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Signaling and proceeds usage for seasoned equity offerings

Abstract

Prior research of seasoned equity offerings (SEOs) offers sparse insight as to how the purpose of an SEO influences stock returns. We extend this research by examining short-run and long-run compounded abnormal returns for portfolios formed according to proceeds usage. We find announcement period returns consistent with signaling theories (such as Myers and Majluf, 1984) that predict less negative returns when firms use proceeds for debt reduction purposes. However, when we analyze a lengthier short-run period covering nearly a calendar month around an SEO, we discover that firms using proceeds for investment-related purposes perform better than those reducing debt. Surprisingly, firms performing the best for this lengthier short-run period use an SEO to sell shares for current owners. Because these SEOs involve greater insider selling, this finding offers evidence against signaling models based on Leland and Pyle (1977). For long-run tests, we find that SEOs done for investment-related purposes perform significantly better for all holding periods up to three years before SEOs and significantly poorer for all holding periods up to three years after SEOs. However, when we look at long-run periods surrounding SEOs, we find that stock price performance associated with the purpose of the offering depends on the holding period examined. For example, firms with investment-related purposes perform best for the two years around SEOs, firms raising funds primarily for selling shareholders perform best for the four years around SEOs, and firms using proceeds for debt reduction perform best for the six years around SEOs.

Keywords: use of proceeds, SEO, signaling theory.
JEL Classification: D82, G14, G32.

Introduction

This study explores the market response to seasoned equity offerings (SEOs). While analysis of SEOs has been abundant for about three decades, little has been done to examine how the use of proceeds (as stated in the prospectus) relates to stock price behavior. In this study, we fill in this gap in the research by using 1,290 SEOs from 1999 to 2005 to examine whether the stated purpose of the offering has a differential impact on stock value.

This study is motivated by the fact that the SEO research appears to ignore the use of proceeds when examining the market response that accompanies an SEO. Three reasons can be offered for this neglect. First, early studies (done on small samples) found no consistent difference in the stock market response based on the stated purpose of the equity offering. Second, the stated reason for proceeds usage cannot be trusted due to the indefinite and ambiguous language in which the reason can sometimes be couched. Third, any effect from the purpose on stock value is believed to be secondary compared to less concrete considerations such as asymmetric information signaling about overvaluation often associated with "timing" considerations.

We believe the latter timing reason is the main reason why the purpose of the offering has been neglected in the SEO research. However, this reason has recently been questioned. For example, the timing finding has been shown by DeAngelo, DeAngelo and Stulz (2007) to be dwarfed by liquidity needs required to fund investment outlays, satisfy debt service obligations, or avoid a dividend reduction. If liquidity needs dominate in motivating SEOs, then the use of proceeds should be examined to see how the market responds when the liquidity needs are expressed in terms of the stated purpose. In other words, if all SEOs really have the same motivation (be it a "liquidity needs" motivation or any motivation for that matter), then which purpose by itself has a greater impact on stock price? When we say a "more thorough" examination is needed, we mean examining more than just the conventional two or three day announcement period response. Due to the selling of large owners and hedge funds, it is necessary to conduct short-run tests that examine stock returns beyond these two or three announcement days. Our study attempts this type of examination by considering a short-run horizon that includes the ten days before and the ten days after the SEO announcement day. We also investigate long-run horizons for up to three years before and three years after the SEO announcement day.

When exploring the immediate three-day market response to SEOs, we find that firms using proceeds for investment-related purposes perform worse than those undertaking SEOs for either debt reduction purposes or secondary selling purposes that entails greater insider selling. The finding of a lower three-day announcement period reaction for debt reduction purposes is consistent with several prominent asymmetric information signaling theories that suggest debt reductions should signal less negative news. While firms raising funds for investment-

related purposes take a greater announcement period "hit", we find that these same firms perform better when we extend the short-run period beyond three days. For example, when we look at the 21 trading days (about a calendar month) surrounding SEOs, firms that raise money for investment purposes perform better than those using proceeds to reduce debt. Surprisingly, firms that use proceeds for the selling shareholders perform the best for the 21 trading days that surround SEOs.

