

INVESTIGATIONS INTO THE UNDERPRICING OF SEASONED EQUITY OFFERINGS AND THE COST OF EQUITY

ANH DUC NGO

International Business Doctoral Program

APPROVED:

Oscar Varela, Ph.D., Chair

William B. Elliott, Ph.D.

Feixue “Faith” Xie, Ph.D.

Stephen Salter, Ph.D.

Benjamin C. Flores, Ph.D.
Dean of the Graduate School

Copyright ©

by
Anh Duc Ngo
2013

PREVIEW

Dedication

To my wife Hong Kim Duong and my sons Minh Duc Ngo and Hai Anh Ngo for their endless love, support and encouragement during my doctoral program.

To my parents, sisters, and brother for their love, encouragement, and unconditional support with my studies.

PREVIEW

PREVIEW

INVESTIGATIONS INTO THE UNDERPRICING OF SEASONED EQUITY
OFFERINGS AND THE COST OF EQUITY

by

ANH DUC NGO, MBA

DISSERTATION

Presented to the Faculty of the Graduate School of
The University of Texas at El Paso
in Partial Fulfillment
of the Requirements
for the Degree of

DOCTOR OF PHILOSOPHY

Department of Economics and Finance

THE UNIVERSITY OF TEXAS AT EL PASO

August 2013

UMI Number: 3594354

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



UMI 3594354

Published by ProQuest LLC (2013). Copyright in the Dissertation held by the Author.

Microform Edition © ProQuest LLC.

All rights reserved. This work is protected against unauthorized copying under Title 17, United States Code



ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

Acknowledgements

I am grateful to many people for their help and encouragement during my doctoral program. First and foremost, I extend my heartfelt gratitude to my dissertation advisor, Professor Oscar Varela. Your guidance, support, and encouragement have brought me to a new place in my academic life. Thank you.

I wish to thank my dissertation committee members Professors William Elliott, Feixue (Faith) Xie, and Stephen Salter for your guidance and support. Your critical comments and feedback were invaluable along every step of my dissertation. I am very grateful to Professor Zuobao Wei for your help and continuous encouragement.

I would like to express my great appreciation to the Ministry of Education and Training of Vietnam, Vietnam Government for awarding me a doctoral scholarship that lightened my financial burden which allows me to focus on the most important aspects of school, learning and doing research. My special thanks go to Dr. Robert Nachtmann, Dr. Timothy Roth, and Mr. and Mrs. Foster for selecting me as the first recipient of the Paul L. Foster and Alejandra de la Vega Foster Doctoral Fellowship which kept me focused on writing of my dissertation during the final year of my doctoral program. Thank you for your generosity and support.

I would very much like to thank the faculty, staff, and my fellow doctoral students in the Department of Economics and Finance, and College of Business Administration for their constant support and encouragement during my doctoral studies.

Finally, I thank Emerald Group Publishing Limited for generously granting me permission to re-publish our article entitled “Earnings Smoothing and the Underpricing of Seasoned Equity Offerings” previously published in the *Managerial Finance Journal*, Volume 38, Issue 9, 2012 as the first chapter in this dissertation.

Abstract

This dissertation consists of three separate but related essays investigating new determinants of the underpricing of seasoned equity offering (SEOs). It also examines new mechanisms and channels that affect the pricing of SEOs. The first essay examines the impacts of earnings smoothing on SEO underpricing. It aims to investigate whether earnings smoothing can add value to firms by reducing the degree of SEO underpricing. The findings show that smoothing earnings performance resulting from discretionary accruals is negatively related to SEO underpricing and improve earnings informativeness. This essay contributes specifically to the current literature on earnings smoothing by demonstrating that high quality firms that expect larger quantity of cash flow in the near future are more likely to actively smooth earnings via discretionary accruals before SEOs to reduce underpricing. The second essay explores the role of lines of credit in pricing seasoned equity offerings via market timing activities. This essay provides evidence that lines of credit, while not perfect substitutes for cash holdings, give firms the option to delay equity offerings until market conditions become more favorable, thereby creating value for current shareholders. Interestingly, these effects are not observed when firms are financially constrained. The third essay investigates the impact of covenant violations on SEO underpricing. It also directly quantifies the changes in implied cost of equity surrounding covenant violations. The results show that seasoned equity offerings are more underpriced after covenant violations. The findings show that firms that violate a covenant, on average, experience an 8.4 % increase in the implied cost of equity. This suggests that creditors may force violating firms to issue equity to lower leverage, thereby resulting in a higher degree of SEO underpricing through the SEO episodes.

