow our investigation to companies’ income-decreasing restatements for three reasons. First, income-decreasing restatements suggest that the company has followed aggressive accounting practices in the past (Ettredge et al. 2010). Consequently, we expect our final sample to provide a more powerful test of the hypotheses. Second, prior research finds that the relationship for an income-increasing sample is unclear (Srinivasan 2005). Finally, income-decreasing restatements have received more adverse consequences than income-increasing restatements by market participants (Srinivasan 2005).

SEC rules adopted in August 2004 require companies to file a Form 8-K within four days of discovering a misstatement in previously issued financial statements. These rules also greatly expand the scope of information required to be disclosed about the restatement.

Following Furtado and Rozef (1987), Beneish (1999), Jayaraman et al. (2004), Arthaud-Day et al. (2006), Desai et al. (2006), Land (2006), Hennes et al. (2008), and Burks (2010), we also don’t classify the management turnover event as voluntary or forced in this study. We don’t intend to distinguish between forced turnover and voluntary turnover because it’s very difficult to judge by their appearance of news or press releases.

On November 7, 2006, the SEC released final rules to the Form 8-K regarding the disclosure of the departure of any named executive officer, as well as the principal executive officer, president, principal financial officer, principal operating officer and principal accounting officer.

Thus, if a person occupies the position of Chairman and CEO prior to the restatement but following the restatement retains the title of only Chairman, this is not considered turnover.

See section 3.3 and 3.4 for detailed discussions about the variables in equations (1-1) and (1-2).

In contrast to the growing amount of researches on CEO and restatements, prior research on CFO has been fairly limited in this area (Aier et al. 2005). In addition, the CFO is the officer with primary responsibility for the financial reporting process. Thus, in our analysis, we include analyses of the post-SOX CFO turnover as part of our tests.
In our primary analysis, we use a 24 months turnover window (6 months before and 18 months after) around the restatement announcement. In addition, we also use an alternative definition of turnover window – that the management leaves the company within 24 months after the restatement announcement – as part of our sensitivity tests.

For example, AIG released its restatement announcement first in May 2005, but its CEO stepped down in March 2005 (WSJ.com).

An independent director is a director who does not have employment, family, or other significant economic or personal connections to the corporation other than serving as a director (SEC 2002).

In this study, we include industry and year dummy variables to control for industry and time fixed effects. Eleven dummy variables are employed for fourteen industries identified in Table 1, because agriculture, food and chemicals are grouped into one industry due to their limited observations. The three year dummy variables control for any time-specific effects during years 2002 to 2005. Similar treatments may be found in Barth et al. (2008) and Fan and Wong (2005).

For instance, if the company merges with or is acquired by another company within 24 months after the restatement announcement and as long as the manager does not leave the company prior to the merger, we do not consider it as a turnover, even though prior research suggests that an acquisition significantly increases the likelihood of managerial turnover (Agrawal and Walkling 1994). In addition, if a person occupies the position of Chairman and CEO prior to the restatement but following the restatement retains the title of only Chairman, this is not considered a turnover.

In this study, we include four incremental variables that interact the restatement characteristics (CORE, AMOUNT, ACCOUNTS, RYEARS) with company-prompted restatements (ATTCOMP) in equation (2).

Because we are interested in company-prompted restatements, we don’t focus on the incremental effect (interaction effects). Instead, we sum the coefficient on the main effect of that characteristic plus the coefficient on the term that interacts the characteristic with the ATTCOMP indicator variable. Our joint test method is similar to Carcello and Neal (2003).

First, the Jones model discretionary accrual is estimated cross-sectionally each year using all firm-year observations in the same two-digit SIC code.

\[ TA_{i,t} = \beta_1(1/ASSETS_{i,t-1}) + \beta_2 SALES_{i,t} + \beta_3 PPE_{i,t} + \epsilon_{i,t} \]

where \( TA_{i,t} \), total accruals at year \( t \) for company \( i \), is the change in non-cash current assets minus the change in current liabilities excluding the current portion of long-term debt, minus depreciation and amortization, scaled by lagged total assets. \( SALES_{i,t} \) is change in sales scaled by lagged total assets, \( ASSETS_{i,t-1} \) and \( PPE_{i,t} \) is net property, plant and equipment scaled by \( ASSETS_{i,t-1} \).

Second, using coefficients \( b_1 \) to \( b_3 \) estimated from the OLS regression by industry and year, we estimate discretionary accruals (DA) for each sample firm as:

\[ DA_{i,t} = TA_{i,t}(b_1(1/ASSETS_{i,t-1}) + b_2 SALES_{i,t} + b_3 PPE_{i,t}) \]

Third, the Kothari et al. (2005) performance-matched discretionary accrual (PMDA) is obtained by matching non-restating companies (denoted by \( j \)) on the industry, year and current ROA.

\[ PMDA_{i,t} = DA_{i,t} / DA_{j,t} \]

Palmrose et al. (2004) also found 68% in their restatement sample.

If we include the base level of ATTCOMP as a main effect in the model, it provides no incremental explanatory power (the company-prompted rate is about 54% of the final sample). Therefore, ATTCOMP is deleted in our final regression (Carcello and Neal 2003).

In Cohen et al.’s (2008) term, the traditional discretionary (abnormal) accruals are called artificial earnings management activities in capturing managers’ earnings management. However, in many cases, managers may have employed real activities to manipulate earnings numbers as well. Thus, we also use the abnormal production costs proxy developed by Roychowdhury (2006) to measure real earnings management as part of our sensitivity tests. The empirical results remain the same.

In this section, we eliminate 121 firms with insufficient data to compute the performance matched discretionary accrual.

We also carry out performance matching based on two-digit SIC code, year, and lagged ROA. Similar results are obtained.
31 DeAngelo (1988) suggests that managers window-dress earnings to portray a favorable earnings picture during the campaign and thereby increases the managers’ chances of retaining their jobs.

32 Because of the similarity of the sensitivity results to the results already reported in the paper, and for the sake of parsimony, we do not tabulate the sensitivity analyses.

33 Roychowdhury (2006) identifies three major real manipulation activities that are relatively free of the effects of pure accrual manipulations: (1) accelerate the timing of sales and/or generate additional unsustainable sales through increased price discounts or more lenient credit terms, (2) reduce discretionary expenditures to report higher margins, and (3) overproduce or increase production to report lower cost of goods sold.
Factors that Impact Customer Loyalty in the Investment Banking Industry

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Executive Summary

The main goal of this article is to provide empirical evidence about some factors that impact customer loyalty in the investment banking industry sector. We find that only 45.11% of our sample repeated dealings with the same lead investment bank during the first seasoned equity offering (SEO). Our results suggest that customer loyalty has been declining in the securities firm industry during last decade. Also, we find that the number of days between offerings has a negative relationship with the probability of a firm to remain loyal to the same underwriter. We also find that firms with IPOs offered during 1999 and 2000 have a higher probability of underwriting loyalty during their first SEO; however, this relationship disappears during the second and third SEO. Similarly, we find that underwriter reputation has explanatory power over the probability of a firm’s loyalty to the same underwriter only during the first SEO.

Introduction

The main goal of this article is to provide empirical evidence about some factors that impact customer loyalty in the investment banking industry sector. We define customer loyalty as those firms that repeat dealings with the same lead investment bank or underwriter. We study a sample of 552 initial public offerings (IPOs) of firms that engaged in one or more seasoned equity offerings (SEOs). We find that firms that remain loyal during their first SEO experience an average underpricing of 16.59% while disloyal ones have an average underpricing of 22.32%. Our results contradict those of Krigman, Shaw, and Womack (2001), who find that loyal IPOs are significantly less underpriced than disloyal IPOs. However, our results are consistent with those of James (1992) who finds significantly lower levels of underpricing when firms remain loyal to the same underwriter than when firms switch underwriters.

Since all IPOs in our sample have one or more seasoned equity offerings (SEOs), our analysis goes beyond the first SEO. Specifically, our study tries to analyze whether the factors that influence a firm’s loyalty to the same lead underwriter during its first SEO also explain such loyalty for its second and third SEO. This constitutes the main differentiating factor of our study compared to previous academic works. Indeed, Krigman, Shaw, and Womack (2001) study firms that conducted an IPO from 1993-1995, which then offered just one SEO within three years following their IPOs. James (1992) studies a sample of 520 IPOs, of which 121 (23%) made at least one security offer after their IPO, but only 24 have a first SEO, 18 a second SEO, and just five have a third SEO. James did not discriminate between debt and equity issues in his analyses, and this constitutes a significant difference with our sample of firms where we only considered equity offerings after the IPO. Also, the small number of first, second, and third SEOs did not allow James to perform meaningful statistical analysis considering each offering individually. Our

Winner of the Best Paper Award at the 5th Annual Financial Services Symposium, September 2010.
sample is large enough to derive meaningful conclusions of each offering considered individually.

Our results suggest that the customer loyalty during the first seasoned equity offering is unique, and that not all the same factors can explain why firms switch underwriters in their second and third SEOs. Our results may prove to be extremely valuable for the securities firm industry, since those factors that explain customer loyalty in several offerings can be considered by investment banks to improve the services they provide. The value of our proposed research work is also reflected by our summary statistics: just 45.1% of our sample remained loyal to the same underwriter during their first SEO. This constitutes a significant reduction compared to the 70% reported by Krigman, Shaw, and Womack (2001) and the 65% reported by James (1992). Our results, compared to previous academic works, suggest that customer loyalty has declined over the last couple of decades.

The rest of this paper is organized as follows: Section 1 summarizes the relevant literature review on this topic; Section 2 explains our proposed hypotheses; Section 3 describes our methodology and proposed models; Section 4 explains our sample and provides some summary statistics; Section 5 provides details of our empirical results; Section 6 summarizes major conclusions about our research work; and the last section lists the bibliographic references cited in this article.

1. Literature Review

A few academic authors have studied the factors that impact a firm’s decision to switch its lead IPO underwriter during its SEOs. Krigman, Shaw, and Womack (2001) study a sample of 572 IPOs between January 1993 and December 1995 that returned to the market for a SEO within three years after their IPOs. They find underwriter switchers are significantly less underpriced than non-switcher IPOs, which is exactly the opposite result that we find in this article. They also find that the main two reasons for underwriter switching is to improve underwriter reputation and analyst coverage. They support these results with a survey they applied, and with some logistic regression models.

James (1992) finds a positive and significant relationship between the probability of switching underwriters and the time between the IPO and the SEOs. He also finds significantly lower levels of underpricing when firms remain loyal to the same underwriter than when firms switch underwriters.

Vikram and Warther (1998) study the issuer-investment bank relationship from 1970-1996. They find that loyal firms pay higher fees when issuing securities compared to disloyal ones. They also find that fees are not important in the switching decision. They conclude that small firms that issue securities less often and with low credit ratings tend to be more loyal to their underwriters.

Our proposed research work constitutes an original contribution, compared to previous research works, in the sense that our analysis goes beyond evaluating customer loyalty between the IPO and the first SEO. Our sample is large enough to allow us to analyze factors that explain loyalty not only during the first SEO, but also during the second and third SEO. Our results suggest that independent variables of customer loyalty have different explanatory power for each SEO, since some of them are significant during the first SEO, but such significance disappears during the second and third SEO.

2. Proposed Hypotheses

Dunbar (2000) finds a negative relationship between the level of underpricing and the market share over time. In other words, he finds that the higher the level of underpricing, the lower the subsequent market share of
the investment bank. Similarly, Beatty and Ritter (1986) find that investment banks that misprice offerings in one period lose market share in the subsequent period. These findings suggest that the level of underpricing should have a negative impact in the issuer’s decision to remain loyal to the same investment bank. Therefore we hypothesize that: (H1) the level of underpricing is negatively related to the probability that the issuer will repeat dealings with the same lead underwriter. The rationale for this hypothesis is that issuers that experience low levels of IPO underpricing will maximize the IPO proceeds and will be more satisfied than those issuers who experience high levels of underpricing and that are forced to leave more money on the table.

Megginson and Weiss (1991) compare market share and the ranking of Carter and Manaster (1990) for underwriter reputation and find a high degree of positive correlation between the two. In other words, those investment banks with the highest reputation also have the largest market share. From an issuer’s loyalty perspective, it seems reasonable to assume that the higher the lead underwriter’s reputation, the greater the probability that the issuer will remain loyal to the same lead underwriter. Therefore we hypothesize that: (H2) the underwriter reputation is positively related to the probability that the issuer will repeat dealings with the same lead underwriter. The rationale for this hypothesis is that issuers that hire investment banks with high reputation will be more satisfied with the services they receive and will probably hire them again in subsequent SEOs.

Ellis, Michaely, and O’Hara (2000) find, in their sample of NASDAQ IPOs, that the lead underwriter performs the role of dominant market maker by handling about 60% of the trading volume in the first few days after the IPO, and about 50% of the volume over the first few months after the IPO. Indeed, in addition to being involved in developing the prospectus, organizing road shows, performing bookbuilding-related activities, determining the stock price, and selling stock shares, the lead underwriter must also perform the role of market maker when the IPO is listed in NASDAQ. In our sample, 65.40% of the firms are listed in NASDAQ. Ellis, Michaely, and O’Hara (2000) also find that the lead investment bank takes significant inventory positions in stock that ranges between 4% and 22% of the issue. This in turn creates a significant positive relationship between the lead underwriter’s trading profits and the level of IPO underpricing. However, they report that aftermarket trading constitutes an insignificant source of profits for the lead underwriter compared to the fees collected from underwriting activities. Regardless of the relative significance of profits generated by aftermarket trading, the issuers’ perceptions about such profits may have an impact in their loyalty towards the lead underwriter. We consider that the potential conflicts of interest associated with the inventory position of the lead underwriter may have a negative influence in the issuer’s future decision about repeating dealings with that same underwriter. Therefore we hypothesize that: (H3) there is a negative relationship between stocks listed in NASDAQ and the probability that the issuer will repeat dealings with the same lead underwriter. The rationale for this hypothesis is that issuers may perceive aftermarket trading profits as a result of opportunistic behavior on the part of the lead underwriter, and therefore issuers will be less likely to remain loyal to such investment banks.

DuCharme, Rajgopal, and Sefcik (2001) find that the long-run return performance of hot Internet IPOs during 1998 and 1999 was worse for those firms that received media attention before the IPO date. They also find a significant level of underpricing in these IPOs. Chan and Meidan (2005) also find poor long-run performance for IPOs issued during 1999-2000. This poor long-run performance
of IPOs offered in 1999 and 2000 could have had an impact in the issuer perception about the responsibility of the lead underwriter in such performance. We consider that IPOs offered during this period were probably more likely to associate their poor long-run stock performance with the lead underwriter than with the overall market irrationality characteristic of that period of time. As a result, we hypothesize that: (H4) there is a negative relationship between stocks offered during 1999-2000 and the probability that the issuer will repeat dealings with the same lead underwriter. The rationale for this hypothesis is that issuers may associate poor long-run stock performance with their lead underwriter and may decide to switch in the event of a subsequent SEO.

Krigman, Shaw, and Womack (2001) hypothesize that when the offer price is higher than the middle point of the filing range, issuers can obtain higher IPO proceeds than originally anticipated, and they might interpret these large proceeds as the result of the lead underwriter’s successful marketing efforts. Under such circumstances, the issuer will be more likely to repeat dealings with the same lead underwriter. They find that shares of loyal firms were offered at prices 3.2% higher than the middle point of the filing range while shares of disloyal firms were offered at prices 4.6% below the middle point of the filing range. In this article we define the level of price adjustment as the percentage deviation of the IPO offer price from the middle point of its filing range. Following the same rationale of Krigman, Shaw, and Womack (2001) we hypothesize that (H5) there is a positive relationship between the price adjustment and the probability that the issuer will repeat dealings with the same lead underwriter. The rationale for this hypothesis is that issuers will associate positive price adjustments with the lead underwriter’s successful marketing efforts and will privilege dealings with this same underwriter again in the event of a successive SEO. We want to test the same hypothesis proposed by Krigman, Shaw, and Womack (2001), evaluated not only during the first SEO, but also in the second and third SEO.

James (1992) finds that firms are more likely to be disloyal to the same underwriter when the time between the IPO and the subsequent SEO increases. We consider that the lead underwriter has a better chance to be selected again in subsequent equity offerings if they occur close to each other over time. Consequently, we hypothesize that: (H6) there is a positive relationship between the number of days among equity offerings and the probability that the issuer will repeat dealings with the same lead underwriter. The rationale for this hypothesis is that the lead underwriter will have a better chance of being selected again if the satisfaction for the services rendered is still fresh in the issuer’s memory. Also, the sooner the SEO occurs, the higher the probability that the issuer’s representatives involved in the lead underwriter selection process will be involved again during a successive SEO, so the selection outcome will probably be the same. We want to test the same hypothesis tested by James (1992), but evaluated in the first, second and third SEO individually considered.

Vikram and Warther (1998) find that loyal firms tend to be smaller in size, have lower credit ratings, and issue securities less often than loyal firms. Conversely, they also find that disloyal firms tend to be large in size, often utility companies, with significant internal resources that create disincentive for them to establish a close relationship with any particular lead underwriter, so they tend to switch opportunistically among underwriters. We consider that the probability of repeating business with the same lead underwriter is influenced by the size of the offering measured by the natural logarithm of the offering’s proceeds. Indeed, the size of the firm is related with the probability of survival and the chances
of issuing securities again. Also, some large national investment banks have a competitive advantage when underwriting a large issue. Accordingly, we hypothesize that: *(H7) there is a negative relationship between the size of the offering and the probability that the issuer will repeat dealings with the same lead underwriter.* We want to test this hypothesis as it applies to the first, second and third SEO individually considered.

Krigman, Shaw, and Womack (2001) find that there are two main reasons for being disloyal to one particular underwriter: to deal with a lead underwriter with superior reputation, and to obtain superior analyst coverage. They surveyed chief financial officers (CFO) and chief executive officers (CEO) of firms that completed their IPOs. They find that 44% of respondents mentioned more or improved research coverage as the top reason to switch underwriter, while 88% mention research as one of the top three reasons for being disloyal to the same underwriter. Although this might have been true in 2001, we decided not to include any variable to control for research coverage. The rationale for this decision follows: during 2001-2002 the analysts' process of rating stocks was severely criticized. Many issuers associated the demand for their stock with the nature of research coverage their stock might have received. In order to minimize the obvious conflict of interest, the Securities and Exchange Commission (SEC) implemented the Regulation AC in 2002. In section I. Introduction and Summary of Regulation Analyst Certification, the SEC states:

“…We were particularly concerned that many investors who rely on analysts' recommendations may not know, among other things, that favorable research coverage could be used to market the investment banking services provided by an analyst's firm, and that an analyst's compensation may be based significantly on generating investment banking business…”

(SEC, 2002)

Therefore, since research analysis has been heavily regulated since 2002, we decided to ignore this factor as a possible explanatory variable for underwriting loyalty. Similarly, we ignore underwriting fees as a factor affecting issuer loyalty. Indeed, Vikram and Warther (1998) find that when highly loyal firms decide to switch underwriters, they are charged higher fees than those charged to firms with lower measures of past loyalty. Also, Krigman, Shaw, and Womack (2001) find that underwriting fees have the lowest ranking among the surveyed reasons to switch lead underwriter. These findings are consistent with those of Chen and Ritter (2000) who find that from 1995 to 1998, 90% of their sample of 1,111 IPOs paid their corresponding investment bank spreads of exactly seven percent, suggesting that no competition among investment banks exist in terms of fees. Based on these previous findings we decided to exclude underwriting fees from our analysis.

3. Methodology

In this research work we applied several logistic regression models (logit models) to determine the factors that impact the probability of customer loyalty defined as those firms who repeat dealings with the same lead investment bank or underwriter. The following logic model is considered:

\[
\ln \left( \frac{p_i}{1 - p_i} \right) = \alpha + \beta_1 DBO_i + \beta_2 UP_i + \beta_3 PA_i + \beta_4 NASDAQ_i + \beta_5 LnPR_i + \beta_6 UR_i + \beta_7 Bubble_i
\]
where \( p_i \) is the probability that the firm will remain loyal and will repeat dealings with the same securities firm or underwriter. \( \alpha_1 \) is the intercept term. \( DBO_i \) is the number of days between equity offerings. \( UP_i \) is the level of IPO underpricing measured by the 1-day holding period return as \( (P_1 - P_0)/P_0 \), where \( P_0 \) is the offer price and \( P_1 \) is the first-trading-day closing price. The level of underpricing is determined for each firm in our sample of IPOs. \( PA_i \) is the level of price adjustment measured as the percentage deviation of the IPO offer price from the middle point of its filing range. \( NASDAQ_i \) is a dummy variable that takes the value of one if the firm is listed in the NASDAQ stock exchange and zero otherwise. \( LnPR_i \) is the natural logarithm of the total dollar amount resulting from the proceeds of the equity offering measured as the total shares offered times the offer price. \( UR_i \) is the underwriter reputation measured by the adjusted Carter-Manaster ranking taken from Jay Ritter’s website at http://bear.warrington.ufl.edu/ritter/ipodata.htm (see Carter and Manaster, 1990). \( Bubble_i \) is a dummy variable that takes the value of one if IPO \( i \) was offered in 1999 or 2000, and zero otherwise. Our analysis also includes some difference-in-mean tests to analyze differences in several independent variables of our sample.

We applied the same logistic regression model twice, but excluding shelf-registered SEOs the second time. The rationale for this exclusion follows: the SEC adopted Rule 415 in November 1983 to allow shelf registration offerings. This regulation allows public firms to offer securities without additional filing notice with the SEC during a three-year period since 2005 and a two-year period before that year. Before 1992 only two types of shelf-registration existed: equity and debt shelves. Since October 1992 the SEC allowed universal shelves to offer both debt and equity securities. The mechanism allows firms to offer securities when capital market conditions are favorable, with minimum filing and administrative preparation expenses. Denis (1991) finds evidence that firms avoid shelf-registrations due to the lack of underwriter certification associated with the shelf procedure. He also finds that firms who announce an SEO using a shelf-registration experience an average stock price decline of 0.7%-0.8%. Denis explains that Rule 415 does not require any disclosure of the participant underwriters until the offering date, if at all. Under Rule 415 once the shelf-registration has been filed, the lead underwriter is usually selected based on a competitive bid for the issue. As a result, the selected underwriter has no time to perform any reasonable investigation of the issuer, and therefore no credible certification of the offering is provided. For this reason, our logistic regression model may produce different results by considering only non-shelf SEOs.

4. Sample and Summary Statistics

Our sample consists of 552 IPOs offered between 1997 and 2008 that issued at least one SEO; 245 of these have at least two SEOs; 82 of these have at least three SEOs; 43 of these have at least four SEOs; and 18 of these have five SEOs. The IPO-related data is obtained from Securities Data Corporation’s (SDC) Global New Issues database. The firms in our sample have stock price data available at the Center for Research in Security Prices (CRSP). The first day closing prices for the IPOs are obtained from CRSP. Those IPOs without price data at CRSP were eliminated. We excluded IPOs of American Depositary Receipts (ADRs), enhanced income securities, stocks with warrants, income depositary shares, and unit IPOs. Data for our control variables are retrieved from the Securities and Exchange Commission (SEC) filings at the Electronic Data Gathering, Analysis, and Retrieval system (EDGAR) database; specifically from the IPO’s initial prospectus and proxy statements. Accounting data are obtained from Standard and Poor’s Research Insight database.
Table 1 shows summary statistics of the number of loyal firms in this sample. Remember that we define loyal firms as those who repeat dealings with the same lead investment bank or underwriter between one offering and the next one. Only 249 firms (45.11%) out of 552 of the sample repeated dealings with the same lead investment bank or underwriter for the first SEO. This constitutes a significant reduction compared to the 70% reported by Krigman, Shaw, and Womack (2001) and the 65% reported by James (1992). These results suggest that customer loyalty has been declining in the securities firm industry. Similarly, 70 firms (28.57%) out of 245 in the sample that had a second SEO remained loyal to the same underwriter from their first SEO. From this group of 245 firms with two SEOs, just 41 (16.73%) remained loyal to the same underwriter two times in a row since their IPOs. Finally, 35 firms (42.68%) out of the 82 in the sample that offered a third SEO remained loyal to the same underwriter from their second SEO. From this group of 82 firms with three SEOs, just 12 (14.63%) remained loyal to the same underwriter three times in a row since their IPOs.