When we examine longer periods surrounding SEOs, we find strong and consistent statistical evidence that firms undergoing an SEO for investment-related purposes perform better for up to three years before SEOs and worse for up to three years after SEOs. However, when we look at holding periods surrounding SEOs, we find no consistent evidence that any one purpose can be consistently linked to stock price performance. For example, whereas SEOs raising funds for investment purposes perform the best for the two years around an SEO, these SEOs perform worse for the six years around an SEO. From an investor's framework of maximizing profit, the chosen holding period would determine how the purpose might be related to stock price performance. In a sense, this result is consistent with the "liquidity" needs finding of DeAngelo, DeAngelo and Stulz (2007) in that all SEOs are ultimately done for a liquidity motive and so any grouping of SEOs should not be expected to consistently explain stock price performance for all holding periods.

We organize the remainder of our paper as follows. Section 1 gives background information on seasoned offering research and findings, while section 2 describes the sample. Section 3 offers descriptive statistics. Section 4 provides empirical results for short-run tests and section 5 gives long-run results. The last section presents summary statements and challenges to future research.

1. Background

This study covers the seasoned equity offering (SEO) line of empirical research. The SEO research has its origins in early short-run event studies such as Masulis (1983) and Asquith and Mullins (1986) who find negative announcement period returns. Masulis and Korwar (1986) and Mikkelson and Partch (1986) look at the purpose of the SEO but they can reach no general agreement about the relation between the purpose of the offering and the change in stock value at the time of the SEO announcement. However, their analysis is plagued by small sample sizes. Subsequent research has also not offered consistent evidence to indicate that the purpose of the offering is a factor in determining stock value. In fact, studies often focus on a sample with a common purpose. For example, Masulis (1983) concentrates on debt reductions and argues for a negative signaling effect. Like Masulis, Hull and Moellenberndt (1994) analyze debt reductions and offer a signaling explanation. However, they show that bank debt reductions generate more negative signaling than non-bank debt reductions because bankers are privy to insider information such that bank debt reductions can signal that bankers do not want to renew the bank debt. In looking at debt reductions, Hull (1999) shows that greater negative signaling is caused when firms move away from their industry debt-to-equity benchmarks. Johnson, Serrano and Thompson (1996) focus on SEOs undertaken strictly for investment purposes. They find that the market reaction at the issue announcement is significantly less negative for firms that experience insider buying just before the announcement as opposed to insider selling or passive management.

Like the short-run SEO research, the long-run SEO research is abundant. Spiess and Affleck-Graves (1995) document that firms making seasoned equity offerings during 1975-1989 substantially underperformed a sample of matched firms from the same industry and of similar size that did not issue equity. This underperformance suggests that managers are taking advantage of overvaluation in the SEO markets. Rangan (1998) offers evidence that the market overvalues equity shares prior to SEOs leading to disappointing and inferior post-SEO share price performance. Jegadeesh (2000) also investigates the long-run performance of SEO firms and finds that SEO stock prices significantly underperform a variety of benchmarks for long periods following the offering. This paper seeks to expand on this long-run SEO research by determining if the use of the proceeds impacts the long-run stock price performance.

The general consensus from the above research has been that SEOs signal negative news about stock overvaluation consistent with mainline signaling theories (Leland and Pyle, 1977; Myers and Majluf, 1984). The negative news about overvaluation stems from a "timing" motive (Loughran and Ritter, 1995; Baker and Wurgler, 2002) whereby the firm undergoes an SEO when the stock price is believed to be peaking. More recently, researchers (DeAngelo, DeAngelo and Stulz, 2007) have shown that firms are motivated by liquidity needs and this motive dominates a timing motive. In other words, firms issue equity when there is a need for cash. We can add that a need for cash can be associated with either a firm-specific purpose or a selling shareholder purpose. Despite a firm's motivation for its SEO, greater negative news should be signaled if there is more investor uncertainty and anxiety about the firm's motives for undergoing an SEO. The possi-

bility also exists that investor apprehension relates to the purpose of the offering. For example, should investors be more concerned about a firm signaling negative news for an investment related purpose, for a debt reduction purpose, or a selling shareholder purpose? This paper explores this question.

As a starting theoretical basis for exploring the purpose question, we can note that the asymmetric information signaling models based on Miller and Rock (1985) and Brennan and Kraus (1987) predict less negative returns for SEOs when cash proceeds are aimed at debt reduction. Myers and Majluf (1984) also suggest a less negative return when the issuance purpose involves a debt reduction. They construct their signaling theory on the notion that a firm only issues equity for a project when the project is inferior. For a good project, Myers and Majluf argue that a firm would issue debt if outside financing is needed. Thus, issuing equity to retire debt should be free from the negative signaling associated with a bad project. The implication is that a less negative response should occur for a debt reduction purpose as opposed to a non-debt reduction purpose. Trueman (1986) argues that management may be able to use the level of a firm's capital expenditures in a project to signal positive information. Thus, SEOs done for investment-related purposes can under certain circumstances mitigate a negative SEO response just like including a debt reduction purpose as part of the proceeds usage.