Table of Contents

Acknowledgements.....	v
Abstract.....	vi
Table of Contents.....	vii
List of Tables	x
List of Figures.....	xi
Chapter 1: Introduction.....	1
Chapter 2: Earnings Smoothing and the Underpricing of Seasoned Equity Offerings.....	
2.1 Introduction.....	3
2.2 Related Literature and Motivation.....	7
2.3 Sample Description Methodology	9
2.3.1 Sample Construction and Offer Date Correction.....	9
2.3.2 Control Variables	11
2.3.3 Sample Description Methodology	14
2.4 Empirical Results Around SEO Episode	18
2.4.1 Univariate Tests	18
2.4.2 Multivariate Tests	19
2.4.3 Three Stage Least Squares (3SLS) Estimation Results	24
2.4.4 Cash Flow Volatility Versus Accrual Volatility.....	28
2.5 Empirical Results on Post-SEO Market Returns and Operating Performance	31

2.5.1 Post-SEO Stock Returns Performance	31
2.5.2 Post-SEO Operating Performance	32
2.6 Robustness Tests	35
2.7 Conclusion	38
Chapter 3: Lines of Credit, Market Timing, and the Underpricing of Seasoned Equity Offerings ...	
3.1 Introduction	40
3.2 Related Literature.....	44
3.3 Sample Description and Descriptive Statistics	47
3.3.1 Sample Construction.....	47
3.3.2 Descriptive Statistics.....	49
3.4 Methodology	51
3.4.1 Proxies for Market Timing Using Previous Mispricing Measures	51
3.4.2 Decomposing Market to Book Ratio Based on Rhodes-Kropf, Robinson, and Viswanathan (2005).....	53
3.5 Empirical Results	56
3.5.1 Lines of Credit and Probability of SEO Issuance	56
3.5.2 Misvaluation, Lines of Credit, and Market Timing	59
3.5.3 Lines of Credit and the Underpricing of Seasoned Equity Offerings	70
3.6 Robustness	74
3.7 Conclusion	74

Chapter 4: The Effects of Covenant Violations on the Implied Cost of Equity and the Underpricing of Seasoned Equity Offerings	
4.1 Introduction.....	76
4.2 Related Literature.....	79
4.3 Sample Selection and Descriptive Statistics	80
4.4 Models for Estimating the Implied Cost of Equity	85
4.5 Empirical Results	87
4.5.1 Impact of Covenant Violations on Implied Cost of Equity	87
4.5.2 Covenant Violations and the Propensity of Equity Issuance	92
4.5.3 Covenant Violations and the Underpricing of Seasoned Equity Offerings	96
4.6 Conclusion	101
Chapter 5: Summary and Conclusion	102
Appendix 1	104
Appendix 2	108
References	110
Vita.....	118

List of Tables

Table 2.1: Summary Statistics.	15
Table 2.2: Spearman Correlation	17
Table 2.3: Univariate Analysis.	20
Table 2.4: Multivariate Analysis.....	22
Table 2.5: Three-State Least Squares Estimation on the Relation between Earnings Smoothing and SEO Underpricing	27
Table 2.6: SEO Underpricing and Components of Earnings Volatility.....	30
Table 2.7: Post SEO Performance.	34
Table 2.8: Robustness Regression	36
Table 2.9: Robustness Regression (Continued).....	37
Table 3.1: Summary Statistics	49
Table 3.2: Logistic Regreession Analysis	57
Table 3.3: The Effects of Lines of Credit on Market Timing: Using BW and KT Timing Measures with KZ Index.....	62
Table 3.4: The Effects of Lines of Credit on Market Timing Using BW and KT Timing Measures with Atman Z-Score	65
Table 3.5: The Effects of Lines of Credit on Market Timing: Using RKRv Timing Measure with KZ Index	66
Table 3.6: The Effects of Lines of Credit on Market Timing: Using RKRv Timing Measure with Altman Z-Score and Ohlson O-Score	69
Table 3.7: The Effects of Lines of Credit on SEO Underpricing.	75
Table 4.1: Sample Selection Process	84
Table 4.2: Summary Statistics.	84
Table 4.3: Changes in the Mean of the Implied Cost of Equity.	88
Table 4.4: Changes in Implied Cost of Equity Capital Following Covenant Violations.....	90