These results, compared to previous academic works, suggest that customer loyalty has declined over the last couple of decades.

Table 2 provides summary statistics about the number of days between equity offerings starting at the IPO offer date of each firm in this sample. The average number of days between the IPO and the first SEO in the sample is about 1,153 days. The average number of days between the first and second SEO is about 673 days, and between the second and third SEO is about 503 days. Similarly, the average number of days from the IPO to the second SEO of those 245 firms that offered two SEOs is about 1,766 days. Finally the average number of days between the IPO and the third SEO of 82 firms in this sample that offered three SEOs is about 2,028 days.

Table 3 shows summary statistics about the level of underpricing for each equity offering. The average level of IPO underpricing in this sample is about 19.74%. This average is significantly lower than that reported by Dempere (2009), who finds an average level of underpricing of 34.61% for the same period. The level of SEO underpricing for the first, second, and third SEO are 3.95, 2.7, and -3.18% respectively.
Table 4 provides summary statistics about the IPO price adjustment of the sample. The average percentage of deviation of the IPO offer price from the middle point of its filing range is -0.947%. This result suggests that for most firms in this sample the underwriter decided to adjust the offer price below that estimated in the initial prospectus submitted to the SEC.

Table 5 shows descriptive statistics of those firms in the sample listed in the NASDAQ stock exchanges versus those listed in other exchanges. Most firms in the sample (65.40%) are listed in the NASDAQ stock exchange. However, that percentage declines to 27% for those firms in the sample that remained loyal during the first SEO. Only 17.55% of those firms in the sample that remained loyal during the second SEO are listed in NASDAQ, while 20.73% of those loyal firms during their third SEO are listed in NASDAQ. Similarly, only 8.98% of firms that remained loyal during their first and second SEOs are listed in NASDAQ and only 3.66% of those loyal during their first, second, and third SEOs are also listed in NASDAQ.

Table 6 provides summary statistics of the average underwriter reputation measured by the adjusted Carter-Manaster ranking. The average underwriter reputation during the IPO of this sample is 8.06, where the maximum possible value of the ranking is 9.001 and the minimum is 1.001. This average declines significantly to about 7.54 during the first SEO and declines again to 5.37 during the second SEO. However, the average increases slightly to 5.71 during the third SEO.

We define customer loyalty as those firms that repeat dealings with the same lead investment bank or underwriter.

Table 7 shows descriptive statistics of the average dollar amount of the proceeds of each offering in this sample. The average dollar amount from the IPOs is about 201 million, while for the first SEO is about 182 million. Similarly, the mean dollar amounts of the proceeds from the second and third SEOs are 192 and 159 million respectively. Table 7 also includes the maximum and minimum dollar amount of each offering proceeds, plus the standard deviation for each variable.
Factors that Impact Customer Loyalty in the Investment Banking Industry

5. Empirical Results

Table 8 shows the average number of days between equity offerings starting with the IPO date of each firm in this sample. Remember that we define loyal firms as those who repeat dealings with the same lead investment bank or underwriter between one offering and the next one. The average number of days between the IPO and the first SEO is 641.6 days for loyal firms and 1,572.9 days for disloyal ones. This difference is significant at a 0.1% confidence level. The difference between loyal and disloyal firms for the average number of days between the first and second SEO is also significant at a 0.1% confidence level with 487.5 days and 751.9 days respectively. However, the average period of time between the second and third SEO is not statistically different between loyal and disloyal firms. This result suggests that the time between offerings is only a relevant explanatory factor of customer loyalty at the early stages of the firm as a public entity.

Table 8: Independent Sample Tests of Average Days between Equity Offerings

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Levene’s Test for Equality of Variances</th>
<th>t-test for Equality of Means (Sig. 2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Days Between IPO and 1st SEO (N: 249 vs. 303)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>641.6</td>
<td>F = 106.4973</td>
<td>Equal variances not assumed t = -13.51</td>
</tr>
<tr>
<td>Disloyal</td>
<td>1,572.9</td>
<td>(0.0000)****</td>
<td>(0.0000)****</td>
</tr>
<tr>
<td>Average Days Between 1st and 2nd SEOs (N: 70 vs. 174)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>487.5</td>
<td>F = 10.2845</td>
<td>Equal variances not assumed t = -4.046</td>
</tr>
<tr>
<td>Disloyal</td>
<td>751.9</td>
<td>(0.00152)***</td>
<td>(0.000)****</td>
</tr>
<tr>
<td>Average Days Between 2nd and 3rd SEOs (N: 35 vs. 47)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>537.2</td>
<td>F = 0.72886</td>
<td>Equal variances assumed t = 0.535</td>
</tr>
<tr>
<td>Disloyal</td>
<td>486.4</td>
<td>(0.3958)</td>
<td>(0.593)</td>
</tr>
<tr>
<td>Average Days Between IPO and 2nd SEO (N: 41 vs. 203)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>1,101.2</td>
<td>F = 15.256</td>
<td>Equal variances not assumed t = -6.53</td>
</tr>
<tr>
<td>Disloyal</td>
<td>1,903.0</td>
<td>(0.0000)****</td>
<td>(0.000)****</td>
</tr>
<tr>
<td>Average Days Between IPO and 3rd SEO (N: 12 vs. 70)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>1,343.9</td>
<td>F = 4.013</td>
<td>Equal variances not assumed t = -3.737</td>
</tr>
<tr>
<td>Disloyal</td>
<td>2,151.1</td>
<td>(0.0485)***</td>
<td>(0.001)***</td>
</tr>
</tbody>
</table>

Notes: The p-values are shown in parentheses. *, **, *** and **** denote statistical significance at 10%, 5%, 1%, and 0.1% significance levels, respectively.

This test, referred to in Tables 8, 9, 10, 11 and 12, was proposed by H. Levene in his article “In Contributions to Probability and Statistics: Essays in Honor of Harold Hotelling, I. Olkin et al.” eds., Stanford University Press, pp. 278-292.
Table 8 also shows that those firms that remained loyal two offerings in a row (first and second SEO) have issued these offerings during the first 1,101.2 days after their IPO dates, while disloyal firms have done the same during the first 1,903 days. Finally, those firms that have been loyal three times in a row (first, second, and third SEO) issued their equity offerings during the first 1,343.9 days after their IPO dates, while disloyal firms did the same during the first 2,151.1 days. These last two results are also statistically significant at 0.1% and 1% confidence levels respectively. These results partially confirm hypothesis H6 about the positive relationship between the number of days between equity offerings and the probability that the issuer will repeat dealings with the same lead underwriter.

Table 9 shows the average underwriter reputation of each firm in our sample at different offering issues. The average underwriter reputation for loyal firms is higher than that of disloyal ones for each equity offering without exceptions, and all these results are statistically significant at conventional levels of confidence. Specifically, the average IPO underwriter reputation is 8.43 for loyal firms and 7.76 for disloyal ones. Similar results can be verified during the first SEO, where loyal firms have an average underwriter reputation of 8.39, while disloyal ones have an average of 6.84. These two results are both significant at a 0.1% confidence level. Similarly, during the third SEO the average reputation is 6.77 for loyal firms and 4.95 for disloyal ones. This is the only result that is significant at a 5% confidence level. Likewise, the average underwriter reputation for those firms that remained loyal during the first and second SEO is 8.20 compared to 4.80 of disloyal firms. Finally, those firms that have been loyal three times in a row have an average underwriter reputation of 8.58, while disloyal ones have an average of 5.24. These two last results are also significant at a 0.1% confidence level. These results support our hypothesis H2 about the positive relationship between underwriter reputation and the probability that the issuer will repeat dealings with the same lead underwriter.

Table 10 contains the level of underpricing for each firm in our sample during each offering starting with their IPOs. Loyal firms have an average underpricing level of 16.59% during their IPOs while disloyal ones have an average underpricing level of 22.32%. This is the only significant result at a 10% confidence level. This result is exactly the opposite result of Krigman, Shaw, and Womack (2001) who find that underwriter switchers are significantly less underpriced than non-switcher IPOs. This result partially supports hypothesis H1 about the negative relationship between the level of underpricing and the probability that the issuer will repeat dealings with the same lead underwriter. Nevertheless, the level of SEO underpricing seems to be irrelevant between loyal and disloyal firms for the second and third SEO, and for firms that have been loyal two and three times in a row. This result suggests that the level of IPO underpricing has explanatory power over customer loyalty only for the first SEO after the IPO. One reasonable explanation is that the pricing process during the IPO is completely different than that during a SEO. Indeed, during the IPO the lead underwriter looks for interested investors during road shows and keeps records in the bookbuilding process. This information helps the underwriter to determine the reasonable offer price for the IPO. The price of an SEO is based exclusively on historical price data, so no analysis is required. Therefore, the average underpricing level in most SEOs is extremely low, and the impact is therefore insignificant.
### Table 9: Independent Sample Tests of Underwriter Reputation for each Equity Offering

<table>
<thead>
<tr>
<th></th>
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<th>t-test for Equality of Means (Sig. 2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average IPO’s Underwriter Reputation</strong> (N: 249 vs. 303)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>8.43</td>
<td>F = 53.292</td>
<td>Equal variances not assumed t = 6.01</td>
</tr>
<tr>
<td>Disloyal</td>
<td>7.76</td>
<td>(0.0000)****</td>
<td>(0.0000)****</td>
</tr>
<tr>
<td><strong>Average 1st SEO’s Underwriter Reputation</strong> (N: 249 vs. 303)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>8.39</td>
<td>F = 196.47</td>
<td>Equal variances not assumed t = 8.89</td>
</tr>
<tr>
<td>Disloyal</td>
<td>6.84</td>
<td>(0.0000)****</td>
<td>(0.0000)****</td>
</tr>
<tr>
<td><strong>Average 2nd SEO’s Underwriter Reputation</strong> (N: 70 vs. 175)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>7.62</td>
<td>F = 135.286</td>
<td>Equal variances not assumed t = 7.87</td>
</tr>
<tr>
<td>Disloyal</td>
<td>4.47</td>
<td>(0.0000)****</td>
<td>(0.0000)****</td>
</tr>
<tr>
<td><strong>Average 3rd SEO’s Underwriter Reputation</strong> (N: 35 vs. 47)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>6.77</td>
<td>F = 6.4542</td>
<td>Equal variances not assumed t = 2.53</td>
</tr>
<tr>
<td>Disloyal</td>
<td>4.95</td>
<td>(0.0000)***</td>
<td>(0.013)***</td>
</tr>
<tr>
<td><strong>Average 2nd SEO’s Underwriter Reputation for Loyal Firms during 1st and 2nd SEO</strong> (N: 41 vs. 204)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>8.20</td>
<td>F = 290.744</td>
<td>Equal variances not assumed t = 9.77</td>
</tr>
<tr>
<td>Disloyal</td>
<td>4.80</td>
<td>(0.0000)****</td>
<td>(0.0000)****</td>
</tr>
<tr>
<td><strong>Average 3rd SEO’s Underwriter Reputation for Loyal Firms during 1st, 2nd, and 3rd SEO</strong> (N: 12 vs. 70)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>8.58</td>
<td>F = 54.524</td>
<td>Equal variances not assumed t = 7.37</td>
</tr>
<tr>
<td>Disloyal</td>
<td>5.24</td>
<td>(0.0000)****</td>
<td>(0.0000)****</td>
</tr>
</tbody>
</table>

Notes: The p-values are shown in parentheses. *, **, ***, and **** denote statistical significance at 10%, 5%, 1%, and 0.1% significance levels, respectively.

### Table 10: Independent Sample Tests of IPO Underpricing

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Levene’s Test for Equality of Variances</th>
<th>t-test for Equality of Means (Sig. 2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average IPO Underpricing of Loyal/Disloyal Firms During 1st SEO</strong> (N: 248 vs. 303)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>16.59%</td>
<td>F = 21.278</td>
<td>Equal variances not assumed t = -1.715</td>
</tr>
<tr>
<td>Disloyal</td>
<td>22.32%</td>
<td>(0.0000)****</td>
<td>(0.087)*)</td>
</tr>
<tr>
<td><strong>Average 1st SEO Underpricing of Loyal/Disloyal Firms During 1st SEO</strong> (N: 210 vs. 266)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>3.63%</td>
<td>F = 0.02996</td>
<td>Equal variances not assumed t = -0.582</td>
</tr>
<tr>
<td>Disloyal</td>
<td>4.20%</td>
<td>(0.8626)</td>
<td>(0.561)</td>
</tr>
<tr>
<td><strong>Average 2nd SEO Underpricing of Loyal/Disloyal Firms During 2nd SEO</strong> (N: 54 vs. 82)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>2.96%</td>
<td>F = 1.2709</td>
<td>Equal variances not assumed t = 0.262</td>
</tr>
<tr>
<td>Disloyal</td>
<td>2.51%</td>
<td>(0.2616)</td>
<td>(0.781)</td>
</tr>
<tr>
<td><strong>Average 3rd SEO Underpricing of Loyal/Disloyal Firms During 3rd SEO</strong> (N: 22 vs. 22)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>-2.79%</td>
<td>F = 1.2051</td>
<td>Equal variances not assumed t = 0.687</td>
</tr>
<tr>
<td>Disloyal</td>
<td>-3.73%</td>
<td>(0.27855)</td>
<td>(0.496)</td>
</tr>
<tr>
<td><strong>Average 2nd SEO Underpricing of Firms that Remained Loyal from its IPO to its 2nd SEO</strong> (N: 33 vs. 103)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>3.05%</td>
<td>F = 0.65917</td>
<td>Equal variances not assumed t = 0.255</td>
</tr>
<tr>
<td>Disloyal</td>
<td>2.58%</td>
<td>(0.4183)</td>
<td>(0.799)</td>
</tr>
<tr>
<td><strong>Average 3rd SEO Underpricing of Firms that Remained Loyal from its IPO to its 3rd SEO</strong> (N: 7 vs. 37)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal</td>
<td>-1.74%</td>
<td>F = 1.0072</td>
<td>Equal variances not assumed t = 0.971</td>
</tr>
<tr>
<td>Disloyal</td>
<td>-3.54%</td>
<td>(0.32133)</td>
<td>(0.337)</td>
</tr>
</tbody>
</table>

Notes: The p-values are shown in parentheses. *, **, ***, and **** denote statistical significance at 10%, 5%, 1%, and 0.1% significance levels, respectively.
Table 11 shows the average price adjustment for the IPO of each firm in our sample. Remember that we define price adjustment as the percentage of deviation of the IPO offer price from the middle point of its filing range. The average price adjustment is 0.91% for loyal firms and -0.025% for disloyal ones. These results are significant at 1% level of confidence. This result partially supports our hypothesis H5 about the positive relationship between price adjustment and the probability that the issuer will repeat dealings with the same lead underwriter.

We argue that issuers will associate positive price adjustment with successful marketing efforts of the lead underwriter and will privilege dealings with the same underwriter again in the event of a successive seasoned equity offering. These results partially support this view.

<table>
<thead>
<tr>
<th>Table 11: Independent Sample Tests of Price Adjustment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Loyal</td>
</tr>
<tr>
<td>Disloyal</td>
</tr>
</tbody>
</table>

Notes: The p-values are shown in parentheses. *, **, ***, and **** denote statistical significance at 10%, 5%, 1%, and 0.1% significance levels, respectively.

<table>
<thead>
<tr>
<th>Table 12: Independent Sample Tests of Proceedings for each Offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>IPO’s Proceeds (N: 249 vs. 303) of Loyal and Disloyal Firms during the 1st SEO</td>
</tr>
<tr>
<td>Loyal</td>
</tr>
<tr>
<td>Disloyal</td>
</tr>
<tr>
<td>1st SEO’s Proceeds (N: 222 vs. 274) of Loyal and Disloyal Firms during the 1st SEO</td>
</tr>
<tr>
<td>Loyal</td>
</tr>
<tr>
<td>Disloyal</td>
</tr>
<tr>
<td>2nd SEO’s Proceeds (N: 60 vs. 87) of Loyal and Disloyal Firms during the 2nd SEO</td>
</tr>
<tr>
<td>Loyal</td>
</tr>
<tr>
<td>Disloyal</td>
</tr>
<tr>
<td>3rd SEO’s Proceeds (N: 27 vs. 28) of Loyal and Disloyal Firms during the 3rd SEO</td>
</tr>
<tr>
<td>Loyal</td>
</tr>
<tr>
<td>Disloyal</td>
</tr>
<tr>
<td>2nd SEO’s Proceeds (N: 37 vs. 110) of Loyal and Disloyal Firms during the 1st and 2nd SEO</td>
</tr>
<tr>
<td>Loyal</td>
</tr>
<tr>
<td>Disloyal</td>
</tr>
<tr>
<td>3rd SEO’s Proceeds (N: 10 vs. 45) of Loyal and Disloyal Firms during the 1st, 2nd, and 3rd SEO</td>
</tr>
<tr>
<td>Loyal</td>
</tr>
<tr>
<td>Disloyal</td>
</tr>
</tbody>
</table>

Notes: The p-values are shown in parentheses. *, **, ***, and **** denote statistical significance at 10%, 5%, 1%, and 0.1% significance levels, respectively.
Factors that Impact Customer Loyalty in the Investment Banking Industry

Table 12 provides the results of difference-in-mean tests of the proceeds of each equity offering. In all cases, loyal firms are able to collect higher proceeds from each equity offering than disloyal ones. However, not all results are statistically significant at conventional levels of confidence. Indeed, the average offering proceeds of loyal firms during the first ($230 million), second ($256 million), and third SEO ($242 million) are lower than those of disloyal firms during the same offerings ($143 million, $150 million, $79 million, respectively.) These results are significant at one, ten, and five percent confidence levels respectively. The remaining results are insignificant at conventional levels of confidence. These results partially contradict hypothesis H7 about the negative relationship between the size of the offering and the probability that the issuer will repeat dealings with the same lead underwriter. Indeed, according to these results loyal firms are bigger than disloyal ones in terms of offering size, but again, since not all results are statistically significant, we cannot derive meaningful conclusions.

Table 13 shows the results of two logit regression models that evaluate the impact of several independent variables on the probability of a firm to remain loyal to the same underwriter during their first SEO. The results confirm hypothesis H6; that the number of days between the IPO and the first SEO has a negative relationship with the probability of the firm to remain loyal to the same underwriter.

Table 13: Logit Regression Model of the Probability of Loyalty during the First SEO

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coefficient</td>
<td>Z-Statistic</td>
</tr>
<tr>
<td>Intercept</td>
<td>-6.633577 (-2.4858)**</td>
</tr>
<tr>
<td>Days between Offerings (DBO)</td>
<td>-0.001507 (-6.7644)****</td>
</tr>
<tr>
<td>Underpricing (UP)</td>
<td>0.00651 (0.020333)</td>
</tr>
<tr>
<td>Price Adjustment (PA)</td>
<td>1.353768 (1.413463)</td>
</tr>
<tr>
<td>NASDAQ (NASDAQ)</td>
<td>0.294849 (1.170146)</td>
</tr>
<tr>
<td>Natural Logarithm of Proceeds (LnPR)</td>
<td>0.234932 (1.682987)*</td>
</tr>
<tr>
<td>Underwriter Reputation (UR)</td>
<td>0.398649 (4.1274)****</td>
</tr>
<tr>
<td>Bubble (Bubble)</td>
<td>-0.702901 (-1.6686)*</td>
</tr>
</tbody>
</table>

McFadden R² 0.278317 0.295884
LR statistic 208.3965 209.3477
N 544 511

Notes: *, **, ***, and **** denote statistical significance at 10%, 5%, 1%, and 0.1% significance levels, respectively. Model 1 includes shelf registrations while Model 2 excludes them. We found no multicollinearity problems with Allison’s (1999) methodology by estimating the equivalent linear regression model and evaluating the tolerance and the variance inflation factor for each independent variable. The standard error was estimated by using the generalized linear model method.

In other words, our results support the notion that the longer the period of time between the IPO and the first SEO, the lower the probability that the firm will repeat dealings with the same underwriter. This result is significant at a 0.1% confidence level in both models: with and without shelf registrations. This result is consistent with that of James (1992), who finds a positive and significant relationship between the probability of switching underwriters (disloyal firms) and the time between the IPO and the seasoned offering. The natural logarithm of the dollar amount from the offering proceeds is positively related to the probability of the firm to remain loyal to the same underwriter. This result suggests that the higher the dollar amount of
the proceeds, the greater the probability of the firm remaining loyal to the same underwriter. This result contradicts hypothesis H7 and is also opposite to that of James (1992). This result is significant at a 10% confidence level in the model with shelf registrations, and at a 5% level in the model without shelf registrations. Underwriter reputation is another independent variable that has explanatory power over the probability of loyalty in our sample. This result supports hypothesis H2 about the notion that the higher the underwriter reputation, the greater the probability that the firm will repeat dealings with the same underwriter. This result is significant at a 0.1% confidence level in both models.

Finally, table 13 provides evidence that contradicts hypothesis H4: those IPOs offered during 1999 and 2000 have a higher probability of remaining loyal to the same underwriter than those offered at any other year. This result is significant at a 10% confidence level in both models. The remaining independent variables considered in our analysis have no explanatory power on the probability of underwriting loyalty in our sample.

Table 14: Logit Model Results for the Loyalty between 1st and 2nd SEO

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Z-Statistic</td>
</tr>
<tr>
<td>Intercept</td>
<td>-0.642982</td>
<td>-0.949235</td>
</tr>
<tr>
<td>Days between Offerings (DBOi)</td>
<td>-0.00018</td>
<td>-3.604****</td>
</tr>
<tr>
<td>Underpricing (UP)</td>
<td>-0.454852</td>
<td>-0.951385</td>
</tr>
<tr>
<td>NASDAQ (NASDAQi)</td>
<td>0.026167</td>
<td>0.426612</td>
</tr>
<tr>
<td>Natural Logarithm of Proceeds (LnPRi)</td>
<td>0.052945</td>
<td>1.465122</td>
</tr>
<tr>
<td>Underwriter Reputation (URi)</td>
<td>0.005448</td>
<td>0.454364</td>
</tr>
<tr>
<td>Bubble (Bubblei)</td>
<td>0.069003</td>
<td>0.976</td>
</tr>
<tr>
<td>McFadden R²</td>
<td>0.069909</td>
<td>0.117012</td>
</tr>
<tr>
<td>LR statistic</td>
<td>2.818650</td>
<td>22.96392</td>
</tr>
<tr>
<td>N</td>
<td>232</td>
<td>144</td>
</tr>
</tbody>
</table>

Notes: *, **, ***, and **** denote statistical significance at 10%, 5%, 1%, and 0.1% significance levels, respectively. Model 1 includes shelf registrations while Model 2 excludes them. We found no multicollinearity problems with Allison’s (1999) methodology by estimating the equivalent linear regression model and evaluating the tolerance and the variance inflation factor for each independent variable. The standard error was estimated by using the generalized linear model method.

Table 14 shows the results of two logit regression models that evaluate the impact of the same independent variables on the probability of a firm remaining loyal during its second SEO to the same underwriter that helped the firm in its first SEO. The results show again that the number of days between the first SEO and the second one has a negative relationship with the probability of the firm remaining loyal to the same underwriter between the first and second SEO. This result is significant at a 0.1% confidence level in both models: with and without shelf registrations.

Underwriter reputation is another significant result, but only in the model that excludes shelf registrations. This result supports our hypothesis H2 about the positive relationship between the underwriter reputation and the probability that the firm will repeat dealings in the second SEO with the same underwriter of the first SEO. This result is significant at a 5% confidence level. The lack of significant results in the model that includes shelf-registrations is consistent with
the lack of underwriter certification hypothesis proposed by Denis (1991.) Indeed, in the model that includes shelf-registration, underwriter reputation has no explanatory power since the underwriter certification is irrelevant for shelves.