Like the Myers and Majluf (1984) signaling theory, the Leland and Pyle (1977) signaling theory is frequently identified with the negative market response for SEOs. Leland and Pyle consider the notion that it is the change in insider ownership percentage that influences the market response. Thus, if markets are efficient and insiders have information not known to the market, then how insiders change their ownership proportions at the time of a corporate event should dictate the immediate market response. In this paper, we seek to capture the effects of this theory by including SEOs where the purpose of the offering is to raise proceeds for selling shareholders as these SEOs have the greatest decrease in insider ownership percentages. A greater negative signaling for SEOs done for selling shareholders assumes that outsiders recognize this greater signaling. Clarke, Dunbar, and Kahle (2001) question outsider's ability to decipher and act on insider information. In particular, they examine insider trading surrounding security offerings and discover that the market fails to fully capitalize the information in the offering announcement and the contemporaneous insider trading. This finding as well as mixed empirical evidence on the impact of insiders (Gerard and Nanda, 1993; Lee, 1997; Ching, Firth, and Rui, 2006) suggest that tests are needed to further examine if the purpose of the offering tied to selling shareholders/insiders provides insight on the market response to SEOs.

2. Sample

For inclusion in our SEO sample an observation must pass the following screening criteria. First, it must announce its SEO in the *Investment Dealers' Digest* (*IDD*) from January 1999 through December 2005. The IDD serves to verify the completion of the offering as it reports performance of recently offered SEOs. Second, the observation must have trading data in the Center for Research in Security Prices (CRSP). Third, we must be able to get a prospectus that is filed with an SEO registration statement. Three web sites were checked so as to obtain prospectuses: (i) Thompson Financial, (ii) Edgar Pro, and (iii) the Security and Exchange Commission. Fourth, the prospectus must indicate a primary purpose for the offering in terms of one of three classifications: (1) cash for selling shareholders, (2) cash for investment-related purposes, and (3) cash for debt reduction purposes. This latter criterion requires us to delete observations when the prospectus is unclear as to the primary purpose of the offering or lists multiple possible purposes with none indicated as the likely primary purpose. After applying these screens, we are left with a sample of 1,290 SEOs. We compared these 1,290 SEOs with 1,015 observations that were deleted but still have CRSP data. For this comparison, we found similarities in both short-run and long-run returns. Thus, we conclude our sample has no selection bias caused by our selection process. For example, deletions of SEOs without prospectuses do not create a sample that will perform differently.

For both short-run and long-run return tests, we use the standard compounded abnormal return methodology (Mitchell and Stafford, 2000; Viswanathan and Wei, 2008) described in long-run studies where the holding period expected return is subtracted from the holding period raw stock return. Short-run compounded raw returns are computed by compounding daily returns for a chosen holding period, while long-run compounded raw returns are computed by compounding monthly returns for a designated holding period. Compounding (instead of cumulating) returns is needed to get holding period results that mimic what investors would earn by buying an asset at a point in time and then selling at a later date without withdrawals or additions other than reinvested cash flows (such as dividends) and without transaction costs.

To get the abnormal compounded return, we compute a compounded expected return for the same holding period computed for the compounded raw

stock return and then subtract this compounded expected return from the compounded raw return. For short-run returns, the expected return for each day is the return given using the traditional market model where alphas and betas are calculated using an equal-weighted exchange-based index to proxy for the return on the market. By "exchange-based" index, we mean the exchange on which the stock is traded: NYSE, AMEX or NASDAQ. The estimation period used to compute alphas and betas covers a six-year period from three years before to three year after the announcement date (day 0). For firms not traded over the full six years, we use whatever trading data is available. For long-run expected returns, we use the equal-weighted exchange-based index monthly return when compounding. The compounded holding period return (using this index) is used for the expected return.