Table 4.5: Changes in Implied Cost of Equity Capital Following Covenant Violations for Random Samples Based on the Propensity Score Matching Technique	91
Table 4.6: Logistic Regaression Analysis	95
Table 4.7: The Effects of Covelant Violations on SEO Underpricing.	100

PREVIEW

List of Figures

Figure 1: Timeline of Earnings Forecasts and Implied Cost of Equity Estimation.....	85
---	----

PREVIEW

Chapter 1

Introduction

This dissertation consists of three separate, but related essays that investigate the roles of earnings smoothing (essay 1), lines of credit (essay 2) and covenant violations (essay 3) on the underpricing of seasoned equity offerings and the cost of equity capital.

There is a vast literature on the determinants of SEO underpricing. Both the theoretical and empirical papers published thus far explain SEO underpricing based on uncertainty or information asymmetry between issuers and outside investors, price pressure effects, pre-offer price move and trading manipulation, transaction cost saving, and underwriter price practice (e.g., Corwin et al., 2003). Prior studies based on uncertain or asymmetric information have documented that the level of SEO underpricing is correlated with the level of information asymmetry between issuers and investors. In a theoretical paper, Rock (1986) showed that underpricing is necessary to ensure uninformed investors' participation in the new offerings. Without such compensation, uninformed investors would be less likely to purchase new shares, because, in most cases, issuers are believed to issue only overvalued stock, as shown in the pecking order model of Mayer and Majluf (1984). Beatty and Ritter (1986) found support for the positive relation between underpricing and ex ante uncertainty because of the winner's curse problem. Most empirical studies on SEO underpricing support the idea that underpricing is used as a mechanism to signal firm quality to outside investors under information asymmetry (Allen & Faulhaber, 1989; Baron, 1982; Benveniste & Spindt, 1989; Chemmanur, 1993). Along these lines, in the first two essays (chapter 2 and 3) I expand the current literature by examining two

new mechanisms that equity issuers can use to reduce their SEO underpricing via earnings smoothing and the use of lines of credit in fostering market timing activities.

More specifically, the first essay contributes to the current literature by investigating the effects of earnings smoothing on the underpricing of seasoned equity offerings. I find evidence that firms with a long period of earnings smoothing prior to SEOs are more likely high quality firms, which experience a lower degree of SEO underpricing. I also find that, based on the mean value for SEOs, such smoothing reduces underpricing by \$0.33 per share and increases the value of the average offering by \$1.65 million or 0.21 percent to the firm.

The second essay investigates the roles of lines of credit on SEO underpricing via market timing activity. I find that firms accessing lines of credit are more likely to actively time the market, because lines of credit, while not perfect substitutes for cash, give firms the option to delay equity offerings, thereby reducing the degree of SEO underpricing. Interestingly, these effects are not observed when firms are financially constrained.

The third essay (chapter 4) contributes to the current literature by quantifying the impacts of covenant violations on the implied cost of equity and on the pricing of post-covenant violation equity offerings. Using a unique dataset consisting of 1,045 first-time covenant violations from 1996-2011 of the US public firms and employing different models of implied cost of equity capital estimation, I find that firms that violate a covenant, on average, experience an 8.48% increase in the implied cost of equity capital. In addition, I also find a higher level of SEO underpricing for equity offerings conducted by violating firms during the period immediately following covenant violations. This suggests that creditors may require violating firms to issue equity to lower leverage, thereby resulting in a higher degree of SEO underpricing through the SEO episodes