Table 15 provides the results of two logit regression models about the probability of a firm remaining loyal two times in a row: during the first and second SEO. These results confirm hypothesis H6 again; that there is a negative relationship between the number of days from the IPO to the second SEO, and the probability of the firm to stay loyal to the same underwriter. This result is significant at a 0.1% confidence level in both models: with and without shelf registrations. The second significant independent variable is the underwriter reputation, but only in the model that excludes shelf registrations. This result also supports hypothesis H2 about the positive relationship between underwriter reputation and the probability that the firm will repeat dealings during the second SEO with the same IPO underwriter. This result is significant at a 10% confidence level.

Table 15: Logit Model Results for the Loyalty between IPO and 2nd SEO

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th>Model 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-8.102009</td>
<td>-1.76833*</td>
<td>-4.782199</td>
<td>-0.964672</td>
</tr>
<tr>
<td>Days between Offerings (DBOi)</td>
<td>-0.001494</td>
<td>-3.46728***</td>
<td>-0.001489</td>
<td>-3.325***</td>
</tr>
<tr>
<td>Underpricing (UP)</td>
<td>1.155192</td>
<td>0.282049</td>
<td>0.804246</td>
<td>0.186204</td>
</tr>
<tr>
<td>NASDAQ (NASDAQ)</td>
<td>0.29098</td>
<td>0.661071</td>
<td>0.478304</td>
<td>0.940079</td>
</tr>
<tr>
<td>Natural Logarithm of Proceeds (LnPR)</td>
<td>0.356212</td>
<td>1.507309</td>
<td>0.172987</td>
<td>0.669946</td>
</tr>
<tr>
<td>Underwriter Reputation (UR)</td>
<td>0.182919</td>
<td>1.400378</td>
<td>0.269792</td>
<td>1.91798*</td>
</tr>
<tr>
<td>Bubble (Bubble)</td>
<td>0.929049</td>
<td>1.324009</td>
<td>0.690555</td>
<td>0.928472</td>
</tr>
<tr>
<td>McFadden R²</td>
<td>0.175805</td>
<td></td>
<td>0.213812</td>
<td></td>
</tr>
<tr>
<td>LR statistic</td>
<td>35.79534</td>
<td></td>
<td>35.08924</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>232</td>
<td></td>
<td>144</td>
<td></td>
</tr>
</tbody>
</table>

Notes: *, **, ***, and **** denote statistical significance at 10%, 5%, 1%, and 0.1% significance levels, respectively. Model 1 includes shelf registrations while Model 2 excludes them. We found no multicollinearity problems with Allison’s (1999) methodology by estimating the equivalent linear regression model and evaluating the tolerance and the variance inflation factor for each independent variable. The standard error was estimated by using the generalized linear model method.

Table 16 has the results of two logit regression models about the probability of remaining loyal to the same underwriter from the second to the third SEO. The lack of explanatory power of the number of days between the second and third SEO is consistent with the results of table 8 where the only insignificant results are those of the difference-in-mean tests for the number of days between the second and third SEO. Also, as in the previous two models, the underwriter reputation has explanatory power over the probability of underwriting loyalty, but only in the model that excludes shelf registrations. This result also supports hypothesis H2 about the positive relationship between the underwriter reputation and the probability that the firm will repeat dealings during the second SEO with the same IPO underwriter. This result is significant at 5% level of confidence.
Table 16: Logit Model Results for the Loyalty between 2nd SEO and 3rd SEO

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th>Model 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Z-Statistic</td>
<td>Coefficient</td>
<td>Z-Statistic</td>
</tr>
<tr>
<td>Intercept</td>
<td>-5.587157</td>
<td>-0.989021</td>
<td>-3.033652</td>
<td>-0.499976</td>
</tr>
<tr>
<td>Days between Offerings</td>
<td>0.000622</td>
<td>1.040846</td>
<td>-0.000219</td>
<td>-0.268337</td>
</tr>
<tr>
<td>Underpricing (UP)</td>
<td>-5.237643</td>
<td>-1.33248</td>
<td>-5.095246</td>
<td>-1.325258</td>
</tr>
<tr>
<td>NASDAQ (NASDAQ)</td>
<td>-0.911158</td>
<td>-1.365228</td>
<td>-0.044785</td>
<td>-0.04851</td>
</tr>
<tr>
<td>Natural Logarithm of Proceeds (LnPR)</td>
<td>0.30561</td>
<td>1.018832</td>
<td>0.066056</td>
<td>0.212196</td>
</tr>
<tr>
<td>Underwriter Reputation (UR)</td>
<td>-0.046756</td>
<td>-0.507358</td>
<td>0.267991</td>
<td>2.481847**</td>
</tr>
<tr>
<td>Bubble (Bubble)</td>
<td>1.294509</td>
<td>1.78986</td>
<td>0.38295</td>
<td>0.518037</td>
</tr>
<tr>
<td>McFadden R²</td>
<td>0.135205</td>
<td></td>
<td>0.140577</td>
<td></td>
</tr>
<tr>
<td>LR statistic</td>
<td>13.07642</td>
<td></td>
<td>9.744040</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>71</td>
<td></td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

Notes: *, **, ***, and **** denote statistical significance at 10%, 5%, 1%, and 0.1% significance levels, respectively. Model 1 includes shelf registrations while Model 2 excludes them. We found no multicollinearity problems with Allison's (1999) methodology by estimating the equivalent linear regression model and evaluating the tolerance and the variance inflation factor for each independent variable. The standard error was estimated by using the generalized linear model method.

Table 17 shows the results of two logit regression models about the probability of a firm remaining loyal three times in a row: during the first, second, and third SEO. As in all previous logit models, the number of days between the IPO and the third SEO has a negative relationship with the probability of the firm to stay loyal to the same underwriter three consecutive times. These results confirm hypothesis H6 again that there is a negative relationship between the number of days between the IPO and the third SEO, and the probability of the firm to stay loyal to the same underwriter. This is the only independent variable that is significant at a 10% confidence level in both models.

Table 17: Logit Model Results for the Loyalty between IPO and 3rd SEO

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th>Model 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Z-Statistic</td>
<td>Coefficient</td>
<td>Z-Statistic</td>
</tr>
<tr>
<td>Intercept</td>
<td>-17.75291</td>
<td>-1.699606*</td>
<td>-12.98683</td>
<td>-1.398784</td>
</tr>
<tr>
<td>Days between Offerings (DBOi)</td>
<td>-0.001026</td>
<td>-1.683178*</td>
<td>-0.001435</td>
<td>-1.742177*</td>
</tr>
<tr>
<td>Underpricing (UP)</td>
<td>-0.941419</td>
<td>-0.274398</td>
<td>0.292701</td>
<td>0.074535</td>
</tr>
<tr>
<td>NASDAQ (NASDAQ)</td>
<td>0.213673</td>
<td>0.16803</td>
<td>0.52487</td>
<td>0.389688</td>
</tr>
<tr>
<td>Natural Logarithm of Proceeds (LnPR)</td>
<td>0.643133</td>
<td>1.230466</td>
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<tr>
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Notes: *, **, ***, and **** denote statistical significance at 10%, 5%, 1%, and 0.1% significance levels, respectively. Model 1 includes shelf registrations while Model 2 excludes them. We found no multicollinearity problems with Allison's (1999) methodology by estimating the equivalent linear regression model and evaluating the tolerance and the variance inflation factor for each independent variable. The standard error was estimated by using the generalized linear model method.
6. Conclusions

We find that only 45.11% of our sample repeated dealings with the same lead investment bank or underwriter during the first seasoned equity offering. This constitutes a significant reduction compared to the 70% reported by Krigman, Shaw, and Womack (2001) and the 65% reported by James (1992). Our results suggest that customer loyalty has been declining in the securities firm industry during the last two decades. Also, our results suggest that some factors considered in previous academic research works have explanatory power over customer loyalty at the early stages of the firm as a public entity. However, once the firm becomes a public corporation with shares of stock traded in the secondary market, customer loyalty is no longer explained by such variables. In particular, we find that the number of days between offerings has a negative relationship with the probability of a firm remaining loyal to the same underwriter once, during their first SEO and their second SEO, twice during their first and second SEO consecutively, and three times in a row during their first, second, and third SEO consecutively. However, the number of days between offerings has no explanatory power over the probability of underwriting loyalty between the second and third SEO. The lead underwriter seems to have a better chance of being selected again if the satisfaction for the services rendered is still fresh in the issuer’s memory. Also, the sooner the SEO occurs, the higher the probability that the issuer’s representatives involved in the lead underwriter selection process will be involved again during that SEO, so the selection outcome will probably be the same.

We also find that firms with IPOs offered in 1999 and 2000 have a higher probability remaining loyal to the same underwriter during their first SEO than other firms in our sample. However, this relationship disappears during the second and third SEO. Similarly we find that the higher the dollar amount of the proceeds, the greater the probability of the firm remaining loyal to the same underwriter during its first SEO. This relationship also disappears during the second and third SEO.

Finally, we find that underwriter reputation has explanatory power over the probability of a firm’s loyalty to the same underwriter during the first SEO. This relationship remains when loyalty occurs between first and second SEO, between the second and third SEO, and twice during their first and second SEO consecutively, but only when the logistic models excludes shelf registrations. This relationship is insignificant when loyalty occurs three times in a row during their first, second, and third SEO consecutively. Our results suggest that issuers who hire investment banks with high reputation will be more satisfied with the services they provide and will probably hire them again in subsequent SEOs.
References


Corporate Financial Reporting Complexity: Recommendations for Improvement

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Executive Summary

Despite the improvements in financial reporting stemming from Sarbanes-Oxley, the U.S. financial reporting system continues to face a number of challenges. Conceivably the most urgent is the need to reduce complexity, and thereby improving transparency and increasing the usefulness of reported financial information to constituents. This paper examines the Final report of the Advisory Report of the Advisory Committee on Improvements to Financial Reporting, and offers recommendations to progressively redress the existing complex system of standards, rules, and regulations that fail to provide relevant and transparent financial information. This complexity has been mounting for many years as a result of different forces; structural, institutional, cultural, behavioral, and political. It is believed that these recommendations, if implemented, would achieve measurable improvements to the current financial reporting system. The paper concentrates on the sources that create substantive complexity and provides an analytical insight of the recommendations. This paper also provides implications for accounting educators and practicing professionals.

Introduction

The impact of market financial innovation and regulation: Financial innovation is fundamentally market driven, and generally more complex and less understood at inception. In conjunction with it, corporate financial reporting is becoming as complex as the U.S. tax system. In general, complexity may effectively impede communication through the feed of financial information between a company and its stakeholders by creating inefficiencies in the marketplace (e.g., increased investor, preparer, audit, and regulatory costs) and producing suboptimal allocation of capital. Over the past two decades, the U.S. experienced several major financial crises. These include the S&L crisis, the reporting scandals,\(^1\) the dot.com bubble, and more recently the ongoing global problems in the credit and financial markets.\(^2\)

Formulating a proper regulatory response to financial innovations is a challenging task for the standard setters (SEC, FASB, AICPA, EITF, ISAB and others). Many have argued that the U.S. should strive to implement a regulatory regime that is principles-based, risk-focused, and consistently applied that can provide needed transparency and safe haven from legal and regulatory risks. Rules should implement principles rather than develop in an ad hoc manner, and financial globalization and financial innovations are closely tied. Thus global regulatory collaboration and coordination are now more vital than ever.\(^3\)

The issue of complexity is one of the most important aspects in financial reporting, and financial instruments are among the most complex on which to report clearly. For example, the concept of fair value, which was intended to help bring transparency, was scorned by some as a “villain”, exacerbating...
the current turmoil, and heralded by others as a savior in revealing the problems on a timely basis. Financial market consequences are of particular relevance to accounting regulators; many empirical studies have investigated the market’s response to the deliberations surrounding and enactments of specific kinds of regulation, and to the information content of data that companies were to disclose as a result of enacted regulation. Given the complexities of pronouncements by accounting standard-setters, research on the consequences of regulation is expected to be long-drawn-out.

The purpose of this paper is to examine the issue of complexity in the SEC Advisory Committee on Improvements to Financial Reporting (better known by its acronym, CFiR). While the proposed recommendations will remain relevant for both international and U.S. financial reporting, the discussion here will primarily be conducted in the context of current U.S. environment. The remaining sections of the paper start with evaluation of CFiR proposed recommendations that have attracted relatively concerted attention and challenges. The paper will briefly address the five general areas (discussed in the next section of the report), followed by a detailed discussion of complexities pertaining to area three: the substantive complexity and articulation of new standards. Significant implications for accounting educators and professionals, and the conclusion, are presented last.

Proposed Regulations

The need for new regulations: In a dynamic global market, complexity represents a major strand in a web of interrelated factors and propositions influencing financial reporting. Nevertheless, it has been singled out as a factor affecting relevance and compliance, and a study of its effect thereon can be viewed as one step in an ongoing program of rulemaking process. Some users and prepares of financial information argue that over time, financial reporting is becoming an onerous compliance implement which is of diminishing relevance to investors. This effect can be attributed largely to: (1) the growth of novel business strategies and financing innovations that elongated the confines of what the traditional reporting framework can factually communicate, and (2) overly controversial traditions that, arguably, result in financial reporting designed as much to protect against legal responsibility as to inform investors. As financial reporting has become more and more complex, many investors have expressed concerns that it is often difficult to understand the financial reports of companies in which they invest. Similarly, on the preparers’ and auditors’ side, many companies expressed trepidation that it is not easy to ensure compliance when preparing financial reports with U.S. GAAP and SEC, given the current reporting rules. In June of 2007, the Chairman of the SEC announced the creation of the SEC Advisory Committee on Improvements to Financial Reporting, which consists of members representing investors and other key constituencies in America’s capital markets.

In August of 2008, the chairman of CFiR presented the final report containing recommendations that can be implemented by the SEC, the Financial Accounting Standards Board (FASB), and the Public Company Accounting Oversight Board (PCAOB).

The CFiR recommendations: The CFiR’s dual mandate was to reduce unnecessary complexity in the U.S. financial reporting system and make financial reports clearer and more understandable to investors. CFiR’s final report provided key recommendations to improve

Bright-line standards ... squeezed judgment out of the financial reporting system, weakening the accounting profession’s ability to apply sound professional judgment.
financial reporting in the following five general areas: 

1. Increasing the usefulness of information in SEC filings
2. Enhancing the accounting standards-setting process
3. Improving the substantive design of new standards
4. Delineating authoritative interpretive guidance
5. Clarifying guidance on financial restatements and accounting judgments

Although this paper discusses a summary of all areas, it will entail much more forethought and analysis of area three, which deals with substantive complexity and articulation of new improvement.

With regard to the first area, the CIFiR noted that many individual investors find company filings with the SEC to be overly complex and detailed; hence it has recommended that the inclusion of a short executive summary at the beginning of a company’s annual report would describe concisely the main aspects of its business and its key performance metrics or indicators (KPI). Proper performance of the KPI will highlight whether a company is achieving its strategic objectives. They measure not only financial outcomes, but also drivers of performance related to customers, people and innovation. CIFiR encourages the development of the KPIs by the private sector on an activity and industry basis as appropriate.

In area two, the CIFiR believes that the financial reporting system would be best served by recognizing the pre-eminence of the perspective of investors, as they are the primary users of financial reports. The CIFiR called for more investor participation in accounting standard setting by increasing investor representation on the FASB and Financial Accounting Foundation (FAF). To be responsive to the ever-changing financial landscape, the CIFiR also called for the creation of a Financial Reporting Forum (FRF), on which key public and private parties would be represented.

To reduce the proliferation of U.S. GAAP, the CIFiR strongly supports FASB’s efforts for completing the codification of all authoritative accounting literature into one document. In this fourth area, the CIFiR believes that there should be a single standards-setter for all authoritative accounting standards and interpretive implementation guidance of general significance. The FASB should perform this function for U.S. GAAP, while the SEC should focus on registrant-specific guidance issues.

With respect to area five, the preparation and audit of financial statements have always required the exercise of judgment. For example, the more frequent use of fair value involves estimates of value that may be less objectively determined than historical cost measures. Similarly, the revised auditing standard applicable to audits of internal control over financial reporting emphasizes the need for professional judgment in taking a risk-based approach to performing internal control audits. Notably, international accounting standards generally contain less regulatory guidance and more reliance on general principles than U.S. GAAP. In recognition of the increasing exercise of accounting and audit judgments, the CIFiR recommends that the SEC and PCAOB adopt policy statements on this subject, adding that such policy statements would not only provide more transparency into how the SEC and the PCAOB evaluate the reasonableness of a judgment, but also encourage preparers and auditors to follow a disciplined process in making judgments. Many issues in the above areas are interrelated and are discussed further below.
Investors, preparers, auditors, and students of the accounting profession [should] understand the economic substance and business purposes of transactions, in contrast to mechanical compliance with the rules.

Financial Reporting Complexity and its Effect on Financial Information

Financial reporting complexity: The CIFiR defines complexity as the difficulty for all stakeholders. For investors, the difficulty is to understand the economic substance of a transaction or event and the overall financial position and results of a company. For preparers, the difficulty is to properly apply the U.S. GAAP and communicate the economic substance of a transaction or event, as well as the overall financial position and results of a company. Complexity can also cause difficulty for other constituents that audit, analyze, and regulate a company’s financial reporting.

Substantial complexities can come from the intricacies of certain transactions and/or from the events themselves. By their very nature the accounting treatment for such transactions is complicated and hence beyond the boundaries of the regulators. Therefore from the outset it is imperative to acknowledge and distinguish between two types of complexity in financial reporting:

1. that which is inescapable, due to the inherent complexity of transactions (e.g., derivative; futures, forwards, options and swaps), and
2. that which could be avoidable, having been brought about by accounting standards themselves.

The issue of products complexity including embedded multifaceted elements, which have to be split out from the underlying contract and accounted for accordingly, is not confined to derivative financial instruments, as the host contract might be a lease or a sale or purchase contract. Certainly multiple-element product and service agreements, increasingly used in business transactions can also be challenging to interpret from an accounting perspective.

Unnecessary accounting complexity: A major focus of the CIFiR final report concerns inherent, avoidable complexities which are currently embedded in GAAP. Because of them, it is vital that regulators take every opportunity to reduce any complexity that is solely a result of the financial reporting system. An informal review of an audited financial statement may create a perception that reported amounts are predetermined and defined, while they could reflect a great deal of estimation, choice, and judgment.

Consistency of information across entities or time periods enhances its comparability, which improves its decision usefulness. Ideally, GAAP is expected to provide clear and consistent guidance for preparing financial statements, but this may not always be true, and that may hinder effective comparison of financial performance between companies.

Consider the following scenario: a large company that purchases a smaller company for the purpose of acquiring its newly-developed intangible asset (a promising new product). The large company would value the patent and record it as an asset under GAAP. On the other hand, if the smaller company is not purchased, but continues to develop the product on its own, it would be constrained by GAAP from listing the patent as an asset on its balance sheet. Regardless of how comparable information may be, it will not be useful if it is irrelevant to users’ decisions or does not faithfully represent the economic phenomena it purports to represent. This example is just one depiction of the avoidable complexity currently embedded in GAAP. The CIFiR final report suggests that financial reporting complexities experienced by the constituent
groups (investors, preparers, and auditors) are largely caused by "avoidable" factors, such as incomparable and inconsistent accounting reports, overly long, inconsistent, poorly written and voluminous accounting standards, audit and regulatory systems that deliver information that is not useful to investors, antiquated initial and continuing education of accountants, and the fact that accounting reports provide investors with a surplus of information that is not very useful.

The Four Most Critical Causes of Avoidable Complexity

The CIFiR identifies the following as the most pressing sources of substantive financial reporting complexity:

1. The mixed attribute model that blends the use of fair value and historical cost.
2. The lack of a holistic approach to disclosures.
3. Certain bright-line rules
4. Exceptions to general principles.

This paper will detail the CIFiR list of recommendations pertaining to these four challenges; analysis and critique of them are presented next.

1. The mixed attribute model: In this model the carrying amounts of some assets and liabilities are measured at historic cost, at lower of cost or market, or at fair value. Historic cost, amortized cost, and fair value measurements are all subject to reliability concerns. Under historic and amortized cost accounting, the need to determine whether assets are impaired illustrates these concerns, as do decisions about the way certain costs should be allocated across quarterly and annual periods. However, in the absence of quoted prices, the implementation of fair value can be complicated.

In a world with heterogeneous users there is no un-dogmatic normative solution to the financial accounting measurement problem. Thus, setting rules requires balancing the different needs and interests of all stakeholders (preparers, auditors, and users-investors) in the accounting arena. Setting financial accounting standards is ultimately a political progression. Positive accounting research is aimed at understanding and predicting the accounting-related preferences and behavior of market participants. For example, Statement of Financial Accounting Standards No. 157, Fair Value Measurements (SFAS 157) established a framework for companies to follow when measuring assets and liabilities at fair value. Fornaro and Barbera (2007) discuss the pros and cons of the fair value hierarchy, assess the usefulness for decision-making, and evaluate its influence on the external auditor's role. SFAS 157 assigns highest priority to quoted prices in active markets (Level 1) and the lowest priority to unobservable inputs that rely heavily on assumptions (Level 3). The attributes of prominent measurement concepts such as historical cost and fair value have been indentified and categorized in the academic and practitioner literature for decades. While SFAS established disclosure requirements that provide insight into Level 2 and 3 fair value estimates, it may not be sufficient in all cases. While few investors might find information related to a valuation model helpful, this might encompass key risks associated with certain assumptions and related sensitivity analyses, including a range of possible outcomes predicted by the model and a discussion of the reliability of the model itself.

For example, if a valuation model relies on historical assumptions for a period of time that excludes economic downturns, that fact and its implications may need to be disclosed. Unless the SEC or FASB establishes a monitoring process to update disclosure requirements, similar problems will persist and may confuse investors. Two prominent
attributes and their ranking of historical cost and fair value seem to be fairly persistent throughout the literature: relevance, where fair value ranks first and historical cost metrics rank second, and reliability, where the ranking is the opposite. As the two prototypic measurement concepts do not rank consistently across the two prototype decision-usefulness attributes, choosing the most decision-useful measurement is non-trivial. For example, some users might invest in companies or markets where corporate governance issues are substantial, and thus incentives between reporting management and stakeholders are misaligned. This might fuel demand for more reliable reporting measures by these investors, while other investors, who invest in well governed companies only, do not have these additional concerns about the reliability of financial information as they do not expect systematic misreporting by management.

The preparation and audit of financial statements have always required the exercise of judgment. The recent trend in accounting entails a move away from prescriptive guidance toward greater use of judgment – for example, the more frequent use of fair value involves estimates of value that may be less objectively determined than historical cost measures.

Complexity arising from the mixed attribute model is compounded by requirements to record some adjustments in earnings, while others are recorded in equity (i.e., comprehensive income). Earnings volatility resulting from the use of credit derivatives is manifested in recent market experience. Under GAAP, credit derivatives are measured at fair value and in general are required to be recognized as an asset or liability. The gain or loss resulting from the change in fair value must be recorded in earnings. Assuming the hedge is effective, most credit derivatives do not qualify for hedge treatment that could allow their gain or loss to be reported in the same period as the gain or loss on the position being hedged. Hence, using credit derivatives can produce enormous earnings volatility. Consider, for example, a credit derivative that hedges the credit risk of a loan. As the loan’s credit quality deteriorates, the value of the credit derivative improves. Since the loan is recorded at historical cost, and the credit derivative is marked to fair value, a gain from the change in value of the derivative is recognized in earnings. Conversely, if the loan’s credit quality improves, the value of the credit derivative declines, resulting in a reported loss. These gains and losses may be offset by the level of provisions that are established for estimated credit losses on the loan, but this would likely result in only a partial offset. Is the answer to this volatility issue fair value accounting? If the hedged asset were measured at fair value, the changes in values of the hedged item and the credit derivative may offset each other, reducing the volatility that arises when only the derivative is marked to market and not the hedged item. Of course, the degree of the earnings volatility under a full fair value accounting approach would depend on the effectiveness of the hedge.