One must be cautious in interpreting long-run results because long-run abnormal return methodologies are viewed with skepticism and sharp disagreements are found (Kothari and Warner, 1997; Barber and Lyon, 1997; Lyon, Barber, and Tsai, 1999; Mitchell and Stafford, 2000; Li and Zhao, 2006). As described later, our reported abnormal return results are robust for other abnormal return methodologies and similar even if we use raw returns. Due to problems with long-run abnormal return methodologies, the fact raw returns give similar results can be construed as giving more credence to our long-run findings. We believe the robustness of our findings for various abnormal return methodologies can be attributed to the nature of our comparative tests where the methodology used can be irrelevant since the comparison procedure can cancel out the effects of the methodology used to compute the expected return. For example, consider portfolio "A" with a mean compounded raw return of 15% and a mean compounded expected return of 5% being compared with portfolio "B" with a mean compounded raw of 10% and a mean compounded expected return of 5%. Regardless of comparing either the raw return or the abnormal return (raw minus expected), the difference would be 5%. Likewise, if another expected return methodology yielded similar expected returns for portfolios "A" and "B", the difference would still be similar. In conclusion, even if the abnormal return methodology has flaws in computing the expected return, the possibility exists that the flaw could be neutralized in comparison tests like what we conduct.

For short-run abnormal returns tests, we also report results when abnormal returns are adjusted for issuance expenses. In doing this, we follow the methodology of Hull and Fortin (1993). This flotation costs methodology involves calculating the expected residual cash outflow of the issuance costs being considered (in our case just the "cash" issuance costs given by the prospectus and not "noncash" costs) per outstanding share and adding the absolute magnitude of this outflow to the closing stock price on the announcement day (day 0). This adjustment serves to make the closing price higher than reported. We then proceed in the usual fashion when figuring the daily return for day 0. For whatever short-run period that includes day 0, we use this adjusted daily return for day 0 when computing the short-run period's compounded return.

3. Descriptive statistics

Table 1 provides descriptive statistics for our sample of 1,290 SEOs classified into three portfolios according to the use of the proceeds. The portfolio number followed by its size (n) and proceeds usage are all described below (where "P" refers to portfolio):

P1 (n = 216): use of proceeds is almost totally for selling shareholders and includes more selling by insiders.

P2 (n = 664): use of proceeds is primarily (or totally) for investment-related purposes including one or more of the following: expansion, merger, or other growth-enhancing purposes such as research and develop (R&D) or sales and marketing (S&M); and

P3 (n = 410): use of proceeds is primarily (or totally) for debt reduction.

Most prospectuses do not reveal the exact dollar amount that will be allocated if more than one purpose is given. Thus, there is no absolute certainty when an observation is classified into one of the three portfolios. Even if one could have perfect certainty for each classification, there is still the uncertainty surrounding the enforcement of stated use of the proceeds. Nonetheless, we believe it is much more probable that the firm will use the proceeds for the stated use as opposed to another use; otherwise, the firm would not specifically mention this use. Below we give examples of how we determine a classification into a portfolio based on how a prospectus states the use of proceeds.

First, for the P1 classification, the prospectus simply states that all (or almost all) of the proceeds are for selling shareholders. This information makes the classification easy and we place the SEO in P1.

Second, for the P2 classification, the prospectus may simply give details confined to possible investment-related purpose and the classification is clear-cut and belongs in P2. A classification into P2 may not be as clear-cut when the prospectuses not only mention possible investment-related purposes but also give what appears to be token mention of other pos-

sible purposes that are most often stated as "working capital" or "general corporate purposes" or even possible debt reduction. For this situation, we assume that the primary use of the proceeds is investment-related purposes such as expansion. The mention of other uses (like "general corporate purpose") can be to cover the firm from a legal standpoint in case they actually spend some of the proceeds for purposes other than investment-related usage. Furthermore, expansion projects typically require an investment in working capital and so the mention of "working capital" is necessary for expansion. Finally, an investment-related project may also necessitate paying down some prior debt and so the mention of debt does not detract from the primary expansion-like usage.

Third, the prospectus lists details about debt reductions and the classification is easy and belongs in portfolio three (P3). A classification into P3 that is less simple is one that not only specifically mentions debt reductions but also gives perfunctory reference to other general corporate purposes. Our assumption is that the primary use of the proceeds will be for debt reduction where the debt reduction may be needed to simply meet maturing debt as might be case for debt that was acquired for a previously announced investment-related project.