Chapter 2

Earnings Smoothing and the Underpricing of Seasoned Equity Offerings¹

2.1 Introduction

This chapter examines whether high quality firms with persistent earnings smoothing before a seasoned equity offering (SEO) can add value by reducing the offerings' underpricing. It provides new evidence on the positive relation between earnings smoothing and firm value through SEO episodes, and its support of the view that earnings smoothing via discretionary accruals improves the informativeness of future earnings. Based on the mean values for SEOs, such smoothing reduces underpricing by \$0.33 per share and increases the value of the average offering by \$1.65 million or 0.21 percent to the firm. This is a substantial increase in value that can be obtained from a smoothing earnings' strategy that, while relatively simple, is costly for underperforming firms. The loss in value from underperformance is consequently more than just the reduced stock price for outstanding shares. It includes a substantial opportunity loss associated with any new financing obtained from equity offerings. Managerial opportunism and information revealing hypothesis have been used in the literature to motivate earnings smoothing. Managerial opportunism motives argue that managers use accruals to exploit information asymmetry, manipulating current earnings to achieve various benefits to themselves

¹ This chapter was previously published as a research article (co-authored with Oscar Varela) with the same title in the *Managerial Finance Journal*, Volume 38, Issue 9, pp.833-859 (2012). The material in this chapter was co-authored by Anh Duc Ngo and Oscar Varela. Anh Duc Ngo had primary responsibility for generating the original research ideas, collecting and cleaning data, and conducting empirical tests. Anh Duc Ngo was the primary developer of the conclusions that are advanced here. Anh Duc Ngo also drafted the first version of this chapter. Oscar Varela contributed to this chapter by refining the original ideas into testable research questions and revising all versions of this chapter. See Appendix 2 for an email granting copyright permission from Emerald Group Publishing Limited.

Note: This article (DOI 10.1108/03074351211248180) is © Emerald Group Publishing and permission has been granted for this version to appear in this dissertation. Emerald does not grant permission for this article to be further copied/distributed or hosted elsewhere without the express permission from Emerald Group Publishing Limited.

or their firms. Information revealing motives argue that managers smooth earnings to reveal information about the firms' future prospect. Both hypotheses have received support from a number of theoretical and empirical studies.

Studies supporting the hypotheses that managers are eager to stabilize their earnings in order to meet their bonus target or protect their job include the following. Bergstresser and Philippon (2006) document that managers whose compensation packages are sensitive to company share prices are more likely to lead their companies with higher level of earnings management. Fudenberg and Tirole (1995) construct a model to explain that managers use earnings smoothing as a vehicle to secure their job positions, and a series of studies, including Defond and Park (1997), have empirically supported this model.

Studies supporting the hypotheses that earnings smoothing can add value to firms by reducing information asymmetry include the following. Trueman and Titman (1988) provide evidence that high perceived earnings volatility increases the perceived risk of bankruptcy probability of the firms, hence its cost of external financing. Francis et al. (2006) examine the relation between cost of equity and seven attributes of earnings, including earnings smoothness, and find that earnings smoothness is negatively associated with cost of equity, even after accounting for cash flow volatility. Sankar and Subramanyam (2001) find that earnings smoothing can reveal managers' private information about future earnings, and conclude that there is information advantage to allowing reporting discretion when managers have private information beyond current earnings in a multi period framework. More recently, Tucker and Zarowin (2006) find that firms with earnings smoothing improve the use of current and past earnings in informing about future earnings forecasts leading to higher firm values. An

implication from their results is that earnings smoothing should result in value premiums, *ceteris paribus*.

In the present paper, using a sample of more than three thousand SEOs during the 21 year period 1989-2009, we find that smooth performance is negatively related to underpricing of seasoned equity offerings, such that smoothing via discretionary accruals adds value to firms by reducing the degree of SEO underpricing, while smoothing via cash flows does not.

Our findings are consistent with the results of recent studies on the effects of smooth performance on firm value. Graham et al. (2005) document that corporate managers perceived a positive market premium for lower earnings volatility, and Carter et al. (2006) find that the use of derivatives to stabilize earnings improves firm value. Roundtree et al. (2008) also find, using Tobin's Q as a proxy for firm value, that cash flow volatility has negative effect on firm value. However, in contrast to our findings, they also find that earnings smoothing via accruals does not add value.