FASB developed SFAS No. 159, The Fair Value Option for Financial Assets and Financial Liabilities that permits the fair valuation of certain assets and liabilities. Using this option, companies are permitted to apply fair value accounting to certain financial instruments that they designate at the time of purchase or origination. Accordingly, firms using the fair value option could mark to market both the credit derivative and the hedged position and report changes in their fair values in current earnings. As a result, some assets and liabilities are measured at fair value, while others are measured at amortized cost or some other basis. SFAS No. 115, Accounting for Certain Investments in Debt and Equity Securities, requires certain investments to be recognized at fair value and others at
The FASB Accounting Standards Codification (ASC) will ... substantively change how GAAP is presented. All topics will be presented using a standard structure, thus resulting in a critically needed simplification of accounting standards.

amortized cost. The CIFiR still advises that fair value should not be the only measurement attribute, and a judicious approach to expanding the full use of it should be delayed until a systematic measurement framework is developed.

2. The lack of a holistic approach to disclosures: In restoring public confidence, Congress passed the Sarbanes-Oxley Act of 2002, and the SEC promulgated numerous new regulations designed to improve corporate governance, enhance auditor independence, and elicit more meaningful corporate disclosure. Regulators continue to focus on ensuring compliance with GAAP, its technical standards and the disclosure rules, but they should also examine the actual requirements of the standards and rules themselves. FASB and GAAP, our current prescriptive accounting rules, have contributed to a lack of transparency in financial reporting. Thus it appears that reducing accounting complexity and migrating to a more principles-based accounting system would encourage more accurate and complete financial disclosure. Therefore, regulators should consider how accounting standards and disclosure rules can be re-designed to elicit information that is complete, clear and concise, and thus, more useful to users.16

The ultimate purpose of disclosure requirements is to elicit full and accurate disclosure of material information. Information is material where there is a substantial possibility that a reasonable person would consider it important in the total mix of available information to formulating an investment decision. The current questions about the ability of our accounting and reporting framework to communicate meaningful information to investors arise, in part, because the economy continues to evolve at a rapid pace, while reporting standards and mechanisms are in a "catch-up" mode. Globalization and the emergence of new economies and capital markets have increased dramatically. Advances in technology, including the emergence of the Internet, faster and more ubiquitous communication, and other technological developments have changed the way companies do business, as well as changing the types of financial arrangements and instruments that businesses utilize. As the business world has become more complex, so have financial reports and accounting standards. Thus regulators need to analyze and empirically test whether disclosure can actually reduce cost of equity capital by mitigating investors' uncertainty, improving market liquidity, and at the same time reducing litigation costs and maintaining direct costs and proprietary competitive advantage of the company.

The Widening of GAAP: One Size Does Not Fit All

While the debate continues over the perceived benefits and costs of the SOX Act, it does not apply to privately held companies. The debate often arises as to whether separate accounting and reporting standards are needed to be set for small and medium-sized entities (SMEs). Nearly half of America's economic output is driven by nonpublic entities. The needs of financial statement users are different for nonpublic entities and public entities. The factors driving the demand for a second GAAP are the needs of users, and the cost of using the current GAAP.17 The demand seems to be gaining momentum,
and seeing that recent trends in standard-setting have increased the differences between the needs of users of financial statements, many small companies feel that as FASB's rulemaking has become exceedingly more complex. SMEs simply don’t have the wherewithal to keep up, particularly as they look at some of the far-reaching projects on the FASB’s agenda, such as the evident move towards fair value accounting.

In 2008, the AICPA recognized the IASB as an accounting body for purposes of establishing international financial accounting and reporting principles. Hence some U.S. private companies have found the simplified IFRS for SMEs an attractive alternative to the more complicated and voluminous U.S. GAAP. Those private companies may find IFRS for SMEs to be a more relevant and less costly financial accounting and reporting standard than U.S. GAAP. Some key challenges that may be present in choosing to use IFRS for SMEs include understanding the differences between IFRS for SMEs and U.S. GAAP; the willingness of financial statement users to accept financial statements prepared under IFRS for SMEs; working with and accepting a more principles-based set of accounting standards compared to the more rules-based U.S. GAAP; the impact on taxes and tax planning strategies; and the impact on financial reporting metrics. Currently FASB is funded solely by public companies (in the past, funding came from a variety of sources, including accounting firms, investment companies, trade associations and nonpublic companies). The SOX Act mandates that funding for the FASB, as well as the PCAOB, come from public companies only. This mandate made many SMEs concerned that FASB will be primarily focused on those public companies from which its funding comes.

3. Bright-line rules: In general, bright-line rules refer to quantified thresholds and pass/fail tests. Bright-line rules may be justified in some parts of GAAP, but not in others. Purposely, bright-line rules should be minimized in recognition guidance, but may serve an important role in the areas of measurement and presentation of items on the financial statements.18

Under current GAAP requirements, bright-line examples are evident in the application of SFAS No. 13, Accounting for Leases. They require, among other criteria, that leases be classified as capital leases and recognized on the lessee’s balance sheet where: (1) the lease term is greater than or equal to 75% of the estimated economic life of the leased property, or (2) the present value at the beginning of the lease term of the minimum lease payments equals or exceeds 90% of the fair value of the leased property. A simple 1% difference in the test results in two significantly different recognitions on the company’s balance sheet: It might either (1) reflect an asset and a liability on its balance sheet, as if it owns the leased asset, or (2) reflect nothing on its balance sheet (an operating lease).

One could define bright-line rules as one end of a continuum representing hard information, while soft information refers to the other end of this continuum. Bright-line standards are always understood the same way by prepares, auditors, and investors. For example, when a long-term investments account is shown at historical cost, there is relatively little room for disagreement about what the amount represents. If the same is measured on the basis of fair value or replacement cost, the reported amount might not produce the same agreement...
(especially when its exit price is not market determined). Numerous judgments would be implicit in the calculation, and footnote disclosure about the company's accounting policies might not eliminate the ambiguity. This is an example of soft information. Hard information describes communication or reports that have the same meaning for everyone, while soft information may have different meanings for different people. As it relates to bright-line rules, when the auditor’s level of expertise is exogenous, the value of the basic auditing increases under bright-line standards relative to soft standards. For the auditor with financial reporting expertise, the value of this expertise relative to the auditor’s basic verification role decreases under bright-line standards.

The SOX Act required the SEC to draft a report on principles-based accounting standards that would better align stakeholders’ interest: namely management, auditors and investors. A high-quality principles-based system is an overarching, internally consistent Conceptual Framework. This Conceptual Framework must be designed to provide preparers, auditors and investors with a clear understanding of the broad approach underpinning the various standards. Establishing high-quality, principles-based accounting standards requires establishing a set of universally agreed upon characteristics for what constitutes such a standard. Any projected principles-based system needs to promote two characteristics of critical importance to ensure that financial reports (a) faithfully present the economic substance of transactions; and (b) are responsive to users’ need for clarity and transparency.19 At present, the fact is that companies can comply with the strict letter of the law, yet fail to provide the information that provides a clear picture of the economic state of the enterprise.

The objectives-oriented aspect of principles-based standards would require a clearer delineation in the conceptual framework in terms of how to determine trade-offs between relevance and reliability and how these would impact comparability. Accordingly, objectives-oriented standards would not use bright-line rules and would have very few exceptions. Schipper (2003) argues that most standards drafted by the FASB are principles-based; nevertheless, the number of scope and treatment exemptions makes them ‘appear’ to be rule-based.

Alternatively, rules-based standards often provide “bright-line” tests which can easily be avoided. As a result, representational faithfulness may be avoided and a low degree of comparability will often result.20 The transition to principles-based accounting standards which faithfully represent the economics of transactions may cause increased volatility to be reported in earnings. The fact is economic volatility is a market reality. Rather than using unfathomable rules to obscure this volatility, investors and all stakeholders will ultimately be better served by having access to clear information about the volatility that actually exists. As noted previously, today’s financial statements are often so complex that even sophisticated financial analysts find it difficult to fully understand the information being provided to them. Principles-based accounting standards must be developed with the clear goal of promoting financial reports in which decision usefulness is the primary goal for investors, and they can easily find and understand the information they need.
The extent of bright-line reporting varies by industry as well. Some industries are characterized by the existence of significant intangibles (soft assets) and contingent liabilities. For example, high-tech and pharmaceutical companies face substantial impairment and litigation risks in connection with their products, and many face large environmental liabilities. The audit of these companies requires expert judgment regarding the valuation of contingent liabilities. Similarly, the financial credit crisis arose primarily from the emergence of significant valuation issues caused by changing real estate prices, deregulation, and some unregulated markets. Hence, the circumstances that led to this crisis also created a demand for the auditor’s interpretation in an industry in which auditors were accustomed to providing verification services. Some auditors appear to have been caught unprepared by this shift in required expertise.

In 2003, FASB issued FIN 46R Consolidation of Variable Interest Entities, which corrected many of the financial reporting inconsistencies generated by patchwork guidance on consolidation that evolved during the 1990s. Duchac (2004) argues that bright-line rules have overshadowed professional judgment resulting in decisions that were consistent with established rules, but inconsistent with the policy goal of providing the most useful financial information. Thus, bright-line rules may not only have added layers of complexity to the existing regulation structure of GAAP, but also squeezed judgment out of the financial reporting system, weakening the accounting profession’s ability to apply sound professional judgment.

The CIFiR recommends that bright-line rules should be minimized in favor of “proportionate recognition” in contrast to the current all-or-nothing recognition approach in GAAP. If proportionate recognition is not feasible or applicable, a secondary approach is recommended that is based on qualitative factors, supported by presumptions, as necessary. Enhanced disclosure should supplement both approaches, and there may be some cases where disclosure is the only effective method of reporting information to investors.

4. **Exceptions to general principles**: Collectively, these exceptions create additional complexity because they deviate from established standards that are applicable to most companies. This multiplicity of application requires all constituents (preparers, auditors and investors) to understand varied implementation methods, even though they are derived from the same fundamental principles. The final report of CIFiR has identified four types of exceptions that contribute to this added complexity:

A. **Industry-Specific Guidance and Exceptions**: The increase of specialized industry standards causes two problems that can thwart the efforts to issue subsequent standards using a more principle-based objective. First, the existence of specialized industry practices makes it more difficult for standard setters to eliminate scope exceptions in subsequent standards (e.g., many standards contain exceptions for insurance arrangements subject to specialized industry accounting). Second, the specialized standards may create conflicting GAAP, which makes it more difficult for accounting professionals to determine the appropriate accounting.

Industry-specific guidance and exceptions include (1) exceptions to general accounting standards for certain industries, (2) industry-specific guidance created in the absence of a single underlying standard or principle, and (3) industry practices not specifically
addressed or based in U.S. GAAP. 23

For example, revenue recognition of upfront fees for gym memberships are not given equal treatment compared with initial hookup activities that cover cable television companies. SFAS No. 51 requires that initial hookup revenue (a type of nonrefundable upfront fee) is recorded to the extent of direct selling costs incurred; the remainder is deferred and recorded in income over the estimated average period that subscribers are expected to stay connected to the system. However, generalized guidance indicates this practice is inappropriate unless it is specifically prescribed elsewhere (e.g., SFAS No. 51). Therefore, similar activities like upfront fees are not afforded equal treatment. CIFiR believes that industry-specific guidance should be eliminated to reduce avoidable complexity.

B. Optionality in GAAP: Alternative accounting policies or accounting choice in GAAP is broad and includes issues of implementation, timing, display, transaction structuring, production decisions, investment decisions, and the level of disclosure, among others (Fields et.al. 2000 and Francis, 2001). Examples are including but not limited to: the indirect versus the direct method of presenting operating cash flows on the statement of cash flows, the application of hedge accounting, the option to measure certain financial assets and liabilities at fair value, and the successful efforts or full cost accounting method followed by oil and gas producers. Alternative accounting policies contribute to avoidable complexity by making financial reports less comparable. This is evident across companies when identical activities are accounted for differently. The view of CIFiR is that alternative accounting policies should be eliminated, except when: (1) multiple accounting alternatives exist that are consistent with the conceptual framework, and none portray economic substance more accurately than others, or (2) an alternative can be developed more quickly than a final “perfect” standard to minimize the effect of other unacceptable practices. If one or both of the justifications above apply, the CIFiR believes that the provision of alternative accounting principles should be coupled with a long-term plan by the FASB to eliminate the alternatives through the use of “sunset provisions”.

One of the key considerations in the decision to eliminate GAAP alternatives should be the cost-benefit trade-offs from such an action, and academic researchers have provided little evidence as to the cost-benefit trade-offs from accounting choice. 24 There is more evidence supporting the benefits of accounting choice than there is evidence as to its costs, although there has been little effective analysis of the magnitude of the trade-offs. One of the main reasons for this lack of evidence is that it is difficult, if not impossible, to rank-order accounting choices on any salient dimension.

C. Scope exceptions: The CIFiR lists exceptions to general principles as a pressing form of avoidable substantive complexity in financial reporting. The exceptions represent departures from the application of a principle to certain transactions. For example, SFAS No. 157 Fair Value Measurements scopes out of its definition of fair value guidance related to pronouncements that address Share-Based Payment transactions (FASB Statement No. 123R, 2004), and FASB Statement No. 13, Accounting for Leases, and other accounting pronouncements that address fair value measurements for purposes of lease classification or measurement, among others. In addition, the delay in the
adoption of SFAS No. 157 for nonfinancial assets and nonfinancial liabilities, except for items that are recognized or disclosed at fair value in the financial statements on a recurring basis (at least annually), effectively scopes out these items for the time being. Scope exceptions may contribute to avoidable complexity because of difficulty in defining the bounds of the exception. As a result, scope exceptions require detailed analyses to determine whether they apply in particular situations, and consequently, increase the volume of accounting literature. Furthermore, where accounting standards specify the treatment of transactions that would otherwise be within the scope, exceptions may result in different accounting for similar activities.

D. Competing Models: Distinguished from alternative accounting policies, competing models refer to requirements to apply different accounting models to account for similar types of transactions or events, depending on the balance sheet or income statement items involved. Examples of competing models may include different models for when to recognize for impairment of assets (e.g., inventory, goodwill, long-lived assets, financial instruments, and deferred taxes) different likelihood thresholds for recognizing contingent liabilities (e.g., probable for legal uncertainties versus more-likely-than-not for tax uncertainties). Different models can also be found in revenue recognition (e.g., percentage of completion, completed contract, and pro-rata) and in determining whether an arrangement is a liability or equity, and in de-recognition of most liabilities (e.g., on the basis of legal extinguishment, as compared to the de-recognition of pension and other post-retirement benefit obligations via settlement, curtailment, or negative plan modification). Competing models contribute to avoidable complexity in that they lead to inconsistent accounting for similar activities, and they contribute to the volume of accounting literature. The CIFiR recommends that similar activities be accounted for in a similar manner. They also believe that in principle accounting standards should be based on business activity, rather than industry-specific guidance and that GAAP should contain few alternatives – either models or accounting alternatives.

Educational Implications for Accountants

If implemented, several policy recommendations of the CIFiR would have significant implications for accounting curriculum content and pedagogy, and many of these are not only pertaining to the reduction complexities but are also relevant to the new conceptual framework for accounting. The recommendations encourage all constituents (investors, preparers, auditors, and students) of the accounting profession to understand the economic substance and business purposes of transactions, in contrast to mechanical compliance with the rules. A general shortcoming cited by the CIFiR is that curriculum content and pedagogy in accounting education for both graduate and undergraduate programs has traditionally accentuated the understanding of mechanics (double-entry bookkeeping) and rules (“check the box” standard) rather than the full understanding of relevant principles.

While many still believe that an educational approach focused on the memorization of rules and exceptions, and/or the use of technology to "research" rules and exceptions continues to be essential for understanding, lately few of the academic community have made great strides to divorce themselves from what is referred to as the "traditional emphasis". Ideally, faculty should be able to explain to students how to analyze the economic substance of a business event consistent with the basic definitions of an
asset, liability, revenue, or expense to rationally determine the proper handling of these items, but it is important to recognize that many today teach only “simplified rules.” This is not only because of a lack of time to broach the multi-levels of complexity found in standards, interpretations, bulletins, and discussions of emerging issues, but also because educators’ primary responsibility is to provide students with a broad education as a foundation for career success, not professional training.

It has become more difficult over time to teach even basic accounting concepts since some accounting faculty find themselves struggling to explain and justifying specific rules in a rational manner given the lack of a coherent conceptual framework. The existing conceptual framework is old and dated, the complexity of the transactions and underlying instruments has changed, and, perhaps most critical, standard setters have not adhered to a consistent set of guiding principles or concepts when establishing the rules, interpretations, and industry exceptions that drive professional practice today. With multiple inconsistent and exception-ridden concept statements and standards, there is a risk that textbooks and faculty as well as continuing educational courses will emphasize rules (given the limitations of the current conceptual framework).

The academic profession must address the critical role of higher education in accounting and the need to deal with the challenges of ever changing technologies of financial reporting and the dynamics of market transformation.

Activity-Based Accounting Concepts vs. Rules: If GAAP is focused on activities rather than industries this implies that classroom time should also be focused on activities rather than industries, and the present position of accounting education is by-and-large today in concord with this sentiment. Matching concepts and revenue-recognition, for example, are taught by focusing on activities that create an expense from general operating revenue recognized, not from the viewpoint of a particular segment or industry. Likewise, teaching students how to audit revenue and expense transactions should not be focused on specific industry understanding but on operating activities as the basis for transactions.

Technology advancement: A Critical Step Toward Simplification: Although the FASB Accounting Standards Codification (ASC) did not change GAAP, it has substantively changed how GAAP is presented, thus resulting in a critically needed simplification. If a new conceptual framework is forthcoming and the issues of complexity are resolved, the ASC and its continuous updating would be of great benefit to educators and professionals. Students could effectively be taught how to conduct professional research and exercise professional analytical thinking to develop logical extensions consistent with a principles-based mandate. The ASC will yield lesser dividends if it simply allows quicker electronic searches of exception-ridden regulations and interpretations, especially so if it is partial and lacks continuous updated. Educators as well as professionals critically need a comprehensive effort resulting in a well-documented and clearly explained guiding conceptual framework. However, accounting educators and professionals are not quit positioned and prepared to help in this undertaking.

XBRL (eXtensible Business Reporting Language) is a language for transmitting information. It must accurately reflect data reported under different standards – it does not change them. The 2009 taxonomy currently in use by SEC issuers was developed by XBRL U.S., Inc., an independent non-profit organization with research, development, and education programs facilitating the expected
widespread adoption of XBRL for tagging business reports across all business domains to aid investors and other users. The FASB provided technical accounting standards support to XBRL(U.S.) during the development of the 2009 taxonomy. Recently, FASB has assembled a small team of technical staff dedicated to maintaining the taxonomy and will work towards the release of the next taxonomy update in early 2011.

Evidence from Hodge et al., (2004) indicates that accounting academics lack familiarity with XBRL, the new standard for tagged business information, and few are currently including any type of its exposure in their classes. This implies that users are unlikely to use the technology without sufficient awareness and education. Another national survey of chief financial officers and senior comptrollers show many CFOs are not familiar with XBRL. The big issue that the academic profession must address is the critical role of higher education in accounting and the need to deal with the challenges of ever changing technologies of financial reporting and the dynamics of market transformation.

**The FASB Accounting Standards Codification (ASC) will**... **substantively change how GAAP is presented. All topics will be presented using a standard structure, thus resulting in a critically needed simplification of accounting standards.**

**Conclusion**

In this paper I discuss the objectives of the CIFiR’s final report, which proposes recommendations to lessen the unnecessary complexity in the U.S. financial reporting system. In my view, complexity impedes transparent financial reporting and renders reports perplexing, confounding and less useful to investors. Financial reporting used to be a means of communication between firms and the providers of capital (users). Unfortunately, as complexity crept onward, financial reporting became more useful for accountants, auditors, lawyers and regulators. There are many faces of complexity (avoidable and unavoidable) and this paper highlights the need to rethink financial reporting, particularly to make reports less complex, more transparent and easier to understand. While avoidable complexity is a natural result of advancement in business transactions, since it is not getting any simpler and is unlikely to be alleviated, avoidable complexity exists because of indolence. The simple accretion of unnecessary multiple details, procedures and rules (lack of holistic approach, special treatments exceptions, bright-lines, options …etc) made financial statements look more like compliance documents than informational formal records. The American tax and legal professions is often blamed for the growth of rules and complexity in U.S. businesses, and the accounting profession is not immune from this either.

There are many approaches to bring about change. There is national and international consensus that the current levels of complexity in financial reporting cannot be allowed to continue, and there is an immediate need to reverse that trend. There is no doubt that an agreement exists for principle-based standards, and the consequent exercising of judgment would position accountants, auditors, preparers, and users of financial reporting in much better stead. A key goal of accounting and reporting is to faithfully portray the
underlying economics of transactions and events in a way that reports similar transactions and events in a similar manner, and different ones differently. This goal would also prevent reporting the same or similar transactions and events in a multitude of different ways. At the moment, the idea of objective-based financial reporting standards may have won the argument, but what would make the process simpler is a challenge for the standard setters (SEC, FASB, AICPA, ISAB and other politicians) to generate the necessary commitment and actions to improve financial reporting, so that this can be achieved in practice.

References


Benzacar, Karine. 2009. IFRS brings a radical change to financial statement presentation. CMA Management, February 2009. Available at www.knowledgeplus.org/pdfs/CMA


“Consolidation of Variable Interest Entities,” FASB Interpretation No. 46R (revised December 2003) FASB ASC 810 Consolidation.


Endnotes

1 Financial reporting problems came into sight not only in the U.S. (e.g., Enron, WorldCom, Tyco, and others) but also in EU countries (e.g., France (Vivendi/Messier); Italy (Parmalat); Britain (Conrad Black). In each of these countries, as in the U.S., CEOs lost their jobs.

2 While financial innovation may create great benefits for the economy, the goal of regulators is to preserve those benefits while achieving important public policy objectives, including financial stability, investor protection, and market integrity. Financial innovations promote certain objectives (e.g., allowing better sharing of risks) but they may pose significant risks. The current credit crisis and previous challenges seem to have come from a number of systemic issues. At the core of it is the explosion of financial innovations. With all sorts of fictitious payment terms, the so-called “non-traditional” loans, e.g., sub-prime mortgages, not only allowed new less-capable borrowers to reach their “dream” of home ownership, but also enabled others to purchase multiple homes and substantial real asset investments as if they were trading commodities. These loans were then passed on by the mortgage brokers, many of whom were not regulated, to the big Wall Street firms that redesigned them into ever increasingly complex packages of
structured securities, inscribed a stack of credit default swaps and other derivatives related to these securities, then sold these to other financial firms, hedge funds, and eager investors who sought higher yields in a period of historically low interest rates.


6 How an entity presents information in its financial statements is critically important because these documents are a central feature of financial reporting. Effective July 1, 2009, IFRS brought a radical change to financial statement presentations (new formats and names; Statement of Comprehensive Income, Statement of Financial Position, and the Statement of Changes in Shareholder’s Equity). The new format does not separate assets and liabilities into distinct sections. Instead, assets and liabilities are netted together in each of the sections (operating, investing, financing, income taxes, and discontinued operations) of the Statement of Financial Position. Short and long-term totals of assets in each section of the statement are optional. However, an entity must disclose the totals for short-term, long-term, and total assets and liabilities, but the entity can do so either in the statement or in the notes to the financial statements. How an entity sets apart assets or liabilities into each of the different sections is subject to the accountant’s judgment. For more details see Benzacar (2009) and KPMG (2009).

7 This final version of the Report went through several progressions and many constituents conveyed their opinions and positions with regard to issues raised. In general, many institutional and private investors were in favor of the recommendations while several public accounting firms and professional associations (e.g., AAA) were critical of them.

8 On July 1, 2009 FASB launched the FASB Accounting Standards Codification (ASC) as the single source of authoritative nongovernmental U.S. generally accepted accounting principles (GAAP). ASC significantly changes the structure and hierarchy of accounting and reporting standards into a topically organized format.

9 Although the number of restatements appears to have started to decline, the number is still quite high. In 2006, more than 9% of all U.S. public companies restated their financial statements because of accounting errors. The correction and disclosure of any accounting error should not automatically result in a financial restatement using SEC’s Form 8-K, only ‘material’ errors.

10 The investors’ term includes all providers of equity capital (current and potential), creditors, as well as credit rating agencies. Because present and potential capital providers have the most direct and immediate interest in an entity’s ability to generate net cash inflows and management’s ability to protect and enhance capital providers’ investments, the FASB decided to designate them as the primary users of financial reporting information. (FASB, Exposure Draft- May 29, 2008).