Table 1. Summary statistics

Panel A. Time periods	P1	P2	P3
Number (percentage) for 1999-2000 by portfolio	44 (20)	238 (36)	75 (18)
Number (percentage) for 2001-2002 by portfolio	54 (25)	164 (25)	150 (37)
Number (percentage) for 2003-2005 by portfolio	118 (55)	262 (39)	185 (45)
Total number (percentage) for 1999-2005	216 (100)	664 (100)	410 (100)
Panel B. Key descriptive variables	P1	P2	P3
Shares offered (primary + secondary)	9.86M; 6.13M	6.80M; 4.00M	7.60M; 4.50M
Secondary shares as a percentage of shares offered	99.9%; 100.0%	12.2%; 0.0%	9.7%; 0.0%
Offer value (offer price × shares offered)	$327M; $170M	$203M; $89M	$179M; $108M
Common value (price day –1 × shares outstanding)	$4.00B; $1.46B	$2.21B; $0.59B	$2.26B; $0.97B
Offer value as percentage of common value	13.13%; 11.80%	19.3%; 15.1%	16.0%; 12.2%
Issuance costs as a percentage of common value	0.54%; 0.47%	1.17%; 0.89%	0.93%; 0.59%
Panel C. Short-run return variables	P1	P2	P3
Eleven-day *SRAR* (days –10 to 0)	–2.41%; –2.50%	–2.33%; –2.71%	–3.02%; –2.95%
Three-day *SRAR* (days –2, –1, 0)	–1.73%; –2.14%	–2.73%; –2.11%	–1.72%; –1.64%
Ten-day post-*SRAR* (days +1 to +10)	2.40%; 1.42%	1.73%; 0.69%	1.21%; –0.13%
21-day around *SRAR* (days –10 to +10)	–0.16%; –1.42%	–0.63%; –2.35%	–2.09%; –3.10%
Panel D. Long-run return variables	P1	P2	P3
Three-year pre-*LRAR* (months –36 to –1)	65.8%; 34.0%	150.1%; 44.5%	56.7%; 18.8%
Two-year pre-*LRAR* (months –24 to –1)	63.2%; 21.7%	151.7%; 50.4%	47.3%; 13.0%
One-year pre-*LRAR* (months –12 to –1)	34.3%; 17.5%	108.8%; 37.8%	37.9%; 13.6%
Post-one-year *LRAR* (months +1 to +12)	–2.1%; –6.2%	–5.5%; –18.7%	–3.4%; –4.5%
Post-two-year *LRAR* (months +1 to +24)	0.8%; –15.5%	–24.3%; –41.4%	–3.1%; –11.5%
Post-three-year *LRAR* (months +1 to +36)	–6.3%; –28.5%	–43.5%; –58.0%	–2.1%; –17.2%

Notes: This table reports summary statistics for 1,290 SEOs classified into three portfolios based on the use of the proceeds. The portfolio number followed by its size and proceeds usage are all described below (where "P" refers to portfolio):

P1 (n = 216): use of proceeds is almost totally for selling shareholders and includes more selling by insiders;

P2 (n = 664): use of proceeds is primarily (or totally) for investment-related purposes including one or more of the following: expansion, merger, or other growth-enhancing purposes such as R&D or sales & marketing; and

P3 (n = 410): use of proceeds is primarily (or totally) for debt reduction.

Panel A reports the number (percentage) of observations for each portfolio by time period. Issuance costs are the "cash" costs mentioned by the prospectus as paid by the firm. Panel B reports means for six key descriptive variables where M and B refer to million and billion. Panel C reports means and medians for four short-run compounded abnormal return (SRAR) variables and Panel D provides means and medians for six long-run abnormal return (LRAR) variables.

Finally, we can offer three examples of a stated purpose that is not classifiable into one of our three portfolios. *First*, the prospectus simply states that the purpose is for "general corporate purposes" or for "general corporate purposes and working capital" indicating anything goes. *Second*, the prospectus gives a list of possible purposes mentioning both debt reduction and investment-related reasons. For such a case, we can make no real assumption about the primary use and so this observation is not classified because both debt and non-debt reduction purposes appear to be equally likely. *Third*, the primary purpose of the offering appears to be for other purposes that do not fall within our three categories. An example of this is an offering that plans to use the proceeds to primarily reduce non-debt securities such as preferred stock.

Panel A in Table 1 gives summary statistics for time periods. Adjusting for the fact the later period of 2003-2005 has one more year, each time period has roughly the same percentage of observations. Portfolios have relatively more observations for this last period. This is generally true even if we adjust for the extra year for the last time period. Except for P2, all portfolios have their fewest percentage of observation in the earlier period of 1999-2000. P2 has its fewest percentage (25%) for the middle period of 2001-2002.