Our findings that earnings smoothing reduces the degree of SEO underpricing lead us to also investigate whether the volatility of contemporaneous discretionary accruals convey information about future earnings, and through it, the underpricing of SEOs. The information revealing hypothesis suggests that earnings smoothing improves the informativeness of past and current earnings about future earnings. We consequently investigate the implications of this relationship for SEO underpricing and post-SEO performance for both groups of firms, namely high and low quality groups, consisting of firms with high and low levels of earnings smoothing, respectively.

Using a modified version of Jones (1991) model to estimate discretionary accruals, we find that the volatility of discretionary accruals is negatively associated with SEO underpricing,

whereas volatility of cash flow (over a five year period prior to the offer date) is not related to underpricing . These results are somewhat consistent with the findings of Subramanyam (1996), which show that discretionary accrual returns are positively associated with future earnings, and convey information about firms' future prospects. Our results are robust to several proxies for earnings smoothness, different estimation techniques, or various sets of control variables. We control for possible endogeneity problems by using three stages least squares (3SLS) and a system of simultaneous equations. The results obtained from 3SLS also support our results. We also re-examine our results by using different proxies of earnings smoothing, including the ratio of standard deviation of cash flows to standard deviation of net income, and the correlation between accrual and cash flows. Our results are robust to these sensitivity tests.

We examine future stock returns and operating performance for SEO firms by calculating portfolio-matched buy-and-hold (*BHAR*) and cumulative (*CARs*) abnormal returns for 6, 12, 18, and 36 months after the issuing year. The results show that firms with a higher level of earnings smoothing have higher *ROA* and *EPS* in every year over the three years following SEOs than those with a lower level of earnings smoothing. The differences in *ROA* and *EPS* between the two groups of firms are statistically significant. The findings are consistent with our prediction that only high quality firms, which anticipate high levels of future cash flows, are able to actively engage in smooth earnings over a long period of time prior to SEOs, thereby resulting in a lower degree of SEO underpricing through the SEO episode.

The remainder of this chapter is organized as follows. Section 2.2 provides related literature and motivation. Section 2.3 describes the research design and our SEO sample. Section 2.4 presents our empirical results around the SEO episode and Section 2.5 the empirical results

for the post-SEO stock returns and operating performance. Section 2.6 presents the results from various robustness tests. Section 2.7 concludes the chapter.

2.2 Related Literature and Motivation

Research supporting the managerial opportunism hypothesis shows that managers may smooth earnings to meet the bonus target (Healy, 1985), to protect their job (Arya et al., 1998), and/or to inflate earnings before exercising stock options (Bergstresser and Philippon, 2006). Those supporting the information revealing hypothesis show that firms smooth earnings to lower their cost of equity and risk perceptions of investors, and signal high future performance and high quality of earnings.

Theoretical models have attempted to explain why smooth earnings help reveal information about firms' future prospects. Channey and Lewis (1995) develop a model in which high quality firms convey their future earnings through smooth earnings. They show that, with asymmetric information, high quality firms inflate income in their financial reports more than low quality firms and that the former smooth earnings whereas the latter do not. In this model, high quality firms bear the cost of over reporting current period income via a tax burden to separate themselves from low quality firms, given that low quality firms are presumed unable to bear this burden. Only high quality firms can reveal information about future earnings by smoothing earnings. Ronen and Sadan (1981), using Spencer's (1973) signaling framework, also argue that high quality firms with good future prospect are more likely to smooth their earnings in order to reveal their quality. This is not to say that low quality firms may not also inflate earnings before some specific corporate events such as mergers and acquisitions, but rather that they are unable to do so over a long period of time given their poor future earnings.

Graham et al. (2005) found that 97 percent of CFOs surveyed prefer smoothing earnings with the belief that they lower the cost of capital and lead to more precise analyst's earnings forecasts. Tucker and Zarowin (2006) find a positive association between the degree of earnings smoothing and future stock returns, and Rountree et al. (2008) find that investors place higher value, measured by Tobin's Q, on firms with smoother performance.

The existing literature suggests that the market can infer firm quality based on a firm smoothing its earnings over a number of years. The present research aims to see if this prospect can payoff for these firms when they engage in SEOs. We hypothesize that managers of high quality firms with long historical smooth performance are more likely to push up the offer price to maximize proceeds from equity offerings, such that firms with smooth earnings are more likely to experience a lower degree of SEO underpricing episodes, compared with firms that do not.