11 The issues of complexity and transparency bring about unavoidable trade-offs. That is, to standardize complex issues transparently results in costly financial reporting consequences. For a recent study see Barth and Schipper, 2008.

12 Campbell 1988. Provides an insightful analysis of Task Complexity from management point of view.

13 According to a recent CFOs survey, more than 70% think financial statements are too complex to be used by the average investor, and would support supplementing them with nonfinancial measures. Grant Thornton LLP (2008).

14 In October 2008, then-President G.W. Bush signed into law the Emergency Economic Stabilization Act of 2008 (EESA), the so-called bailout bill. Under section 132 of the EESA, Congress gave the SEC the authority to suspend the use of fair value accounting under SFAS 157. The introduction of FAS 157 was hardly noticed by those outside the accounting profession. In 2006, when the standard was issued, the capital markets were strong and asset holders were apparently satisfied with the prospect of marking
the value of assets to the pricing information provided by markets prevailing at that time. Section 133 of EESA requires the SEC to conduct a study of the fair value accounting as stipulated in SFAS 157. In 2009, the SEC issued its report, which concluded that fair-value accounting had not caused the credit crisis, and argued against suspending or substantially changing the standards. Rather, the report indicated that bank failures in the United States appeared to be the result of growing probable credit losses, asset quality concerns, and, in certain cases, eroding lender and investor confidence. While the SEC was clear in its judgment, the debate continued. For additional details see “Report and Recommendations Pursuant To Section 133 of the Emergency Economic Stabilization Act of 2008: Study on Mark-to-Market Accounting”. Available at http://www.sec.gov/news/studies/2008/marktomarket123008.pdf.


18 One could argue that if standard-setters desire accurate and conservative reporting, they are more likely be able to achieve it by combining (1) standards that are imprecise enough to avoid precise safe harbors, thereby allowing incentive interpretation to occur, and (2) forceful enforcement action that tips the balance of incentives away from aggressive reporting and towards more accurate and conservative reporting. See empirical results in Nelson (2005).


20 It has been shown that auditors are less likely to make decisions consistent with economic substance over form for a structured transaction than an unstructured transaction. See DiPiazza et.al. (2010) and Jamal, K., and H.-T. Tan. (2010)


22 Proportionate recognition describes accounting for one’s rights and obligations as a party to a contract. Determining whether a contract should be accounted for as a single unit of account, or whether it should be split into multiple components; also, determining whether a contract that has characteristics of both liabilities and equity should be treated as one instead of the other. For extensive insight and discussion see Botosan et al., (2005).

23 This list includes insurance, utilities, oil and gas, mining, cable television, financial, real estate, casino, broadcasting, and film. See Appendix G of the Final Report of the Advisory Committee on Improvements to Financial Reporting to the United States Securities and Exchange Commission, August 1, 2008.

24 Examples are found in Holthausen (1990); Holthausen and Leftwich (1983); and Watts and Zimmerman (1990).

25 Inventory, for example, is assessed for potential loss of usefulness and reevaluated at the lower of cost or market value on a periodic basis. If its cost exceeds the current market value (replacement), a loss is recorded. In contrast, goodwill is tested for impairment annually, unless there are indications of loss before the next annual test. To determine the amount of any loss, the fair value of a “reporting unit” (as defined in GAAP) is compared to its carrying value on the balance sheet. If fair value is greater than carrying value, no impairment exists. If fair value is less, then companies are required to allocate the fair value to the assets and liabilities in the reporting unit, similar to a purchase price allocation in a business combination. Any fair value remaining after the
allocation represents “implied” goodwill. The excess of actual goodwill compared to implied goodwill, if any, is recorded as a loss.

De-recognition relates almost exclusively to assets, liabilities, and equity. It addresses: (1) the criteria, (2) the basis to be to release by providing a substitute or replacement (i.e., dollar amount), and (3) the timing to be used when derecognizing a particular asset, liability or equity item for purposes of determining gain or loss, if any.

Well-known authors of new accounting textbooks now have orientation that serve the new understanding of principles-based and decision-making concepts and user’s perspective: see Warfield Weygandt and Kieso (2008) and Revsine, Collins, Johnson, Mittelstaedt (2009).

The AICPA has recently setup AICPA RESOURCE, a powerful online research tool that provide access to the most comprehensive, up-to-date accounting and auditing information available anywhere, for easy information retrieval that include FASB ASC, but the yearly regular subscription is costly ($1211.25), an expensive tool for students and nonmembers.

A new survey of CFOs and senior controllers by Grant Thornton found that 64 percent of public companies do not currently report their financial results using XBRL. Of those, half have no plans to file their financials in XBRL format in the future, despite an SEC mandate that all public companies have to report their financials using the interactive data format by 2011. Sean Denham, a partner in Grant Thornton’s Professional Standards Group and a member of the AICPA’s XBRL Task Force, commented: “I foresee a lot of companies playing catch-up as the 2011 SEC deadline approaches.” His full remarks are available at http://www.grantthornton.com

Executive Summary

Since March 14, 2005, nearly every business day at 6 PM Eastern Standard Time (EST) there is an hour-long show on the cable financial network CNBC. The program, called Mad Money, is billed as a briefing on personal investment. Jim Cramer, the energetic host, offers his “buy” and “sell” recommendations of companies in an effort to help the audience to “…try to make money.” We analyze recommendations made on Jim Cramer’s show along two lines of inquiry. First, we estimate the immediate impact of Cramer’s recommendations by considering the market reaction subsequent to a broadcast. Second, we examine the effect of his investment advice on the stock price of Mad Money picks, and on the direct competitors of the recommended companies.

Our sample consists of episodes broadcast between August 2008 and December 2008. Mad Money shows are aired twice nightly on CNBC five days a week, first at 6 PM EST and then repeated at 11 PM EST. The data were taken from official recaps posted at http://www.thestreet.com, a financial website founded by Jim Cramer, and is restricted to companies listed on the NYSE and AMEX exchanges as well as NASDAQ market. We identify Cramer’s picks as either “buy” or “sell.” This simple binary categorization eliminates distinguishing between weak and strong recommendations (positive or negative) and removes the subjectivity that would be involved in such a transcription process.

Next, we separate picks by the party who initiated the ticker question: caller or non-caller. During each segment – such as “Lightning round,” “Sudden death,” and “Are you diversified?” – viewers call into the program and ask Jim Cramer for his opinion on particular stocks. He discusses these callers’ picks very briefly. Therefore an average five-second recommendation during the “Lightning round” is unlikely to convey the same information as Cramer’s five-minute recommendation during the opening segment. Furthermore, the bulk of the tickers mentioned on the program represent questions from callers, and Jim Cramer professes no previous knowledge that these tickers will be investigated. Therefore, his responses to callers’ inquiries may not represent his stock-picking ability.

Cramer devotes the majority of each broadcast to discussing his “picks” – stocks that he has complete discretion to include in the program. As a result, those “picks” are reflective of his stock-picking ability. We then identify competitors of in-depth Cramer “buy” and “sell” picks using the four-digit SIC code (the Standard Industrial Classification which classifies industries by a four digital code), and each firm’s size, and obtain their daily pricing information over the sample period. Stock prices were collected for both Cramer’s selections and for the competitors, on the date they were recommended and five days after the recommendation date.
Results in our study indicate that the prices of Jim Cramer’s buy picks experienced significantly lower prices after the buy recommendations. The competitors of the buy picks experienced even worse stock performance after the recommendations. The price differences between the two groups are, on average, statistically significant. According to our results, potential investors will not profit from Jim Cramer’s buy picks. However, results also show that Cramer’s picks outperformed the competitors in the same industry.

Regarding sell recommendations, evidence in this study shows that prices of Cramer’s sell picks do experience lower stock prices, and the declines in prices are significantly lower than the price as of the recommendation date. The same conclusion can be drawn for the competitors. The differences between sample and competitors, however, are inconclusive.

1. Introduction

Since March 14, 2005, nearly every business day at 6 pm EST Jim Cramer has been hosting Mad Money, an hour-long show providing investment advice. Presented on the cable financial network CNBC, the energetic host gives viewers his “buy” and “sell” recommendations. Cramer professes no insider knowledge and encourages his audience – 600,000 viewers daily – to research each firm’s earnings estimates before investing. It is safe to presume that Cramer’s picks – at least over a short horizon – should be reasonably correct. To determine their accuracy, a “buy” recommendation on the show, followed by a swell of buy orders and spikes in prices the next trading day, would provide instant proof. However, in August 2007, Barron’s, a major financial newspaper, revealed that Cramer’s stock picks consistently underperform.

Our research studies an interaction between stock prices and analyst recommendation literatures. The mass-media component of our paper examines the market reaction to stocks mentioned in financial news outlets (e.g., Barber and Loeffler, 1993; Greene and Smart, 1999; Liang, 1999; Busses and Green, 2002; Barber and Odean, 2006; Engelberg et al, 2007; Lim and Rosario, 2008). For example, Barber and Odean (2006) studied account activity at large retail brokerage firms and determined that individual investors trade around attention-grabbing events, and lose money by doing so. Engelberg et al. (2007; ESW) uncovered significant next-day returns for first-time positive recommendations by Cramer, returns which increased inversely with market capitalization. Lim and Rosario (2008) documented smaller excess returns subsequent to recommendations than ESW found. They attribute them to either the difference in sample selection or to the difference in measurement of excess returns.

The purpose of this paper is to examine whether potential investors can benefit from Jim Cramer’s picks, both buy and sell recommendations. More specifically, we evaluate the market response immediately following a broadcast of Mad Money. We analyze recommendations made by Jim Cramer along two lines of inquiry. First, we estimate the immediate impact of Cramer’s recommendations by the market reaction subsequent to a broadcast. Second, we examine the effect of his investment advice on the stock price of Mad Money picks and on the direct competitors of the recommended companies. Cohen and Frazzini (2006) argue that in the market in which all participants are potential recipients of news, investors underreact to news from economically linked firms. Neumann and Kenny’s (2007) analysis of returns and trading volume around stock recommendations aired on the Mad Money program reveals investors’ response to both “buy” and “sell” recommendations.
2. Data

Our sample consists of episodes broadcast between August 2008 and December 2008. Mad Money shows are aired nightly on CNBC five days a week, first at 6 PM EST and then repeated at 11 PM EST. Characterized as a briefing on personal investment, the program is delivered with flair and infused with gimmicks that are intended to enhance the entertainment value of the show, with Jim Cramer offering his recommendations and criticisms of companies in an effort to, in his words, “make you money.” The majority of each broadcast’s running time consists of a discussion of firms he elects to talk about – Cramer’s picks. These are companies he has researched beforehand and has chosen to mention on the program. Cramer has complete discretion over the firms in this category. There are also smaller segments of the program called “Lightning Round,” “Sudden Death,” and “Are you Diversified?” During those segments, viewers call in to the program and ask Cramer for his opinion on particular stocks they are curious about. Caller picks are typically discussed only cursorily.

The data were taken from official recaps posted at http://www.thestreet.com, a financial website founded by Jim Cramer, and is restricted to companies listed on the NYSE and AMEX exchanges as well as the NASDAQ market. We checked results against independent recap websites.

We identify picks as either “buy” or “sell.” This simple binary categorization eliminates distinguishing between weak and strong recommendations (positive or negative) and removes the subjectivity that would be involved in such a transcription process. Next, we separate picks by the party who initiated the ticker question: caller or non-caller (Cramer).

During the short segments when viewers call in to ask Cramer’s opinion on particular stocks, he discusses these ‘callers’ picks’ very briefly. Therefore an average five-second recommendation during the “Lightning round” is unlikely to convey the same information as one of his own five-minute recommendations, which he discusses during the opening segment. The bulk of the tickers mentioned on the program represent questions from callers, and Jim Cramer professes no previous knowledge that those tickers will be discussed on a show. Therefore, his responses to callers’ inquiries may not represent his stock-picking ability. It is worth mentioning that the majority of these ticks are often follow-ups to his previous “buy” or “sell” picks.

Cramer devotes the majority of each broadcast’s time to discussing his “picks” – stocks that he includes in the program completely at his own discretion, and which he has presumably investigated. As a result, these “picks” are reflective of his stock-picking ability.

Next, we identify competitors of in-depth Cramer “buy” and “sell” picks using the four-digit SIC code (the Standard Industrial Classification to classify industries by a four digital code) and the firm’s size, and obtain their daily pricing information over the sample period. Stock prices at the recommendation date as well as five days after recommendation date were collected for both Cramer’s selections sample and competitor firms.

Over 75% of Cramer’s in-depth picks represent large cap stocks, responses to phone inquiries or both. If he is correct:

- a price change for an in-depth “buy” recommendation is likely to be positive, whereas
- a price change for an in-depth “sell” recommendation is likely to be negative.

Therefore, we anticipate spikes and valleys in the short-term price change of his picks due to a majority of his audience following his advice. The response, on average, of the picks’ competitors is less easy to anticipate.
3. Results

The results in Exhibit 1, Panel A, show that, on average, 52.47% of the sample companies did experience a higher price one day after the “buy” recommendation.

According to Exhibit 1, Panel B, 64.60% of the companies experienced a lower price one day after the “sell” recommendation. On the other hand, about two-thirds of the recommended “sell” companies also experienced lower prices two, three, four, and five days after the recommendation date.

It is also noteworthy that over the sample period “buy” recommendations outnumber “sell” recommendations (223 vs. 101).

Exhibit 1
Descriptive statistics of price differences for sample companies: “buy” and “sell” recommendations

<table>
<thead>
<tr>
<th>Panel A. “Buy” recommendation</th>
<th>% of firms that experienced positive change in stock price</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=223</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P1-P0*</td>
<td>52.47</td>
<td>0.50051</td>
</tr>
<tr>
<td>P2-P0</td>
<td>39.91</td>
<td>0.49082</td>
</tr>
<tr>
<td>P3-P0</td>
<td>41.70</td>
<td>0.49418</td>
</tr>
<tr>
<td>P4-P0</td>
<td>42.60</td>
<td>0.49561</td>
</tr>
<tr>
<td>P5-P0</td>
<td>39.82</td>
<td>0.49064</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B. “Sell” recommendation</th>
<th>% of firms that experienced positive change in stock price</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=101</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P1-P0*</td>
<td>35.40</td>
<td>0.48133</td>
</tr>
<tr>
<td>P2-P0</td>
<td>32.45</td>
<td>0.48439</td>
</tr>
<tr>
<td>P3-P0</td>
<td>36.28</td>
<td>0.46352</td>
</tr>
<tr>
<td>P4-P0</td>
<td>33.92</td>
<td>0.45923</td>
</tr>
<tr>
<td>P5-P0</td>
<td>31.27</td>
<td>0.46756</td>
</tr>
</tbody>
</table>

Note: *P1-P0 = Price one day after the recommendation date minus price on the recommendation date. If the price difference is positive, it is coded as “1”; otherwise, it is coded as “0”.

Next, we separate companies into two groups. Group 1 represents companies that experience price decreases after the recommendation day. Companies that experience price increases after recommendation day are placed in Group 2.

According to the non-parametric test results presented in Exhibit 2, Panel A, 60% of companies with “buy” recommendations experience price decreases two, three, four, and five days after the recommendation has been “aired” on TV.

52% of companies given “buy” recommendations by Jim Cramer do exhibit higher prices, but only on the first day after his recommendations. In other words, contrary to Jim Cramer’s predictions, results indicate that on average, stocks that Cramer gave “buy” recommendations experienced lower prices for the next few days after day 1.

On the other hand, a price drop after “sell” recommendations takes place the day after the recommendation date. We observe that individual investors are more sensitive to “sell” recommendations vs. “buy” recommendations. On average, close to 70% of “sell” recommendation
companies experience price decreases the first five days after recommendation day. It appears that stocks with “sell” recommendations experience negative prices longer than one day, while a “buy” recommendation has less positive effect on stock prices after recommendation day.

### Exhibit 2
Non-parametric binomial test stock price change for sample of companies: Test proportion

<table>
<thead>
<tr>
<th>Panel A. “Buy” recommendation N= 223</th>
<th>N</th>
<th>Observed Prop.</th>
<th>Test Prop.</th>
<th>Asymp. Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1-P0 Group 1</td>
<td>106</td>
<td>0.48</td>
<td>0.50</td>
<td>0.503*</td>
</tr>
<tr>
<td>Group 2</td>
<td>117</td>
<td>0.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P2-P0 Group 1</td>
<td>134</td>
<td>0.60</td>
<td>0.50</td>
<td>0.003*</td>
</tr>
<tr>
<td>Group 2</td>
<td>89</td>
<td>0.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P3-P0 Group 1</td>
<td>130</td>
<td>0.58</td>
<td>0.50</td>
<td>0.016*</td>
</tr>
<tr>
<td>Group 2</td>
<td>93</td>
<td>0.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P4-P0 Group 1</td>
<td>128</td>
<td>0.57</td>
<td>0.50</td>
<td>0.032*</td>
</tr>
<tr>
<td>Group 2</td>
<td>95</td>
<td>0.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P5-P0 Group 1</td>
<td>133</td>
<td>0.60</td>
<td>0.50</td>
<td>0.003*</td>
</tr>
<tr>
<td>Group 2</td>
<td>88</td>
<td>0.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>223</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B. “Sell” recommendation N=101</th>
<th>N</th>
<th>Observed Prop.</th>
<th>Test Prop.</th>
<th>Asymp. Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1-P0 Group 1</td>
<td>65</td>
<td>0.65</td>
<td>0.50</td>
<td>.000*</td>
</tr>
<tr>
<td>Group 2</td>
<td>36</td>
<td>0.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P2-P0 Group 1</td>
<td>65</td>
<td>0.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>36</td>
<td>0.33</td>
<td>0.50</td>
<td>.000*</td>
</tr>
<tr>
<td>P3-P0 Group 1</td>
<td>70</td>
<td>0.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>31</td>
<td>0.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P4-P0 Group 1</td>
<td>71</td>
<td>0.69</td>
<td>0.50</td>
<td>.000*</td>
</tr>
<tr>
<td>Group 2</td>
<td>30</td>
<td>0.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P5-P0 Group 1</td>
<td>69</td>
<td>0.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>32</td>
<td>0.31</td>
<td>0.50</td>
<td>.000*</td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: *Based on Z approximation.

Group 1: firms that experience a lower price after recommendation date
Group 2: firms that experience a higher price after recommendation date

Next, we investigate whether Jim Cramer’s recommendations have any impact on competitors of the “picks”. Based on the SIC code and the size of the firm, we identify 501 companies as the competitors of companies that receive “buy” recommendations, and 238 companies as the competitors of companies that receive “sell” recommendations over the sample period.

The results presented in Exhibit 3, Panel A, reveal that on average 29.74% of the competitors experience a higher price one day after the “buy” recommendation; 37.33%
of the competitors experience a higher price two days after the “buy” recommendation. Over 70% of the picks’ competitors experience lower prices three, four and five days after the “buy” recommendation date. On the other hand, only about a third of the picks’ competitors experience a higher price one through five days after the “sell” recommendation. It appears that investors under-react to news of economically linked firms for both “buy” and “sell” recommendations.

**Exhibit 3**
Descriptive statistics of price differences for sample of competitors: “buy” and “sell” recommendations

<table>
<thead>
<tr>
<th>Panel A: “Buy” recommendation N=501</th>
<th>% of firms that experienced positive change in stock price** Std. Dev.</th>
<th>Panel B: “Sell” recommendation N=238</th>
<th>% of firms that experienced positive change in stock price Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P1-P0</strong></td>
<td>29.74</td>
<td><strong>P1-P0</strong></td>
<td>35.29</td>
</tr>
<tr>
<td><strong>P2-P0</strong></td>
<td>37.33</td>
<td><strong>P2-P0</strong></td>
<td>31.09</td>
</tr>
<tr>
<td><strong>P3-P0</strong></td>
<td>29.14</td>
<td><strong>P3-P0</strong></td>
<td>38.66</td>
</tr>
<tr>
<td><strong>P4-P0</strong></td>
<td>29.14</td>
<td><strong>P4-P0</strong></td>
<td>35.71</td>
</tr>
<tr>
<td><strong>P5-P0</strong></td>
<td>29.14</td>
<td><strong>P5-P0</strong></td>
<td>31.09</td>
</tr>
</tbody>
</table>

*Note: *P1-P0 = Price one day after the recommendation date minus price on the recommendation date. If the price difference is positive, it is coded as “1”; otherwise, it is coded “0.” **: Number of firms coded 1/total firms

Exhibit 4 presents the results of a non-parametric binominal test of the stock price change for a sample of competitors. According to the results displayed in Panel A:

- 70% of competitors experience a negative price change one day after “buy” recommendation day.
- 63% of competitors experience a lower price two days after “buy” recommendation day.
- On average, on the third day after a “buy” recommendation, 70% of “buy” picks’ competitors experience stock price decreases.
- These results suggest that, on average, the competitors of Jim Cramer’s “buy” picks experience lower prices for three consecutive days after the day he recommends his “buy.”

On the other hand, it appears that “picks” competitors exhibit less of a negative price trend after “sell” recommendations compared to “buy” recommendations. The initial reaction of over 30% of “picks” competitors had their stock price reversed; starting the third day after “sell” recommendations were issued, they stop falling.

Next, we separate competitors into two groups:

- Group 1 represents companies that experience price decreases after the recommendation day.
- Companies that experience price increases after the recommendation day are placed in Group 2.
According to the non-parametric test results presented in Exhibit 4, Panel A, 70% of companies with “buy” recommendations experience price decreases two, three, four, and five days after the recommendation has been “aired” on TV. Results indicate that, on average, the competitors of Jim Cramer’s stocks with “buy” recommendations also experience lower prices two, three, four, and five days after the recommendation date. Only 48% of companies given “buy” recommendation by Jim Cramer exhibit higher prices the day after the recommendation day.

On the other hand, when Cramer told his audience to sell certain stocks, their prices dropped the day after he made his “sell” recommendation. We observe that individual investors are more sensitive to “sell” recommendation than to “buy” recommendation. Stocks with “sell” recommendations experience negative price “drift” longer than one day. On average, close to 65% of “sell” recommendation companies experience price decreases the first five days after each recommendation day. At the same time, “buy” recommendations have less of a positive effect on stock prices after recommendation day. The results for competitors are similar to those for sample companies.

Exhibit 4

Non-parametric binomial test stock price change for competitors: Competitors are stratified into two groups: firms experiencing lower stock prices after recommendation date (Group 1) and firms experiencing higher stock prices (Group 2). Total companies N = 501

<table>
<thead>
<tr>
<th>Panel A: “Buy” recommendation N=501</th>
<th>N</th>
<th>Observed Prop</th>
<th>Test Prop.</th>
<th>Asymp. Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P₁-P₀*</td>
<td>Group 1</td>
<td>352</td>
<td>0.70</td>
<td>0.50 0.000*</td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>149</td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td>P₂-P₀</td>
<td>Group 1</td>
<td>314</td>
<td>0.63</td>
<td>0.50 0.000*</td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>187</td>
<td>0.37</td>
<td></td>
</tr>
<tr>
<td>P₃-P₀</td>
<td>Group 1</td>
<td>355</td>
<td>0.71</td>
<td>0.50 0.000*</td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>146</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>P₄-P₀</td>
<td>Group 1</td>
<td>355</td>
<td>0.71</td>
<td>0.50 0.000*</td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>146</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>P₅-P₀</td>
<td>Group 1</td>
<td>355</td>
<td>0.71</td>
<td>0.50 0.000*</td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>146</td>
<td>0.29</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B: “Sell” recommendation N=238</th>
<th>N</th>
<th>Observed Prop</th>
<th>Test Prop.</th>
<th>Asymp. Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P₁-P₀*</td>
<td>Group 1</td>
<td>154</td>
<td>0.65</td>
<td>0.50 0.000*</td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>84</td>
<td>0.35</td>
<td></td>
</tr>
<tr>
<td>P₂-P₀</td>
<td>Group 1</td>
<td>164</td>
<td>0.69</td>
<td>0.50 0.000*</td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>74</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>P₃-P₀</td>
<td>Group 1</td>
<td>92</td>
<td>0.61</td>
<td>0.50 0.001*</td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>146</td>
<td>0.39</td>
<td></td>
</tr>
<tr>
<td>P₄-P₀</td>
<td>Group 1</td>
<td>85</td>
<td>0.64</td>
<td>0.50 0.000*</td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>153</td>
<td>0.36</td>
<td></td>
</tr>
<tr>
<td>P₅-P₀</td>
<td>Group 1</td>
<td>74</td>
<td>0.69</td>
<td>0.50 0.000*</td>
</tr>
<tr>
<td></td>
<td>Group 2</td>
<td>164</td>
<td>0.31</td>
<td></td>
</tr>
</tbody>
</table>

Note: *Based on Z approximation.
Group 1: firms that experience a lower price after recommendation date
Group 2: firms that experience a higher price after recommendation date
To investigate whether Jim Cramer’s “buy” and “sell” recommendation has any different impact on prices of “picks” and on their competitors’ prices one through five days after recommendation day, we compare the mean value of percentage change in stock prices between these two groups. Based on the results presented in Exhibit 5, Panel A, we conclude that the average percentage change in price for sample firms with “buy” recommendation is positive only on the day after the recommendation has been made. However, starting the second day after the recommendation has been aired, the average percentage change in price for Jim Cramer’s “buy picks” tends to reverse, and the prices go down. At the same time, the percentage change in price for “picks” competitors stays negative throughout the five day window. The average percentage change in price for Jim Cramer’s “sell picks” and their competitors remains negative throughout the five day window.