Panel B in Table 1 reports mean and median statistics for six key descriptive statistics. The statistics are generally more similar for P2 and P3. This is reflected in the fact that P1 has the greatest or least statistics for each descriptive variable. For example, P1 has the greatest mean (median) for "Secondary Shares as a Percentage of Shares Offered" at 99.9% (100.0%), which reveals that this portfolio consists almost exclusively of secondary selling with a few token primary shares at times being offered. From the 764 prospectuses that provide the needed information, we are able to ascertain that (i) about half of the shares sold by current selling shareholders involve insiders (where an insider is defined as a manager or officer or an entity that owns at least 5% of the outstanding shares), and (ii) P1 has over twice as many insiders selling compared to P2 and P3 combined. Thus, P1 is the portfolio for which Leland and Pyle would predict a more negative market response. Of further interest, P1 has lower mean (median) issuance costs of 0.54% (0.47%). These lower values reflect the fact that we do not include those issuance costs as a firm expense that the prospectus specifically mentions as being by selling shareholders. Finally, P1 has the largest statistics for "Offer Value" and "Common Value" and the least statistics for "Offer Value as a Percentage of Common Value".

Panel C in Table 1 gives statistics for short-run compounded abnormal returns (*SRARs*) that cover four holding periods from three days to 21 days. The three-day SRARs are like those reported by prior SEO research indicating that the announcement period return for our more recent time period (1999-2005) is like those announcement period returns reported for the 1970s, 1980s, and 1990s. As judged by medians, Panel C reveals that all portfolios have more negative eleven-day *SRARs* (days –10 to 0) compared to their three-day *SRARs* (days –2 to 0). The greatest change in negativity is for the debt reduction portfolio (P3) as its mean (median) goes from –3.02% (–2.95%) for its eleven-day *SRAR* to –1.72% (–1.64%) for its three-day *SRAR*. The ten-day post-*SRAR* values reveal that all portfolios perform positively after the announcement day (day 0) except for P3, which has a median of –0.13% even though its mean is 1.21%. A positive ten-day post-*SRAR* performance is especially true for the portfolio involving secondary selling (P1) where the ten-day post-*SRAR* mean (median) is 2.40% (1.42%). This is inconsistent with signaling theories that would predict that greater selling by current shareholders (which would also include greater insider selling) should cause greater negative news. For all portfolios, the ten-day post-*SRAR* price performance contrasts with the negative performance that occurs before these ten days as captured by the eleven-day *SRAR*. In looking at both mean and median statistics for the 21-day around *SRAR* (days –11 to +10) compared to the three-day *SRAR*, Panel C reveals that the negativity for the three-day *SRARs* is only sustained for P3, which has a mean (median) 21-day around *SRAR* of –2.09% (–3.10%). Surprisingly, P1 exhibits less negativity for its 21-day around *SRAR* with a mean (median) of only –0.16% (–1.42%).

In conclusion, the results in Panel C suggest that any conclusion about the short-run impact of the purpose of the offering is dependent on the holding period being considered. While the traditional announcement period return (as captured by the three-day SRAR) is strongly negative for all portfolios, if one considers the 21-days around the announcement date (about one calendar month), this strong negativity is not always the case as judged by the mean and median for P1 and the mean for P2. It remains to be seen if statistically significant differences exist when comparing *SRARs* among portfolios (which we will do in Table 2).

Panel D in Table 1 gives long-run abnormal return (*LRAR*) results for holding periods up to three years before and three years after SEOs. While academics might argue that *LRAR* findings should be treated with skepticism, practitioners will note that the *LRARs* reported in Panel D are computed in a manner similar to what stock mutual funds will report on its funds. For

example, a fund will report a holding period return on its portfolio and then contrast this return with some benchmark portfolio for that same holding period. The difference tells the investor if the fund has outperformed or underperformed the benchmark.

The *LRARs* given in Panel D of Table 1 are consistent with previous research conducted on earlier time periods because (i) the pre-SEO returns are extremely positive verifying prior findings that SEOs occur after stock prices have performed well and are assumedly overpriced, and (ii) the post-SEO returns represent underperformance. Panel D reveals that the portfolio consisting of SEOs that are using proceeds primarily for investment (P2) performs more positive before SEOs but more negative after SEOs. This is true for both means and medians for all time periods tested. Due to positive skewness inherent in some stock returns during pre-SEO positive price run-ups, all mean pre-SEO *LRARs* for all portfolios are large compared to their negative post-SEO *LRARs*. However, this is not the case when looking at medians. For example, consider the three-year pre-*LRARs* of 34.0%, 44.5%, and 18.8% for P1, P2, and P3, respectively. These are very similar in magnitude for the three-year post-*LRARs* of –28.5%, –58.0%, and –17.2% for the same three portfolios. It remains to be seen (in Table 3) if statistically significant differences exist when comparing *LRARs* between portfolios.