The SEO underpricing literature is extensive. Corwin (2003) finds that SEOs are more underpriced for firms with high price uncertainty and bigger offer sizes. Kim and Shin (2004) find, investigating short selling and underpricing, that offer discounts are negatively related to underwriter rank and positively related to return volatility and underwriter spread. Cotton et al. (2004) documents that price stabilization is negatively associated with trading volume, offer price, and return variance.

More recently, Kim and Park (2005) examine the relation between earnings management by SEO firms and their offer prices. They find that SEO firms that aggressively manage earnings are also more likely to push up their offer prices and reduce the degree of underpricing. But in contrast to the present research, they do not test for the relationship between earnings smoothing and SEO underpricing. The longer term dimension of earnings smoothing suggests that it may be

reasonable to believe that firms that smooth rather than manage earnings may have better longer-term prospects. Therefore we also test, beyond Kim and Park (2005), whether firms that engage in long-term earnings smoothing prior to SEOs have higher stock returns and operating performance in the three years after the SEOs, compared to those that do not or that engage in shorter-term window dressing by managing earnings (before SEOs). This additional test aims to disentangle alternative explanations of managerial opportunism versus information effectiveness for long term earnings smoothing absent in Kim and Park (2005).

Indeed, the effects of smoothing performance on underpricing through SEO episodes have not received much attention. To our knowledge, no empirical research to date directly examines the relation between smooth performance and SEO underpricing. The objective of this chapter is to fill this gap in the literature using a large sample of seasonal equity offerings from the last two decades, and provide new evidence on the determinants of SEO underpricing.

2.3 Sample Description and Methodology

In this section, sample construction and offer date correction are discussed.

2.3.1 Sample Construction and Offer Date Correction

The 1989-2009 sample of U.S. common stock seasoned equity offerings (SEOs) by non-regulated companies comes from the Securities Data Company's (SDC) New Issue Database. The sample excludes initial public offerings and issues by non-U.S firms, as well as utilities and financial firms. Only offerings after 1989 are considered because the 1987 SFAS No.95 mandated that firms provide cash flow statement in their financial reports.

The initial sample consisted of 6,859 offerings, with stock prices obtained from the Center for Research in Security Prices (CRSP) and accounting variables from Compustat. For an offering to enter the final sample, it was necessary that there be at least 8 quarterly accounting

data points prior to the SEO, 250 prior trading days and 12 prior monthly returns, and sufficient other data to compute discretionary accruals. All sample firms were listed on the NYSE, NASDAQ, or AMEX. The methodology section explains in more detail where missing values necessary for obtaining discretionary accruals required us to eliminate firms from the sample. The sample size after these restrictions and deletions consists of 5,108 offerings.

Ritter's reputation rank for each underwriter, obtained from Jay Ritter's website, supplements the data for our SEO sample². Ritter evaluates each underwriter's reputation based on scores ranging from 0 to 9 (highest quality). We use each SEO lead manager's name as the identifier to obtain the Ritter underwriter ranking scores. The merging process reduces the SEO sample to 3,156 offerings. Then, to avoid the effects of outliers, we winsorize the top and bottom 1 percent of the distributions of all variables. The final sample size consists of 2004 firms with 3,034 offerings.

Prior studies (Lease, Masulis, and Page (1991), Eckbo and Masulis (1992)) show that offer dates directly obtained from the SDC database are often inappropriate for analyzing the underpricing of SEOs due to the fact that some offers take place after the close of trading. For example, Lease et al. (1991) investigate the time stamp from the Dow Jones News Service (DNJS) and find that 25% of offers from 1981 through 1983 take place after the close of trading. To address this issue, researchers have corrected offer dates for their analysis by applying a volume based correction method. For example, Safieddine and Wilhelm (1996) apply this method and find that 18.4 % of offers during 1980-1991 required an offer date correction. Following their method, we adjust our sample offer date as follows: If trading volume on the day following the SDC offer date is (1) more than twice the trading volume on the SDC offer date,

² Jay Ritter website at <http://bear.warrington.ufl.edu/ritter/ipodata.htm>