Exhibit 5
Percentage changes of stock prices between price on recommendation day and prices one through five days after: Test includes both sample companies and competitors

<table>
<thead>
<tr>
<th>Panel A: “Buy” recommendation N=724</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(P1−P0)/P0* Group 1</td>
<td>223</td>
<td>0.0026</td>
</tr>
<tr>
<td>(P1−P0)/P0 Group 2</td>
<td>501</td>
<td>-0.0060</td>
</tr>
<tr>
<td>(P2−P0)/P0 Group 1</td>
<td>223</td>
<td>-0.0032</td>
</tr>
<tr>
<td>(P2−P0)/P0 Group 2</td>
<td>501</td>
<td>-0.0137</td>
</tr>
<tr>
<td>(P3−P0)/P0 Group 1</td>
<td>223</td>
<td>-0.0048</td>
</tr>
<tr>
<td>(P3−P0)/P0 Group 2</td>
<td>501</td>
<td>-0.0048</td>
</tr>
<tr>
<td>(P4−P0)/P0 Group 1</td>
<td>223</td>
<td>-0.0082</td>
</tr>
<tr>
<td>(P4−P0)/P0 Group 2</td>
<td>501</td>
<td>-0.0189</td>
</tr>
<tr>
<td>(P5−P0)/P0 Group 1</td>
<td>223</td>
<td>-0.0147</td>
</tr>
<tr>
<td>(P5−P0)/P0 Group 2</td>
<td>501</td>
<td>-0.0246</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B: “Sell” recommendation N=339</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(P1−P0)/P0 Group 1</td>
<td>101</td>
<td>-0.0039</td>
</tr>
<tr>
<td>(P1−P0)/P0 Group 2</td>
<td>238</td>
<td>-0.0093</td>
</tr>
<tr>
<td>(P2−P0)/P0 Group 1</td>
<td>101</td>
<td>-0.0143</td>
</tr>
<tr>
<td>(P2−P0)/P0 Group 2</td>
<td>238</td>
<td>-0.0178</td>
</tr>
<tr>
<td>(P3−P0)/P0 Group 1</td>
<td>101</td>
<td>-0.0189</td>
</tr>
<tr>
<td>(P3−P0)/P0 Group 2</td>
<td>238</td>
<td>-0.0171</td>
</tr>
<tr>
<td>(P4−P0)/P0 Group 1</td>
<td>101</td>
<td>-0.0243</td>
</tr>
<tr>
<td>(P4−P0)/P0 Group 2</td>
<td>238</td>
<td>-0.0190</td>
</tr>
<tr>
<td>(P5−P0)/P0 Group 1</td>
<td>101</td>
<td>-0.0409</td>
</tr>
<tr>
<td>(P5−P0)/P0 Group 2</td>
<td>238</td>
<td>-0.0315</td>
</tr>
</tbody>
</table>

Note: Group 1 = sample companies; Group 2 = competitors
*: Price one day after the recommendation date (P1), minus price of the recommendation date (P0) divided by the price of the recommendation date (P0).
We anticipate spikes and valleys in the short-term price change of his picks due to a majority of his audience following his advice.

To determine whether the percentage price change is economically significant between sample and competitors, we perform an independent sample t-test. Exhibit 6 presents the test results. We conclude that for “buy” recommendations, the day-one average percentage change in price for the sample is .859 percent higher than that of the competitors, which is statistically significant. The same conclusion can be drawn for days two through five after the “buy” recommendation day. Based on the empirical findings, it appears that Jim Cramer’s recommended stocks outperform the competitors over the sample period. However, both his “picks” and their competitors, on average, experience negative price changes after the recommendation every day, one through five. Results show that both Jim Cramer’s buy picks and the competitors in the same industry experienced lower prices after the buy recommendations. However, the competitors experienced even lower stock prices than the picks.

Exhibit 6
Independent sample test of percentage change in stock price test for sample and competitors over the five day period

<table>
<thead>
<tr>
<th>Panel A. “Buy” recommendation</th>
<th>F</th>
<th>Sign.</th>
<th>Mean** Difference</th>
<th>t-statistic</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\frac{P_1-P_0}{P_0})</td>
<td>5.149</td>
<td>0.024</td>
<td>0.0085905</td>
<td>3.956</td>
<td>0.000</td>
</tr>
<tr>
<td>(\frac{P_2-P_0}{P_0})</td>
<td>4.463</td>
<td>0.035</td>
<td>0.0010518</td>
<td>3.435</td>
<td>0.001</td>
</tr>
<tr>
<td>(\frac{P_3-P_0}{P_0})</td>
<td>5.881</td>
<td>0.016</td>
<td>0.0115085</td>
<td>3.039</td>
<td>0.002</td>
</tr>
<tr>
<td>(\frac{P_4-P_0}{P_0})</td>
<td>1.371</td>
<td>0.242</td>
<td>0.0106503</td>
<td>2.623</td>
<td>0.009</td>
</tr>
<tr>
<td>(\frac{P_5-P_0}{P_0})</td>
<td>1.647</td>
<td>0.200</td>
<td>0.0099002</td>
<td>2.324</td>
<td>0.020</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B. “Sell” recommendation</th>
<th>F</th>
<th>Sign.</th>
<th>Mean** Difference</th>
<th>t-statistic</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\frac{P_1-P_0}{P_0})</td>
<td>4.297</td>
<td>0.039</td>
<td>-0.00535</td>
<td>-4.522</td>
<td>0.000</td>
</tr>
<tr>
<td>(\frac{P_2-P_0}{P_0})</td>
<td>2.615</td>
<td>0.107</td>
<td>-0.00351</td>
<td>-7.011</td>
<td>0.000</td>
</tr>
<tr>
<td>(\frac{P_3-P_0}{P_0})</td>
<td>0.736</td>
<td>0.391</td>
<td>0.00185</td>
<td>-6.435</td>
<td>0.000</td>
</tr>
<tr>
<td>(\frac{P_4-P_0}{P_0})</td>
<td>1.242</td>
<td>0.266</td>
<td>0.00526</td>
<td>-6.329</td>
<td>0.000</td>
</tr>
<tr>
<td>(\frac{P_5-P_0}{P_0})</td>
<td>4.621</td>
<td>0.032</td>
<td>0.00938</td>
<td>-9.188</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Note: *: calculated as \(\frac{P_1-P_0}{P_0}\).
**: The mean percentage change of sample firms – the mean percentage change of competitors.
For sell recommendations, the results are not as conclusive. For stock prices one day after the recommendation date, the competitors experienced a lower price than the sample and the difference is economically significant. The same conclusion can be drawn for day two stock prices. However, for prices three, four, and five days after recommendation date, the sample experienced lower prices than competitors. The difference is economically significant for price day five at 3.2%. Results indicate that both Jim Cramer’s sell pick and the picks’ competitors in the same industry experienced lower prices after the recommendations.

The average percentage change in price for sample firms with “buy” recommendations is positive only on the day after the recommendation has been made.

4. Conclusion

In this study, we investigate whether investors can benefit from Jim Cramer’s picks in both buy and sell recommendations. To further examine whether the recommendations have any impact on the competitors in the same industry of Cramer’s picks, we include the competitors that were selected by using both SIC code and the firm size. 501 competitors were selected for buy recommendations and 238 competitors were selected for sell recommendations. Stock prices one through five days after the recommendations were collected.

The results of our study indicated that the prices of Jim Cramer’s buy picks experienced significantly lower prices after the buy recommendations. The competitors of the buy picks experienced even worse stock prices after the recommendations. The price differences between two groups are, on average, statistically significant. According to our results, potential investors will not profit from Jim Cramer’s buy picks. However, the results of our study also show that Cramer’s picks outperformed the competitors in the same industry.

Regarding sell recommendations, the evidence in this study shows that prices of Cramer’s sell picks do experience lower stock prices, and the drops in prices are significantly lower than the price at the recommendation date. The same conclusion can be drawn for the competitors. Competitors also experienced significantly lower stock prices one through five days after the recommendation date. The differences between sample and competitors are inconclusive.

References


http://www.barrons.com

http://www.madmoneyrecap.com

http://www.onlinetradersforum.com

http://www.thestreet.com


**Endnotes**

1 We collect data from first-run episodes.

2 www.madmoneyrecap.com and www.onlinetradersforum.com

3, 4, 5 Independent sample t-test: H0: change in price is significantly different from “0.”

6, 7, 8 Independent sample t-test: H0: change in price is significantly different from “0.”
Adding Assurance to the Term “Organic”

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Executive Summary

As Americans increasingly eat healthy foods, the demand for organic foods has skyrocketed. Consumers will pay to limit their exposure to pesticides and other food toxins. But premium prices have attracted unethical food producers, often resulting in fraudulent labeling. While the United States Department of Agriculture (USDA) developed national standards regulating organic food production through the National Organic Program (NOP), the government has been unable to hire and train adequate numbers of accredited certifying agents. As of 2009 the NOP reported only 55 domestic and 40 foreign accredited certifying agents (NOP, 2009) to monitor all organic products entering our food supply. To protect consumers, we suggest that the industry hire CPAs to attest that the producers, distributors and suppliers of organic foods meet certain standards. CPAs have long performed such attestation services for other industries in order to add credibility to these products and services.

The Food Marketing Institute (2007) has also called for the addition of private sector auditing and certification programs. This need for assurance of the quality of organic foods provides a unique opportunity for CPAs to provide attestation services to consumers regarding the reliability of organic food producers. The CPA profession should thus promote and develop this opportunity to provide these types of services.

Introduction

Swindlers have long mislabeled food products to defraud consumers. Centuries ago merchants added burnt peas, beans and chicory to what was sold as coffee, and painted sweets with toxic substances like red oxide of lead, red sulphuret of mercury, or lead chromate to give them appealing, bright colors. The age-old human propensity to profit from consumers unaware of the value of what they buy continues today, most obviously in exploiting the demand for organic food products.

We wish to thank Phil Beaulieu (University of Calgary), John Fleming (Loscalzo & Associates), Brian Green (University of Michigan-Dearborn), Martin Leibowitz (Yeshiva University), Julius Otten (KPMG, retired), Greg Trompeter (University of Central Florida) and Dave Sinason (Northern Illinois University) for their helpful comments on earlier drafts of this paper.

We would also like to thank Leah Woodall (M.S.A. Student, Wayne State University, and now with KPMG) for her valuable research assistance on the project.
In 2007 the Wisconsin Department of Agriculture, Trade and Consumer Protection reported many incidents of improperly labeled organic foods. The Cornucopia Institute, a government and corporate organic food industry watchdog, filed complaints with the Wisconsin regulators and the U. S. Department of Agriculture (USDA) that Walmart repeatedly mislabeled organic foods in five states by using product placement policies that mixed organic and conventional produce. Walmart, calling these events isolated incidents, stated that it would implement new stocking methods to help prevent further recurring incidents (Wong, 2007).

Organic food sales grew from about $1 billion in 1990, to $18 billion in 2006 and to $30 billion in 2009.

Criticisms of the USDA continue since many incidents of fraudulent activities are only punished lightly or slowly, as occurred with a Florida orange grower who could not show documents or prove that his oranges and orange juice were produced organically. More than two years later, the orange grower’s products were still on the shelves and being sold as organic produce (Kastel, 2007). As reports of organic food fraud have proliferated, many consumers have expressed doubts on the reliability of the 2002 USDA-established organic certification program to protect the purity of organically labeled products (Conrad, 2009). To mitigate issues of consumer confidence, we suggest the application of attestation procedures to the current organic certification system. Using certified public accountants (CPAs) to attest to the fair presentation of audited financial statements or the compliance of governmental agencies with existing standards has long been a preferred method of providing independent assurance to these areas. In order to attest to the fair presentation of organic certification, we first examine the current organic certification process and the roadblocks it has encountered since its inception in 2002. We then identify areas where attestation standards can correct the existing weaknesses. With the understanding that expanding into new attestation services is not without its own challenges, we review potential issues CPAs may face in providing these services.

We conclude with our recommendation for future action.

Organic Certification and Certification Problems

The USDA’s National Organic Program (NOP), which was created as part of the Organic Food Production Act of 1990 to develop national organic standards and to monitor and regulate organic food production, controls organic certification at the top-most level. Governed by a 15-member committee of farmers, handlers and processors, retailers, consumers, environmentalists, scientists and certifying agents, the NOP (2007) develops and enforces standards for producing, handling and labeling imported and domestic organic foods. It also accredits foreign and domestic certifying agents who inspect organic production and handling operations to certify that they meet USDA standards. This special certification, a USDA organic seal, provides the highest available assurance that the product was grown under strict organic standards.

The NOP relies on its Certifying Agents (CA) to complete the certification fieldwork and report their certification recommendations back to the NOP. Certifying Agent candidates must demonstrate their experience and understanding of the organic farming process to the NOP peer review board. Accredited CAs employ and train inspectors to visit farms requesting organic certification and evaluate them based on prescribed NOP standards.

Herein lays the major problem regarding organic certification reliability. Organic food
sales grew from about $1 billion in 1990, to $18 billion in 2006 and to $30 billion in 2009. The number of certified organic farmers has grown roughly in tandem with the increased demand for organically grown foods. The Organic Farming Research Foundation (2008) reported the growth of organic farms from about 2,700 in 1994 to 13,000 certified organic producers in 2007. Despite the USDA’s intent to protect the public from receiving improperly labeled “organic” products, many documented lapses have occurred, primarily due to an insufficient number of adequately trained personnel (Agribusiness Marketing Report, 2006). The reported 54 domestic and 44 foreign accredited certifying agents simply cannot police the thousands of foreign and domestic farms that provide organic products to U.S. consumers. Increasing foreign imports have so overwhelmed the USDA that its system inspects only one percent of all food imports (Blobaum, 2007). Additionally, Wilson (2008) states that the number of USDA certified agents is inadequate and the NOP must provide enough certifying agents to adequately monitor the organic supply chain. Violators must be identified and removed from the system in order to protect the health of our citizens and our environment. Faster identification of violations, threat of independent review, and setting harsher punishments beyond the current $10,000 maximum fine would add credibility to the entire process.

At a recent Congressional hearing, former FDA Commissioner David Kessler said that “Our food-safety system is broken” and that “the FDA has an insufficient number of inspectors to handle the workload” (“Greening” the Foods We Eat..., 2009). The Food Marketing Institute (2007), which conducts research for its 1,500 member worldwide companies, added that neither the USDA nor the FDA have the resources to properly inspect food products and ensure compliance with food safety regulations. It thus recommended using private sector auditing and certification programs.

A Review of Standards for Organic Certification

In order to analyze how to apply attestation services it is important to review NOP organic certification standards. NOP (2007) production and handling standards regulate organic crop production, wild crop harvesting and organic livestock management (See Exhibit I). Production and handling standards require that no prohibited chemical or biological substances be used on farm land for at least three years prior to organic production. The USDA’s website, which the U.S. Secretary of Agriculture makes available to the public, lists all banned substances. The land must also have distinct boundaries for organic and non-organic production. Farmers must also maintain or improve their soil’s physical, chemical and biological condition.

The reported 54 domestic and 44 foreign accredited certifying agents simply cannot police the thousands of foreign and domestic farms that provide organic products to U.S. consumers.
### Exhibit 1. USDA Guidelines – Labeling Packaged Products

<table>
<thead>
<tr>
<th>If you want to claim:</th>
<th>“100 percent Organic” (or similar statement)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your product:</td>
<td>Must contain 100 percent organically produced ingredients, not counting added water and salt.</td>
</tr>
<tr>
<td>Your label MUST:</td>
<td>Show an ingredient statement when the product consists of more than one ingredient. &lt;br&gt;Show below the name and address of the handler (bottler, distributor, importer, manufacturer, packer, processor, etc.) of the finished product, the statement: “Certified organic by ________” or similar phrase, followed by the name of the Certifying Agent. Certifying Agent seals may not be used to satisfy this requirement. (IP)</td>
</tr>
<tr>
<td>Your label MAY show:</td>
<td>The term “100 percent organic” to modify the product name. (PDP/IP/OP) &lt;br&gt;The term, “organic” to identify the organic ingredients.¹ Water and salt included as ingredients must not be identified as organic. (IS) &lt;br&gt;The USDA organic seal and/or certifying agent seal(s). (PDP/OP) &lt;br&gt;The certifying agent business/Internet address or telephone number. (IP)</td>
</tr>
<tr>
<td>Your label MUST NOT show:</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>If you want to claim:</th>
<th>“Organic” (or similar statement)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your product:</td>
<td>Must contain at least 95% organic ingredients, not counting added water and salt. &lt;br&gt;Must not contain added sulfites. &lt;br&gt;May contain up to 5% of: &lt;br&gt;a. non-organically produced agricultural ingredients which are not commercially available in organic form; and/or &lt;br&gt;b. other substances allowed by 7 CFR 205.605.</td>
</tr>
<tr>
<td>Your label MUST:</td>
<td>Show an ingredient statement &lt;br&gt;List the organic ingredients as “organic” when other organic labeling is shown.² &lt;br&gt;Water and salt included as ingredients must not be identified as organic. (IS). &lt;br&gt;Show below the name and address of the handler (bottler, distributor, importer, manufacturer, packer, processor, etc.) of the finished product, the statement: “Certified organic by ________” or similar phrase, followed by the Certifying Agent’s name. Certifying Agent seals may not be used to satisfy this requirement. (IP)</td>
</tr>
<tr>
<td>Your label MAY show:</td>
<td>The term “Organic” to modify the product name. (PDP/IP/OP) &lt;br&gt;“X% organic” or “X% organic ingredients.” (PDP/IP/OP) &lt;br&gt;The USDA Organic seal and/or certifying agent seal(s). (PDP/OP) &lt;br&gt;The certifying agent business/Internet address or telephone number. (IP)</td>
</tr>
<tr>
<td>Your label MUST NOT show:</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

Letter Codes for information above indicate position on package and are defined as: <br>PDP: Principal Display Panel; IP: Information Panel; IS: Ingredients Statement; OP: Any Other Panel

¹ An organically produced ingredients statement uses the word “organic” in conjunction with the name of the ingredient, or an asterisk or other reference mark which is defined below the ingredient statement. <br>² An organically produced ingredients statement uses the word “organic” in conjunction with the ingredient’s name, or an asterisk or other reference mark which is defined below the ingredient statement.
<table>
<thead>
<tr>
<th>If you want to claim</th>
<th>&quot;Made with Organic Ingredients&quot; (or similar statement)</th>
</tr>
</thead>
</table>
| Your product:        | Must contain at least 70% organic ingredients, not counting added water and salt. **Must not** contain added sulfites; except that wine may contain added sulfur dioxide in accordance with 7 CFR 205.605. **May** contain up to 30% of:
  a. non-organically produced agricultural ingredients; and/or
  b. other substances, including yeast, allowed by 7 CFR 205.605. |
| Your label MUST:     | Show an ingredient statement. List the organic ingredients as “organic” when other organic labeling is shown.³ Water and salt included as ingredients must not be identified as organic. (IS). Show below the name and address of the handler (bottler, distributor, importer, manufacturer, packer, processor, etc.) of the finished product, the statement: “Certified organic by ________” or similar phrase, followed by the Certifying Agent name. Certifying Agent seals may not be used to satisfy this requirement. (IP) |
| Your label MAY show: | The term “Made with organic______ (specified ingredients or food groups).” (PDP/IP/OP) “X% organic” or “X% organic ingredients.” (PDP/IP/OP) The certifying agent seal(s). (PDP/OP) The certifying agent business/Internet address or telephone number. (IP) |
| Your label MUST NOT show: | The USDA Organic seal. |
| If you want to claim | That your product has some organic ingredients |
| Your product:        | May contain less than 70% organic ingredients, not counting added water and salt. May contain over 30% of:
  a. non-organically produced agricultural ingredients; and/or
  b. other substances, without being limited to those in 7 CFR 205.605. |
| Your label MUST:     | Show an ingredient statement when the word organic is used. Identify organic ingredients as “organic” in the ingredients statement⁴ when % organic is displayed. Water and salt included as ingredients must not be identified as organic. (IS). |
| Your label MAY show: | The organic status of ingredients in the ingredients statement.⁴ Water and salt included as ingredients must not be identified as organic. (IS) “X% organic ingredients” when organically produced ingredients are identified in the ingredient statement. (IP) |
| Your label MUST NOT show: | Any other reference to organic contents The USDA Organic seal. The certifying agent seal. |

³ To identify an ingredient as organically produced, in the ingredients statement, use the word “organic” in conjunction with the name of the ingredient, or an asterisk or other reference mark which is defined below the ingredient statement.

⁴ To identify an ingredient as organically produced, in the ingredients statement, use the word “organic” in conjunction with the name of the ingredient, or an asterisk or other reference mark which is defined below the ingredient statement.

January 9, 2003
http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELDEV3004323&acct=nopgeninfo
At a recent Congressional hearing, former FDA Commissioner David Kessler said that “Our food-safety system is broken”...

Farmers and others in organic food production businesses must be certified in order to label their products as organic. They must then document the type of operation, history of substances applied to the land for the last three years, and organic products grown, raised or processed. Organic producers must also submit an organic system plan that outlines their practices and substances for production use, plus implemented recordkeeping procedures and practices to prevent commingling organic and non-organic foods. Certification requires keeping current and accurate post-certification records that show compliance with USDA regulations for producing, harvesting and handling raised or sold “organic” agricultural products (NOP, 2007).

Upon receiving an applicant’s required documents, certifying agents conduct on-site inspections of their operations and examine the processes laid out in the applications, including inspecting production equipment and building(s), contamination risks, pest control, sales and production records. Successful inspections grant applicants certification and accreditation (NOP, 2007; Crandell, 2004). But they still face unannounced inspections from organic inspectors to ensure continuing compliance with NOP regulations (Organic Food, 2007).

Without an adequate inspection staff, unannounced inspections cannot be completed and noncompliance with organic standards may persist. The lack of compensating controls in this area increases the inherent risk that fraud may occur.

Parallel Situations: Kosher Meat and Forestry Industries

Many states have long regulated the kosher meat industry, normally allowing orthodox rabbis to certify that kosher-labeled meat follows strict Jewish standards. However, less conservative rabbis, the American Civil Liberties Union (ACLU), and others have challenged this process, claiming that it violates the constitutional prohibition of the establishment of religion (Fishkoff, 2009). Thus, many states now allow manufacturers and purveyors of kosher food to fill out forms indicating what “kosher” food they sell and under whose authority. States now post these forms for public view, so consumers can ascertain the overseer’s quality and/or qualifications.

While consumers of kosher meat generally have some idea of the quality of the inspectors (e.g., knowing that a Union of Orthodox Rabbi’s seal carries much more weight than an unknown authority), organic foods producers represent a broader market of many different types and dispersed producers. This forms a major opportunity for CPAs to “privatize” this market.