4. Short-run return results

Table 2 reports the statistical results when comparing short-run compounded abnormal returns (*SRARs*) between portfolios for the four short-term holding periods given in Table 1. For Panel A, our first research hypothesis is that *SRARs* for P1 will be inferior compared to P2 and P3. The two null hypotheses stemming from this research hypothesis are that *SRARs* for P1 will be equal to or superior to P2 and P3. The nulls are expressed as: H_0: $SRAR_{P1} \geq SRAR_{P2}$ and H_0: $SRAR_{P1} \geq SRAR_{P3}$. Rejection of these nulls offers evidence for signaling models based on Leland and Pyle (1977). Our next research hypothesis is that *SRARs* for P2 will be inferior to those of P3. For this hypothesis, the null is that *SRARs* for P2 will be equal to or superior to P3 as expressed as: H_0: $SRAR_{P2} \geq SRAR_{P3}$. Rejection of this null provides support for signaling theories (Myers and Majluf, 1984; Miller and Rock, 1985; Brennan and Kraus, 1987) that predict a less negative reaction for SEOs that reduce debt. Given the above research hypotheses, logic dictates that *SRARs* for P1 should be more inferior to *SRARs* of P3 than are *SRARs* for P2. Thus, we can capsulize our expectations in terms of the following null: H_0: $SRAR_{P1} \geq SRAR_{P2} \geq SRAR_{P3}$.

Table 2. Short-run return results for portfolios formed according to purpose of the offering

Panel A. *SRAR* variables (days)	H_0: $SRAR_{P1} \geq SRAR_{P2}$	H_0: $SRAR_{P1} \geq SRAR_{P3}$	H_0: $SRAR_{P2} \geq SRAR_{P3}$
Eleven-day *SRAR* (–10 to 0)	–0.09; –0.63	0.74; 0.47	0.86; –0.18
Three-day *SRAR* (–2, –1, 0)	1.80**; 0.83	–0.01; –0.61	–2.44***; –1.67**
Ten-day post-*SRAR* (+1 to +10)	0.87; 1.24	1.62**; 1.87**	0.79; 0.50
21-day around-SRAR (–10 to +10)	0.38; 1.12	1.75**; 1.95**	1.40*; 0.70
Panel B. Adjusted *SRAR* variables	H_0: $ADJ_{P1} \geq ADJ_{P2}$	H_0: $ADJ_{P1} \geq ADJ_{P3}$	H_0: $ADJ_{P2} \geq ADJ_{P3}$
Eleven-day *ADJ* (–10 to 0)	–0.77; –0.01	0.28; 0.04	1.17; 0.16
Three-day *ADJ* (–2, –1, 0)	0.67; 0.36	–0.71; –1.32*	–1.82**; –0.97
Ten-day post-*ADJ* (+1 to +10)	Same as in Panel A	Same as in Panel A	Same as in Panel A
21-day-around *ADJ* (–10 to +10)	–0.13; 0.64	1.40*; 1.64**	1.63**; 0.98

Notes: This table reports short-run compounded abnormal return (SRAR) results for various short-run holding periods when portfolios are formed according to the use of the proceeds. The portfolio number followed by its size and proceeds usage are all described below (where "P" refers to portfolio):

P1 (n = 216): use of proceeds is almost totally for selling shareholders and includes more selling by insiders;

P2 (n = 664): use of proceeds is primarily (or totally) for investment-related purposes including one or more of the following: expansion, merger, or other growth-enhancing purposes such as R&D or sales & marketing; and

P3 (n = 410): use of proceeds is primarily (or totally) for debt reduction.