The Forest Stewardship Council (FSC) manages certification for timber and forest products that meet environmentally sustainable practices, e.g., that “old growth” forests are not used to produce toilet paper. The FSC accredits independent certification agents who provide forestry management assessments and supply chain tracking to ensure proper certification with these standards (www.fsc.org).

Opportunities for Certified Public Accountants

CPAs are well known for the assurance services they provide to the public, and these services improve the quality of information for decision makers (Arens, et. al, 2008). An attestation service is a type of assurance service wherein a CPA issues a report about the reliability of another party’s assertion. CPAs have long attested to third parties that:
A. financial statements and internal controls, which are the responsibility of management, present fairly the financial position of an entity,
B. the financial statements adhere to generally accepted accounting principles (GAAP), and
C. internal controls are effective.
CPA attestation services have extended into other areas, including attesting to compliance with environmental protection laws; assurance services related to e-commerce (i.e., WebTrust); and assurance services as to information technology systems (i.e., SysTrust). These services provide assurance to consumers, investors and others regarding a company’s compliance with laws, and with the reliability and integrity of their respective e-commerce practices and information technology systems in such areas as transaction policies, privacy, security, confidentiality, and information availability (Pugliese and Halse, 2000; Boritz et al., 1999).

When organizations such as the Food Marketing Institute (2007) call for establishing trustworthy private sector auditing and food safety certification programs, this marks a clear opportunity to expand CPA-offered assurance services. Due to the proliferation of fraud in the organic foods market and lack of adequate USDA inspection capabilities, the public would benefit from having CPAs attest to the proper labeling of organic foods. Such assurance would greatly improve the quality of information to consumers who are not in a position to authenticate organic food labeling. Given organic foods’ premium prices, this assurance would provide economic benefits and assure those concerned with minimizing exposure to pesticides that the organic foods they buy are what they purport to be.

CPA practitioners could attest to the proper labeling of organic foods by issuing an “attestation report” pursuant to Statement on Standards for Attestation Engagements (SSAE) No. 10, Attestation Standards: Revision and Recodification (AICPA 2001). In such a report, based on independently obtained evidence, the CPA would opine that the organic food producer complied with applicable NOP organic certification standards. A responsible party (e.g., a knowledgeable member of management) from the food producer client should also provide a written statement of the certification standards used for the CPA’s compliance testing and report issuance.

CPAs have also established experience in “risk-oriented auditing,” which Germany’s organic food sector now seeks.

According to the AICPA’s (2001) Attestation Standards, the attest engagement “shall be performed by a practitioner having adequate knowledge of the subject matter.” CPA certification could review the farmer’s Organic Plan, inspect records pertaining to materials applied to organic products, test residue for prohibited substances, and conduct site visits to observe proper adherence to organic standards. CPAs would conduct these specialized activities subsequent to proper training in these areas, which the government currently provides to interested third parties. Additionally, those with inadequate expertise regarding the requirements of organic farming and related areas may use the work of specialists, an already common practice in valuing precious gems or underground oil deposits. As always, CPAs should be able to review the specialists’ qualifications and work product, and not substitute the specialists’ work for their own (see Attestation Standard Section 601.43 and Auditing Standards Section 336, Using the Work of a Specialist).

An example of such a report appears in Exhibit 2.
Tom Smith  
President  
Acme Corporation  
Any Town, USA  

Dear Mr. Smith,  

We have examined Acme Corporation's compliance with the United States Department of Agriculture's Requirements for calling its livestock and other agricultural products and thus warrant receiving a USDA Organic Seal. These guidelines include separating organic and non-organic production methods and other standards found at the website www.usda.gov for the year ending December 31, 2009. Management is responsible for Acme Corporation's compliance with those requirements. Our responsibility is to express an opinion on Acme Corporation's compliance based on our examination.

Our examination was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants and, accordingly, included examining, on a test basis, evidence about Acme Corporation's compliance with those requirements and performing such other procedures as we considered necessary in the circumstances. We believe that our examination provides a reasonable basis for our opinion. Our examination does not provide a legal determination on Acme Corporation's compliance with specified requirements.

In our opinion, Acme Corporation complied, in all material respects, with the aforementioned requirements for the year ended December 31, 2009.

Sincerely,

Jones and Hammer, CPAs  
May 12, 2010
The client could then send the report to its wholesalers or retailers, or, with the CPA's permission, note the CPA's attestation on its products—similar to notations of CPAs' SysTrust and WebTrust assurance services. Consumers have come to rely on the American Dental Association's [ADA] statement that a toothpaste product has been found “to be a safe and effective dentifrice that can be of significant value when used in a consciously applied program of oral hygiene and regular professional care.” Consumers would similarly expect and welcome a CPA attestation of whether organically labeled products were grown, produced, distributed and sold according to the guidelines of the USDA, since they are ingesting these foods. CPAs should also be prepared to attest that the organic products were not compromised at any stage in the supply chain or production processes, including soil preparation, farming or ranching, processing, storage or refrigeration and retailing. CPAs can even make use of recent food tracing technologies that allow consumers to track where a potato inside a Frito-Lay package was made or where a leaf of lettuce or a Chiquita banana was harvested (Gustin, 2010).

Making the CPA's Involvement More Viable

CPAs must overcome some governmental (e.g., FDA and USDA), professional (e.g., AICPA) and marketing hurdles to establish certified organic food assurance programs, as well as introducing and promoting these programs to organic food producers, distributors and consumers. We believe that the demand for organic food safety will ultimately enable CPAs to overcome these hurdles.

The FDA has acknowledged that our food supply's safety is a “shared public and private responsibility” (Food Marketing Institute [FMI], 2008). In May 2008, the FDA published a request for comments concerning third-party certification programs, titled Third-Party Certification Programs for Foods and Feeds; Request for Comments (Docket No. 2008-N-0183). The FMI, a world-wide association of food retailers and wholesalers representing 75% of all U.S. retail food stores, responded in a 12-page letter promoting the accredited third party certification programs. It acknowledges that some retailers already use accredited third party certification programs to provide additional assurance that their suppliers are producing or processing food under standards at least equal to, and often beyond, that of the federal government. Accredited third party certification programs can serve as a mechanism to independently assess the standards and conditions under which food is produced (p. 1).

The AICPA's Assurance Services Executive Committee (2008, p. 1) also supports CPAs providing additional assurance services. It published a White Paper, The Shifting Paradigm in Business Reporting and Assurance, to highlight “significant trends which give rise to emerging reporting and assurance opportunities and needs.” Although most CPA assurance services have focused on financial statements, the AICPA Committee (p. 8) stresses that business and market needs are becoming increasingly complex and need additional assurances.

Due to the FDA and the FMI wide-spread support for additional third-party certification programs, and the AICPA's awareness of the need for additional assurance services arising from dynamic changes in the marketplace, we believe that the AICPA would support the development of a new AICPA assurance of organic food safety.

European studies encourage CPAs to enter the third party certification market, as they seek to transfer some of their established reputations in the financial assurance area to this new practice area (Albersmeier, Schulze, and Spiller,
A solid reputation provides consumers with confidence, allows the audit firm to command higher fees for their services than unknown assurance groups, and enables organic farmers to command higher product prices. CPAs have also established experience in “risk-oriented auditing,” which Germany’s organic food sector now seeks (Jahn et al, 2005b). A Greek study on organic food and audit quality indicated that better quality standards contribute to sales growth and higher profit margins (Kontogeorgos and Anastasios, 2008). CPA firms can use marketing tools to emphasize why assurance from an established firm with a solid reputation in risk-auditing can benefit the organic farmer in both quality assurance and increased profit margins.

The AICPA and state CPA societies have long used push marketing to encourage CPAs to have their clients use SysTrust and WebTrust assurance services—often with limited success. Perhaps they should also use pull (or demand) marketing (Kotler, 2003, p. 511) to help the organic food chain—from growers to warehouses to distributors to the general public—appreciate directly the need for such services, similar to what the ADA does for toothpaste.

CPA attestation could add value to the organic certification process by going beyond current USDA standards. To differentiate their services from current offerings, we recommend CPAs provide and promote an open data policy. Interested organic farmers would have their Organic Plans and inspection results published in a publicly viewable website database run by the AICPA to help consumers evaluate the sources of organic food. CPAs can score foods based on criteria such as years of continuous organic certification, frequency of inspection, distance travelled to the consumer, and other relevant facts. The open availability of data and scoring system provide far more information than a simple USDA Organic label. The standard formatting of information and the ease of comparability among producers provide the value that other certification processes lack.

Summary and Conclusion

The increased worldwide demand for organic foods provides potential for organic produce fraud and mislabeling. While consumers should become more educated about the organic food process, the USDA and similar state agencies should more carefully monitor and enforce existing “organic” laws. However, the USDA and NOP have been unable to enforce current standards and this lack of governmental action provides an opportunity for the private sector to help the public, specifically CPA certification.

Public consumers should receive better assurance that their organic food purchases are grown and produced according to federal guidelines. This situation opens the door for an additional attestation service by applying the provisions of Attestation Standards to add assurance that food producers and distributors comply with organic regulations and label properly their organic products.

References


American Institute of Certified Public Accountants (AICPA), Auditing Standards Board (2001) Statement on Standards for Attestation Engagements (SSAE) no. 10, Attestation Standards: Revision and Recodification, Vol. 1, AT sec. 501, which is also codified into AICPA Professional Standards, Volume 1, as AT sections 101 through 701.

Adding Assurance to the Term “Organic”


Conrad, C. (April 2, 2009). *Organic Food: Can We Trust It? Can We Afford It?* The Healthy House Institute, http://www.healthyhouseinstitute.com/a_1006-organic_food_can_we_trust_it_can_we_afford_it#


Personal Liability of Corporate Shareholders in New York

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Executive Summary

Individuals are often counseled to conduct their businesses through a corporate entity, since the shareholders’ personal assets are protected against liens and judgments levied against the corporation. However, there are circumstances when a shareholder’s actions or failures will allow a claimant to “pierce the corporate veil” and use a shareholder’s personal assets to satisfy an unpaid corporate claim.

This article discusses circumstances which cause shareholders in New York to lose corporate protection, and what steps must be taken to prevent this from happening.

Introduction

A business delivery truck gets into an accident and severely injures a person. The business’s assets and liability insurance are inadequate, so the injured party wants the owner to sell his home and use the proceeds to satisfy the judgment. In another situation, a business owner enters into a contract. He does not want to risk losing his life savings if the contract is breached.

These are just two examples in which business owners are concerned about the risk of having to use personal assets to satisfy judgments and financial obligations of their businesses. Financial professionals often advise clients to form a corporation and conduct business through the corporation, in order to place a barrier between the owner’s assets and anyone asserting a claim against the business.

People are inundated with commercials about forming a corporation. Many companies will form a corporation for you for a small sum and some basic information. The ease of corporate formation now allows individuals, small business owners, and those newly entering the business world to incorporate. They form corporations and operate under the presumption that the corporation acts as a complete shield for their personal assets against claims made against their businesses. However, merely creating a corporation is not enough. This article will discuss several circumstances in which business owners actions can lead to the loss of corporate protection.

A corporation is an entity which is independent of its owners, and individuals may incorporate for the purpose of limiting liability. However, a situation may arise in which the corporation is sued and does not have the assets to satisfy a judgment. A party may then ask the court to “pierce the corporate veil” and force the shareholders to use personal assets to satisfy a judgment.

In order to attach shareholder assets, a claimant must first establish a claim against a corporation and then allege certain acts of misconduct on behalf of the shareholders to establish shareholder personal liability. Generally, a claimant must show that the owners (shareholders) exercised complete domination over the corporation, and the domination was used either to commit a fraud, or to create harm to the claimant, which resulted in the claim brought against the shareholders. The court looks at the particular set of facts and makes a decision on
a case-by-case basis. (4) It is difficult, if not impossible, to give a precise approach to all situations in which the corporate veil may be pierced. (5)

A corporation must be an entity separate and independent from its shareholders.

Determining Whether a Corporation is an Independent Entity

Some of the factors the court will consider when deciding if the corporation was merely an alter-ego of the shareholders are:

The Absence of Corporate Formalities: A corporation must be an entity separate and independent from its shareholders. The laws governing corporate formation and operation must be followed. Stock certificates must be issued, directors elected and officers appointed; meetings must be held, resolutions must be passed, and corporate books and records must be kept. Failure to do any of the above may result in the loss of corporate protection for the shareholders.

These formalities must be adhered to regardless of the size of the corporation or the number of shareholders. Sole shareholders may decide to eschew corporate procedures because all of the management decisions are made by a single person, who may skip certain corporate steps in order to save the time and effort that could be devoted toward running the underlying business. A sole shareholder may feel that corporate formalities are necessary only when there are two or more business owners, assuming incorrectly that formalities exist only to regulate the interaction between owners, and not between owners and the general public. This can be a costly mistake.

In Austin Powder Co. v. McCullough (6), a creditor was allowed to pierce the corporate veil and attach the shareholders’ assets because the corporate defendant had no board of directors of officers, held no corporate meetings, kept no corporate records, had no assets or inventory, and conducted business with assets paid for or belonging to the shareholders.

In Pae v. Yoon (7), the plaintiff entered into a contract with the defendant corporation for the sale of goods. Afterwards, the plaintiff sued for breach of contract. A trial was held and the court found in favor of the plaintiff. The plaintiff then sought to have the judgment satisfied out of the corporate owner’s personal assets. The defendant claimed that the plaintiff contracted with the corporation and not the owner, so the owner was not personally liable. The court held that evidence elicited at trial showed that there was an absence of corporate formalities, so the owner was personally liable.

Personal use and commingling of corporate funds: All corporate financial transactions must be conducted through separate corporate accounts and not the shareholders’ personal accounts. Sole shareholders who conduct business through a corporation may be tempted to use corporate assets for their own personal use or deposit corporate funds directly into their personal bank accounts, since it is easier to skip the additional bookkeeping and accounting steps of depositing and withdrawing the funds from a separate corporate account. A sole proprietor who used to co-mingle business and personal assets may not change bookkeeping methods after corporate formation. However, the failure to do so may result in a shareholder liability.

In Morri NY Foods Corp v. DeFilippo (8), the defendant owned the stock of a corporation known as Amity Wholesale. A dispute between the plaintiff and Amity Wholesale
arose and the plaintiff named the shareholder directly in the lawsuit. The shareholder moved to dismiss the claims against him since the contract was between plaintiff and the Corporation. The court denied the motion, citing evidence that receivables due to the corporation and commissions earned by the corporation went directly to the shareholder or his wife and were not deposited into a corporate bank account.

A corporation should have a separate bank account and Tax ID number. All corporate proceeds should first be deposited into this account, and then withdrawn and paid to the shareholders. In addition, the shareholders should not pay expenses of the corporation out of a personal bank account. A corporate checkbook should be used for all disbursements so records of corporate payments may be kept. Shareholders should also not use assets of the corporation for personal use.

A separate tax return should be filed on behalf of the corporation. Failure to file a corporate tax return and report the income directly on the individual tax return is evidence that the corporation is the alter ego of the shareholders, and can subject shareholders to personal liability. (9)

Inadequate capitalization: Courts look at the amount of corporate capital to determine if there are enough corporate funds to carry on the corporation’s business. The corporation should be able to conduct business on its own. The court will look at the business the corporation is engaged in to determine if the business could exist on its own, given the corporate capital available. A lack of funds is an indication that the corporation was not intended to exist on its own and was a mere arm of the shareholders. (10)

However, a court will not automatically pierce the corporate veil if the amount of corporate liability insurance is not adequate to compensate an injured plaintiff. In *Walkovsky v. Carlton* (11), a corporation held title to a taxi cab. The taxi cab struck the plaintiff, causing severe personal injuries. The only asset of the corporation was the taxi cab and its New York City medallion. A medallion is the license that allows its owner to operate a New York City taxi cab. Because it enables its owner to earn money by operating a cab, a medallion is quite valuable and can be mortgaged. The taxi medallion of the defendant cab in this case already had a mortgage on it, leaving little equity.

In *a New York closely held (non-public) corporation, the top ten largest shareholders are liable for the salaries of the corporate employees*.

The court held that the corporate veil could not be pierced. Shielding oneself from personal liability and asset protection are legitimate reasons to incorporate. The court noted that the corporation carried the legal minimum amount of liability insurance. The $10,000 requirement for liability insurance was deemed adequate by the legislature, and therefore the court would not rule that it was inadequate under these circumstances. It’s interesting to speculate whether the outcome would have been different if there had been no minimum insurance amount to guide the court.

Statutorily Imposed Shareholder Liability: In a New York closely held (non-public) corporation, the top ten largest shareholders are liable for the salaries of the corporate employees. This statute serves to pierce the corporate veil by holding the shareholders liable for the salary portion of corporate debts. (12)
Section 630 of the NY Business Corporation Law states in part that:

(a) The ten largest shareholders, as determined by the fair market value of their beneficial interest as of the beginning of the period during which the unpaid services referred to in this section are performed other than shares of which are listed on a national securities exchange shall jointly and severally be liable for all debts, wages or salaries due and owing any of its laborers, servants or employees. (13)

Consider this when deciding whether or not to invest in a company in which you will not have a management or supervisory role. If you were to blindly invest in a corporation, and wages or salaries were not paid, if you were one of the ten largest shareholders you would be personally liable for the total wages due.

Perpetuation of fraud by use of a corporate vehicle: A corporation may not be used as a vehicle to fraudulently avoid liability. (14) Transfers made without fair consideration to render a transferor insolvent (15); or without fair consideration to render a business person with reasonably small capital (16); or before a pending action for money damages or after a judgment (17), or with intent to defraud present and future creditors (18) are void. If a corporate structure is used to perpetuate any of the above, the court may pierce the corporate veil and rule that the house was part of the debtor’s bankruptcy estate and would be used to satisfy the debtor’s outstanding debts.

Failing to ratify pre corporate contracts: A business owner may conduct business on behalf of a corporation before the corporation is formed. For example, you may enter into a lease for office space where the corporation is to conduct its business, prior to a Certificate of Incorporation being issued and the initial shareholder meeting being held. An individual who acts on behalf of a corporation yet to be formed is known as a promoter.

Unless the parties agree otherwise, a promoter is liable for contracts entered into prior to corporate formation. (20) A promoter is viewed as an agent acting for a principal that does not yet exist. (21) By acting for the non-existent principal, the promoter assumes liability. (22)

Once a corporation is formed, it may adopt the contract and be concurrently liable with the promoter. (23) However, the promoter remains personally liable unless the corporation and third party agree to release the promoter from liability. (24) Promoters should therefore make
every effort to put a third party on notice that the promoter is only acting on behalf of a corporation and that the 3rd party will not hold the promoter personally liable.

**The mere formation of a corporation is not an absolute liability shield.**

**Conclusion**

Business owners are told to incorporate in order to protect their personal assets. However, the mere formation of a corporation is not an absolute liability shield. Owners must conduct business through the corporation and respect all corporate formalities. Shareholders must act in good faith and use the corporation to protect their assets and not as a vehicle to defraud creditors and those would have legitimate claims against the business.

**Note:** The preceding is for factual information only and should not be construed as legal advice. No one should ever try to interpret one of the issues discussed above without the assistance of an attorney.

**References**


(13) New York Business Corporation Law § 630


(15) *Debtor & Creditor Law 273*

(16) *Debtor & Creditor Law 274*

(17) *Debtor & Creditor Law 273-a*

(18) *Debtor & Creditor Law 276*


Entrepreneurs, Investors, and Equity Financing: A Resource-Economic Analysis

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Executive Summary

High technology start-up firms are key drivers of the innovation that is necessary for modern economic growth and development. Entrepreneurs of such companies often seek external capital in order to fund early-stage research and development, to ramp up production, or to expand product lines and service offerings. Venture capital is a well-known source of such capital, but to attract this type of investment, entrepreneurs (and any other existing owners) must give up equity in order to obtain the financing. How much equity must an entrepreneur yield to a venture capitalist in order to secure the necessary capital to grow her business?

In this paper, we develop a rigorous conceptual framework for analyzing this question, by considering the determinants of the "ownership share", a quantitative measure of the equity sacrificed by the entrepreneur. (It is defined as the amount of capital raised, divided by the post-money valuation of the financing round.) We motivate our approach using the existing theoretical and empirical literature on entrepreneurial finance. One advantage of our model is that it enables a rigorous conceptualization of how the ownership share (a form of equilibrium price) might emerge from the interaction between entrepreneurs and investors. Comparative-static analysis of the equilibrium price function then illustrates how this share should vary with important factors relevant to investor-entrepreneur interaction: investor costs, the firm’s profitability (consumer demand), entrepreneurial productivity, and initial entrepreneurial wealth.

Our findings were intriguing and included two surprising results. The model clearly and as expected indicates that that the ownership share should be:

• directly related to investor costs (i.e., if the venture capitalist [VC] faces higher costs, the entrepreneur has to give up more equity to obtain financing), and

• inversely related to initial entrepreneurial wealth (wealthier entrepreneurs have to give up less equity to VCs).

Two other results, however, are somewhat counter-intuitive in that theoretically ambiguous expectations surround both product price and entrepreneurial productivity. We call for further research to help resolve their impact on ownership share. Finally, the model also illustrates how some of these

Entrepreneurs typically surrender a share of ownership or control of their start-ups to investors in return for financing and other assistance.

I. Introduction

When an entrepreneur and an investor form an equity-financing arrangement, what factors influence the formation and magnitude of the equilibrium ownership share yielded to the investor? To address this question, we develop an economic model of the interaction between entrepreneurs and investors that illustrates the formation of this share in an early-stage, private-equity environment. Entrepreneurs fundamentally require equity financing to obtain productive resources, such as specialized labor and capital. Against this backdrop, we derive several comparative statics of variation in the equilibrium share, results that provide a resource-economic explanation for many empirical patterns frequently observed, but seldom formally modeled, within the entrepreneurial finance literature. The results also serve as testable hypotheses for future empirical research.

II. The Model

Investors potentially make equity financing available, and entrepreneurs seek it out. To analyze these activities, we take a static modeling approach similar to that of Kanniainen and Keuschnigg (2004), who also studied equilibrium in a stylized private-equity market with entrepreneur-investor interaction. We specifically work to formalize the equilibrium ownership share resulting from this interaction.

A. The Entrepreneur

To operate and create value for herself, potential investors, and the overall economy, the hypothetical entrepreneur requires access to productive resources. Private equity financing, such as that potentially available from venture capitalists, assists entrepreneurs in acquiring and further developing these resources. Recognizing this, we model the entrepreneur’s problem as a resource-employment decision. ¹

At any stage of a start-up firm's development, and thus at any financing round, a profit-maximizing entrepreneur markets some product, with quantity \( Y \), and charges unit price \( P \). Functionally, these become \( Y = Y(x(q)) \) and \( P = P[Y(x)] \), respectively. In the output function, \( x \) represents a vector of productive resources (including most importantly the entrepreneur's own skills) required to produce \( Y \). We retain the classical assumption of diminishing marginal productivity of resources, so that \( \frac{\partial^2 Y}{\partial x^2} < 0 \). To obtain access to resources, the entrepreneur requires equity financing, \( q \), and so we specify \( x \) functionally as \( x = x(q) \), capturing the entrepreneur’s derived demand for productive resources; the marginal effect \( \frac{\partial x}{\partial q} > 0 \) captures the extent to which equity financing influences entrepreneurial resource demand. We assume linearity of resource demand, so that \( \frac{\partial^2 x}{\partial q^2} = 0 \). We also assume that the entrepreneur possesses some market power in the sale of her product, and so we specify \( P \) as a function of \( Y \). Define \( s = s(x; \omega) \) as a vector of resource prices, where marginal resource cost \( \frac{\partial s}{\partial x} > 0 \) and \( \omega > 0 \) captures exogenous factors that increase costs, such that \( \frac{\partial^2 s}{\partial x \partial \omega} > 0 \). As examples, \( \omega \) might capture the state of entrepreneurial taxes, government regulations, or circumstances prevalent in resource markets that exogenously influence production costs.

Entrepreneurs typically surrender a share of ownership or control of their start-ups to
investors in return for financing and other assistance. This mechanism reinforces the incentive for entrepreneurs to engage in activities that contribute to the well-being of the firm, and by extension to investors' returns, and creates a disincentive for entrepreneurs to pursue exclusively self-serving activities. Define $\theta$ as the profit share ($0 < \theta < 1$) potentially offered an investor in return for this assistance. Let $\pi_e$ represent the start-up firm's economic profit whereby $\pi_e = P(Y) Y[x(q)] - s(x) x$. Then $Z_e = (1 - \theta) \pi_e$ represents the entrepreneur's total profit; expanding this, $Z_e = (1 - \theta) \{P(Y) Y[x(q)] - s(x) x\}$. The entrepreneur seeks to employ resources $x$ that maximize $Z_e$, implying the first-order condition $\partial Z_e / \partial x = 1 - \theta \{P(Y) + (\partial P / \partial Y) Y[\partial Y / \partial x] - [(\partial s / \partial x) x + s(x)]\} = 0$. Here $P(Y) + (\partial P / \partial Y) Y[\partial Y / \partial x]$ represents the marginal revenue product of the resources $x$, or $\text{MRP}_x$. Solving this condition for $x$, we obtain $x* = \{P(Y) + (\partial P / \partial Y) Y[\partial Y / \partial x] - s(x)\} / (\partial s / \partial x)$. The entrepreneur faces a budget (liquidity) constraint that limits the amount she can spend on productive resources. For simplicity, suppose the entrepreneur employs two inputs: labor ($L$) and physical capital ($K$). She thus incurs labor costs $wL$ and capital costs $rK$, where $w$ and $r$ represent average costs of labor and capital, respectively. Define $V (\geq 0)$ as the existing (i.e., pre-money) wealth possessed by the entrepreneur, independent of any external financing. Whatever the value of $V$, the entrepreneur now seeks additional financial resources from an investor. The entrepreneur’s pre-money budget constraint is $V = wL + rK = sx$. Equity financing slackens the constraint so that $q + V = wL + rK = sx$, where $q$, as above, represents the total monetary value of equity financing. Substituting $x*$ into the constraint and solving for $q$ yields

$$q_e = \frac{\left(\frac{P(Y) + (\partial P / \partial Y) Y[\partial Y / \partial x] - s(x)}{\partial s / \partial x}\right) - V}{s}$$

representing the entrepreneur’s demand for private-equity finance.

Inspection of (1) reveals how entrepreneurial demand for equity finance varies with key exogenous factors, consistent with intuition and earlier research. Variation in entrepreneurial product price, capturing variation in consumer demand, affects private-equity demand according to $\partial q_e / \partial P = (\partial Y / \partial x) / (\partial s / \partial x) > 0$. This indicates that relatively stronger consumer demand translates to relatively stronger demand for entrepreneurial finance, other things equal; Gompers and Lerner (2000) and Jeng and Wells (2000) have linked consumer demand to the state of macroeconomic activity and to the presence of technology “bubbles” in this context. We also see an inverse relationship between entrepreneurial costs and the demand for equity financing. Such costs vary exogenously through $\omega$, such that $\partial q_e / \partial \omega = [(\partial s / \partial \omega) (\partial s / \partial x) [\text{MRP}_x - 2] - \partial^2 s / \partial x \partial \omega [s(\text{MRP}_x - s)] / (\partial s / \partial x)^2$. This effect is intuitively negative if $\text{MRP}_x > s$, i.e., if entrepreneurial resources are sufficiently productive at the margin to justify their marginal cost of employment, implying the essential viability of the start-up firm. As Poterba (1989) discusses, entrepreneurial costs may take the form of capital gains taxes, higher rates of which can discourage entrepreneurial activity in general and reduce the demand for investor funding. Entrepreneurs may also exhibit lesser demand for equity finance when facing higher costs associated with labor-market rigidities. Jeng and Wells (2000) suggest that the presence of rigidities in Germany and Japan may have contributed to the minimal presence of venture capitalist markets in those countries. We also see a predictably inverse relationship between pre-money wealth ($V$) and equity finance demand.

**B. The Investor**

The investor’s objective function is $Z_i = \theta \pi_e - c(q; t)q$; that is, the investor will
receive $\theta$ percent of the entrepreneur’s profit, which at a given financing round may or may not exceed zero. In this function, $c = c(q; t)$ represents the investor’s average cost of making financing and other services available, and $t$ represents the stage of financing. Following Kanniainen and Keuschnigg (2004), we assume $\frac{\partial c}{\partial q} > 0$, indicating that investor costs increase with the level of financing. In light of prior research on the phenomenon of staged financing, discussed below, we further assume $\frac{\partial^2 c}{\partial q \partial t} < 0$, indicating that the marginal cost of financing declines at latter stages of financing.

Investors in general and venture capitalists in particular often engage in value-adding activities that incur both direct and opportunity costs. They incur direct costs in the allocation of physical capital and labor (including their own efforts) aimed at monitoring, professionalization, and other support activities. They incur opportunity costs to the extent that they forego other investment opportunities in order to finance and work with a particular entrepreneur’s project (see Gompers 1995, Jeng and Wells 2000, and Manigart et al. 2002). Gompers (1995) also suggests that later-stage start-up firms incur lower agency costs. These observations and possibilities motivate our assumptions about the properties of the investor cost function.

The investor seeks to allocate to the entrepreneur equity financing $q$ that maximizes $Z_i$, implying the first-order condition $\frac{\partial Z_i}{\partial q} = \theta P(Y) \frac{\partial Y}{\partial x} \frac{\partial x}{\partial q} - \left[ \frac{\partial c}{\partial q} q + c(q) \right] = 0$. Solving for $q$, we obtain

$$q_i^* = \left[ \frac{\theta P(Y) \frac{\partial Y}{\partial x} \frac{\partial x}{\partial q} - c(q; t)}{\frac{\partial c}{\partial q}} \right],$$

interpretable as the investor’s private-equity supply function. As Kaplan and Strömberg (2003) discuss, investors frequently make funding contingent on measurable performance by the start-up. Thus, we stipulate that, at any financing stage, $q_i^* > 0$ only if $Z_e \geq Z_e^*$, where $Z_e$ represents a threshold level of start-up profitability. As early-stage start-ups seldom earn positive profit, in practice $Z_e$ and $Z_e^*$ tend to be negative at early stages. Logically $q_i^*$ has a lower bound of zero at any financing stage.

**Investors frequently make funding contingent on measurable performance by the start-up.**

Inspection of (2) reveals several relationships frequently discussed in entrepreneurial finance research pertaining to the supply side of equity-finance markets. Note that $\frac{\partial q_i^*}{\partial \theta} = P(Y) \frac{\partial Y}{\partial x} \frac{\partial x}{\partial q} \left[ \frac{\partial c}{\partial q} \right] > 0$, suggesting that equity financing varies directly with the share offer, a connection illustrated by Megginson and Weiss (1991). Variation in entrepreneurial product price affects $q_i^*$ according to $\frac{\partial q_i^*}{\partial P(Y)} = \theta P(Y) \frac{\partial Y}{\partial x} \frac{\partial x}{\partial q} \left[ \frac{\partial c}{\partial q} \right] > 0$, indicating that greater consumer demand encourages greater equity financing, other things equal. As Gompers (1995) discusses, we might especially observe this phenomenon in the context of “growth” industries, as relevant during the Internet boom of the 1990s. Equity financing varies with the financing stage according to $\frac{\partial q_i^*}{\partial t} = \frac{\left[ \frac{\partial^2 c}{\partial q \partial t} \right]}{\frac{\partial c}{\partial q}}$, which has sign pattern $(+)$, consistent with greater financing occurring at latter stages. This will prevail if factors positively related to consumer demand, entrepreneurial productivity, and the derived demand for resources have sufficient magnitude to exceed the investor cost $c$. Such factors contribute directly to the startup’s financial viability, facilitating higher returns for investors. Given the assumed relationship between investor costs and staging, the result also conforms to Gompers’ (1995) suspicion that this will occur to the extent that “later stage companies [are]
Entrepreneurs, Investors, and Equity Financing: A Resource-Economic Analysis

associated with lower agency costs.” It further formalizes the empirical finding whereby later-stage firms receive larger investment amounts than earlier-stage firms.

C. Market Equilibrium and Comparative Statics

That hypothetical variation in the demand for and the supply of equity financing occurs in intuitive ways, consistent with extant literature, suggests that this model offers a reasonable analytical approach to studying the market for equity finance. But our central analytical concern relates to the equilibrium profit share that prevails in this market and how it might vary with certain exogenous factors. Equilibrium occurs when the investor offers equity financing equal to that desired by the entrepreneur, occurring at a single share level offered by the entrepreneur and sought by the investor. Equating $q_e^*$ and $q_i^*$ and solving for $\theta$ yield

\[ \theta^* = \frac{c(q_t) + s}{P(Y)(\partial Y / \partial x)(\partial x / \partial q)} \]

representing the equilibrium share. As Inderst and Müller (2006) discuss, many capital-market factors can impact this share. We examine how $\theta^*$ varies with investor costs, entrepreneurial product price, entrepreneurial productivity, and pre-money wealth.

1. Investor Costs

Investor costs influence the equilibrium share according to $\partial \theta^*/\partial c = 1/[P(Y)(\partial Y/\partial x)(\partial x/\partial q)]$. The denominator of this expression contains only positive components: entrepreneurial product price, the marginal product of resources, and the strength of the entrepreneur’s derived demand for those resources. Thus, $\partial \theta^*/\partial c > 0$, indicating that higher investor costs translate to a higher equilibrium profit share.

As discussed earlier, an investor may incur either direct or opportunity costs. In the latter context, Manigart et al. (2002) suggest that less diversified (i.e., more specialized) investors, who forego more alternative investments, may require higher returns for their involvement in a given start-up firm. In principle, the greater the investor’s expertise in specialized areas, the greater the value of his time and the greater the cost of making equity financing available. Furthermore, the presence of alternative ventures may give an investor additional leverage to negotiate a higher share. In this context, Kaplan and Schoar (2005) note that “a startup would be willing to accept [terms more favorable to VCs] if some investors provided superior management, advisory, or reputational inputs.” This comparative static also illustrates how greater investor market power might impact the equilibrium share. If a relative absence of competitive investors makes a given investor a less efficient provider of funds and services than in the presence of greater competition, greater market power may translate to inflated investor costs and a larger share. Future empirical analysis of these comparative static’s might investigate how opportunistic behavior by investors affects the equilibrium share.

2. Entrepreneurial Product Price (Consumer Demand)

Entrepreneurial product price influences the equilibrium share according to

\[ \frac{\partial \theta^*}{\partial P} = \frac{s}{[P(\partial Y/\partial x)(\partial x/\partial q)]^2} \left( \frac{\partial Y}{\partial q} \right)^2 + sY \frac{\partial c}{\partial q} - c(q) \]

While the denominator of (4) is positive for reasons observed earlier, the numerator may take on any sign, giving $\partial \theta^*/\partial P$ an ambiguous sign. A higher product price implies relatively healthier consumer demand; Jeng and Wells (2000) capture this empirically by examining
the state of the macroeconomy that surrounds entrepreneurial activity. As illustrated earlier, healthier consumer demand increases the entrepreneur’s demand for financing, exerting upward pressure on the ownership share the entrepreneur willingly yields. But because greater consumer demand alternately affords the entrepreneur more revenue to self-finance her resource employment, she would require lesser external financing and could retain a greater share, exerting downward pressure on $\theta^*$. As observed earlier in the context of equity-finance supply, a higher product price also would encourage greater funding by investors, also contributing to a lower share. The ambiguous sign of $\partial \theta^*/\partial P$ illustrates how the role of consumer demand, however measured, becomes a key empirical question in entrepreneurial finance research.

3. Entrepreneurial Productivity

We can write the entrepreneur’s production function as $Y = Y(x; \lambda)$, where $\lambda > 0$ captures exogenous determinants of the marginal productivity of resources such that $\partial Y/\partial x > 0$ and $\partial^2 Y/\partial x \partial \lambda > 0$. For example, $\lambda$ might capture the pre-existing skills, training, or experience of the entrepreneur or her workforce. Exogenous variation in entrepreneurial productivity affects the equilibrium share according to

$$\theta^* = \frac{\partial^2 Y/\partial x \partial \lambda}{\partial^2 Y/\partial x \partial \lambda + \partial^2 Y/\partial x \partial q} \cdot \frac{\partial Y/\partial x}{\partial q} \cdot \frac{\partial q}{\partial \lambda}$$

As with entrepreneurial product price, and for similar reasons, variation in entrepreneurial productivity exerts an ambiguous marginal effect on $\theta^*$. To the extent that greater productivity encourages entrepreneurs to seek financing, a possibility implied by the equity-finance demand function, an entrepreneur may willingly yield a greater share of profit to an investor. However, that greater entrepreneurial productivity can create higher returns that facilitate self-financing, exerting downward pressure on $\theta^*$.

The conceptual ambiguity aside, empirical evidence from earlier studies does suggest the latter outcome, an inverse relationship between entrepreneurial productivity and ownership share. Kaplan and Strömberg (2003) found that a smaller intra-firm mix of intangible, human-capital assets—greatly associated with the unique skills of the firms’ founders—resulted in lesser venture-capitalist control. Similarly, Hsu (2004, p. 1835) observed that “high quality entrepreneurs have their own reputations and established networks, which [may] obviate the need to pay a premium to access capital” from external funding sources. In principle, one can investigate this relationship further with the aid of data capturing the entrepreneur’s own resources and abilities.

This comparative static also helps us understand how a shakeup in a start-up firm’s management team might affect the equilibrium share. As a small firm leaves the early stages of development and begins actual marketing and production, the need for entrepreneurs to be efficient (i.e., exhibit greater marginal productivity) at management grows in relative importance while the need for entrepreneurs to be efficient at innovation declines. If especially high-tech entrepreneurs have comparative advantages in innovation, the pattern $\partial \theta^*/\partial \lambda < 0$ ironically can reflect declining overall entrepreneurial productivity, possibly motivating investors to replace the founders with professional managers who have more experience in the day-to-day operation of a maturing firm.

4. Pre-Money Entrepreneurial Wealth

Pre-money wealth influences the equilibrium share according to

$$\partial \theta^*/\partial V = -\frac{s(\partial c/\partial q)}{P(Y)(\partial Y/\partial x)(\partial x/\partial q)} < 0,$$

suggesting that greater such wealth contributes to a reduced share. Pre-money wealth from
Entrepreneurs, Investors, and Equity Financing: A Resource-Economic Analysis

“...a startup would be willing to accept [terms more favorable to venture capitalists] if some investors provided superior management, advisory, or reputational inputs.”

Kaplan and Schoar (2005)

early-stage angel or familial sources facilitates greater self-financing and a lower surrendered share. One can test this hypothesis using data capturing the presence of such wealth within a sample of entrepreneurs or startups.

D. The Role of Financing Stage

Our model finally allows us to examine how variation in financing stage might impact the equilibrium share; it does so directly, as a first-order factor, and indirectly, as a second-order factor impacting other comparative statics.

The derivative $\frac{\partial \theta^*}{\partial t} = (\partial c/\partial t)/(P(Y)(\partial Y/\partial x)(\partial x/\partial q))$ captures how the share varies by financing stage as a direct effect, independent of other marginal effects. Because $\partial c/\partial t < 0$ and the denominator is positive, $\partial \theta^* / \partial t < 0$, indicating a declining share at latter stages. Intuitively, because agency, information-gathering, and other costs relevant to a particular start-up generally decline with successive stages, the investor increases financing, as illustrated earlier in relation to equity-finance supply. One can investigate this direct effect empirically by incorporating data indicating the stage of financing alongside data on the equilibrium ownership share.

Financing stage exerts a somewhat more complex indirect influence on $\theta^*$, functioning through other important effects. Consider how the effects of variation in entrepreneurial product price and productivity vary by financing stage. Differentiating Equation (4) with respect to $t$, we obtain

\[
\frac{\partial^2 \theta^*}{\partial P \partial t} = \frac{\partial Y/\partial q}{P(\partial Y/\partial x)} \left[ \frac{\partial^2 c}{\partial x \partial q} \left( \frac{P(\partial Y/\partial x) - [MRP_i - s(x)]}{\partial s/\partial x} + V \right) \right] \left( \frac{\partial Y/\partial q}{P(\partial Y/\partial x)(\partial x/\partial q)} \right)^2.
\]

These second-order impacts have ambiguous signs that depend on the signs of the first-order effects $\partial \theta^* / \partial P$ and $\partial \theta^* / \partial \theta$, respectively.

The intuition and economic meaning of these possible signs become clearer if we examine their implications graphically.

Exhibit 1 (Panel A), on page 123, depicts the impact of variation in entrepreneurial product price on equity-finance demand ($q_e$) and supply ($q_i$). Given stronger consumer demand, entrepreneurs exhibit greater equity-finance demand ($q_{e1}$ to $q_{e2}$), consistent with $\partial q_e^* / \partial P > 0$, observed earlier. Variation in $P$ motivates investors to make greater equity financing available ($q_i1$ to $q_i2$), consistent with $\partial q_i^* / \partial P > 0$, also observed earlier. To illustrate, suppose $\partial q_i^* / \partial P > \partial q_e^* / \partial P$, so that the equilibrium share declines from $\theta^*_1$ to $\theta^*_2$. The opposite possibility, $\partial q_i^* / \partial P < \partial q_e^* / \partial P$, would result in a higher equilibrium $\theta$. The two possibilities reflect the fundamental ambiguity of the sign of $\partial \theta^* / \partial P$, established earlier.

Variation in financing stage, $t$, affects the magnitude by which $\theta^*$ will rise or fall due to the variation in $P$. If $\partial \theta^* / \partial P \partial t < 0$, then the $\theta$-dissipating effect depicted in Exhibit 1A declines at later stages. That is, the premium the entrepreneur receives in the form of a lower share surrendered—here associated with stronger consumer demand—would decline at later stages. If $\partial \theta^* / \partial P \partial t > 0$, then this $\theta$-dissipating effect would increase at later stages; the entrepreneur’s premium would gain strength. Assuming investor marginal
costs decline at later stages, one might more confidently expect the latter possibility to hold: the relatively lesser marginal costs would encourage greater equity-finance supply, exerting downward pressure on \( \theta^* \). Similar effects and interpretations hold if we consider how variation in financing stage affects the impact of entrepreneurial productivity. Whether greater productivity facilitates a larger \( \theta^* \) or a smaller \( \theta^* \) (we cannot know ex ante, as shown earlier), \( \partial \theta^*/\partial t > 0 \) would imply that variation in financing stage reduces the entrepreneur’s premium, supporting a greater surrendered share, and \( \partial \theta^*/\partial t < 0 \) would imply that it reinforces it. These indirect effects highlight the importance of incorporating empirical interactions of the observable financing stage with measures of entrepreneurial product price and entrepreneurial productivity.

Analytically, variation in financing stage exerts a more definitive impact on the wealth-share relationship. The derivative \( \partial \theta^*/\partial V \) varies by financing stage according to \( \partial^2 \theta^*/\partial V \partial t = -s(\partial^2 c/\partial q \partial t)/P(Y)(\partial Y/\partial x)(\partial x/\partial q) \). Under the assumption that \( \partial^2 c/\partial q \partial t < 0 \), the denominator is positive, rendering \( \partial^2 \theta^*/\partial V \partial t > 0 \) unambiguously. As discussed above, \( \partial \theta^*/\partial V < 0 \), indicating that greater pre-money wealth facilitates a lower surrendered share, other things equal; \( \partial \theta^*/\partial V \partial t > 0 \) suggests a reinforcement of this effect at later financing stages.

Panel B of Exhibit 1 illustrates this effect graphically. Relatively wealthier entrepreneurs require less equity financing (\( q_{i1} \) to \( q_{i2} \)), exerting downward pressure on \( \theta^* \) (\( \theta^*1 \) to \( \theta^*1' \)) to the entrepreneur’s benefit. If investor marginal costs decline at later stages, the investor may respond by making greater financing available (\( q_{i} \) to \( q_{i2} \)), reducing \( \theta^* \) further (\( \theta^*1' \) to \( \theta^*2 \)) and reinforcing the initial effect \( \partial \theta^*/\partial V < 0 \). To investigate these effects empirically, one would similarly incorporate interactions between the financing stage and measures of pre-money entrepreneurial wealth.

Because greater consumer demand alternately affords the entrepreneur more revenue to self-finance... she would require less external financing and could retain a greater share...

III. Conclusion

To investigate key aspects of the interaction between entrepreneurs and investors, we developed a static economic model of a stylized private equity market, emphasizing resource acquisition as an essential entrepreneurial motivation. The model enables a rigorous conceptualization of the equilibrium price (ownership share) that might emerge from this interaction. Comparative-static analysis of the equilibrium price function then illustrated how this share varies with important factors relevant to investor-entrepreneur interaction: investor costs, entrepreneurial profitability, entrepreneurial productivity, and initial entrepreneurial wealth. The model also illustrates how some of these relationships become sensitive to the stage of financing, directly and indirectly, and overall provides a formal conceptual setting for future empirical research of the equity-financing process.
Exhibit 1. The Role of Financing Stage

References


Kanniainen, Vesa, and Christian Keuschnigg.  


**Endnotes**

1 This approach to entrepreneurial activity reflects a resource-based view of start-up firm activity, as exemplified by Chrisman (1999), Evans and Volery (2001), Hellman and Puri (2002), and others.

2 See, for example, Hellman and Puri (2000), Kaplan and Strömberg (2003), and Denis (2004).

3 The second-order condition requires that \( \frac{\partial^2 Z}{\partial x^2} = (1-\theta)[(\partial^2 Y/\partial x^2)(P + (\partial P/\partial Y)Y) + (\partial Y/\partial x)^2(\partial P/\partial Y) - x(\partial^2 s/\partial x^2) - 2(\partial s/\partial x)] < 0 \). We know that 1-\(\theta\) > 0.  Within the braces, \( \partial^2 Y/\partial x^2 < 0 \) because of diminishing marginal productivity, and \( [P + (\partial P/\partial Y)Y] \) represents the entrepreneur’s marginal revenue, which is positive.  All remaining subtracted terms within the braces are positive and all additive terms are negative.  Hence, the second-order condition holds, consistent with entrepreneurial profit maximization.

4 \( V \) essentially captures the entrepreneur’s initial resource endowment; as Hsu (2004) notes, heterogeneous entrepreneurs may well vary in these endowments.  The extreme case \( V = 0 \), an assumption in the model of Kanniainen and Keuschnigg (2004), would imply that the entrepreneur has no initial resource endowment; such an entrepreneur may have received no seed money from angels or family members, for example.

5 Note that for \( \partial q_e*/\partial \omega \) to be negative, the numerator of the derivative, as shown in the text, must be negative, implying that \( (\partial s/\partial \omega)(\partial s/\partial x)/((\partial^2 s/\partial x^2) \omega < s(MRP_x) - s(MRP_x - 2) \). By definition of its components, the left side of this inequality must be positive, and so for this inequality to hold, the right side must be positive.  But this implies \( s(MRP_x) - s > 0 \), requiring \( MRP_x > s \).

6 Many researchers have studied the relationship between taxation and entrepreneurial activity more generally.  See, for example, Bruce (2000, 2002), Gentry and Hubbard (2000), and Fölster (2002).


8 The second-order condition requires that \( \partial^2 Z/\partial q^2 = \theta P(Y)(\partial Y/\partial x)(\partial x) - (\partial^2 s/\partial q^2 - 2(\partial^2 s/\partial q^2) < 0 \).  By assumption, \( \partial^2 x/\partial q^2 = 0 \), eliminating the first term on the right side of this expression.  All remaining terms are negative, and so the condition holds, consistent with investor profit maximization.

9 Studying (2), \( q_e \) decreases, approaching its lower bound, as product price \( P \) (a direct indicator of eventual profitability) approaches 0, a relationship consistent with Gompers’ (1995, p. 1462) observation that investors “cut off financing if they learn negative information about [the firm’s] future returns.”

10 Equity-finance demand appears graphically vertical because of the absence of \( \theta \) as a functional argument in \( q_e \), as seen earlier (Equation 2).
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