The first column in Panel A describes the SRAR variable being tested. The last three columns give nonpaired one-tailed parametric *t* statistic results when testing the null: H_0: $SRAR_{P1} \geq SRAR_{P2} \geq SRAR_{P3}$ where "≥" refers to superior (less negative or more positive). The test is one-tailed because signaling theories predict that portfolios with selling shareholders (P1) will have a more negative market response compared to other SEO portfolios (P2 and P3) and that a portfolio of SEOs characterized by investment-related purposes (P2) will be more negative than a portfolio (P3) that primarily reduces debt. Panel B repeats Panel A after adjusting each SRAR variable that contains day 0 for issuance expenses by following the procedure given by Hull and Fortin (1993). Each *t* statistic is followed by a one-tailed nonparametric (Wilcoxon rank-sum) *z* statistic. In Panel B, *ADJ* refers to the *SPAR* adjusted for issue costs. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

As seen by the parametric and nonparametric statistics in the column of Panel A headed by "H_0: $SRAR_{P1} \geq SRAR_{P2}$", we find no negative statistics that are significant and cannot reject this null. On the contrary, we find six positive statistics including the statistically significant parametric statistic (t = 1.80) for the three-day *SRAR* tests. This reveals that the portfolio with selling shareholders (P1) performs better than the portfolio where the proceeds are used for investment purposes (P2). Because P1 also includes the largest levels of insider selling, we cannot offer evidence consistent with signaling models based on Leland and Pyle.

For the column in Panel A headed by "H_0: $SRAR_{P1} \geq SRAR_{P3}$", we also cannot reject the null. Quite the opposite as expected, we find statistically significant evidence that P1 (the portfolio with selling shareholders including more selling insiders) performs better than P3 (the portfolio where the proceeds are used for debt reduction purposes). The results are significant at the 5% level for the parametric and nonparametric tests for both the ten-day post-*SRAR* (t = 1.62 and z = 1.87) and the 21-day around-*SRAR* (t = 1.75 and z = 1.95). Like the previous column of results, this column presents short-run evidence against signaling theories premised on insider signaling associated with changes in insider percentages as hypothesized by Leland and Pyle.

As seen in the last column in Panel A of Table 2 headed by "H_0: $SRAR_{P2} \geq SRAR_{P3}$", we reject this null for the three-day *SRAR* (t = –2.44 and z = –1.67) thus finding evidence that SEOs reducing debt (P3) performs in a superior fashion relative to SEOs undertaken for investment purposes (P2). However, the t and z statistics for both the ten-day post-*SRAR* and the 21-day around-*SRAR* are positive with the t statistic for the 21-day around-*SRAR* significant at the 10% level (t = 1.40). Thus, of noteworthy importance, the short-run response (days –2, –1, 0) is not really indicative of what is happening for the longer 21 trading days (about the equivalence of a calendar month) around the announcement date. Investors should note that for lengthier short-run holding periods they are better off owning shares in SEOs undertaken for investment purposes than in SEOs aimed at debt reduction. Thus, only for the shortest announcement period tests can we say we have support for models like Myers and Majluf (1984) that argue debt reduction mitigates the negative signaling.

Panel B repeats the tests in Panel A but adjusts for issuance costs following the methodology of Hull and Fortin (1993). This methodology adds back the cash outflow caused by issuance expenses so that the announcement period effect captures all negative effects except those from issuance costs. These tests may better indicate the true negative signaling that occurs at the time of the SEO and thus the true signaling impact based on the purpose of the offering. The market reaction for the cash flow from the issuance costs is assumed to occur at the time of announcement (e.g., for day 0) in the same fashion that paying dividends lowers the stock price on the ex-dividend day. Thus, only those three *SRARs* that include day 0 are adjusted, while the ten-day post-*SRAR* is not adjusted since it does not include day 0. These three *SRARs* with day 0 are referred to as "*ADJs*" in Panel B of Table 2.

Comparing the *SRARs* in Panel A with the corresponding *ADJs* Panel B, we see that adjusting for issuance costs can change a t or z statistic by either weakening it or strengthening it. In five cases, the significance level for a t or z statistic is reduced and, in two cases, the significance level is increased. Of importance, the positive three-day *SRAR* (as now delineated by reference to three-day *ADJ*) in the first column that tests P1 and P2 is no longer significant as the t statistic falls from 1.80 (that was given in Panel A) to 0.67 as now given in Panel B. Thus, we no longer have any statistical evidence that the portfolio with the greatest insider signaling due to greater insider selling (P1) performs significantly better than the portfolio with proceeds used for investment purposes (P2).

When testing P1 and P3, we now have weak nonparametric evidence that the portfolio with selling shareholders (P1) performs worse (z = –1.32) than the portfolio with debt reductions (P2). While the 21-day around-SRAR statistics are weakened, both remain statistically significant (t = 1.40 and z = 1.64) indicating SEOs with selling shareholders perform better (for the calendar month surrounding the announcement date) than SEOs that reduce debt. While there are some minor modifications, we still have the same general conclusion deduced from Panel A in that the three-day and 21-day around-*SRARs* offer contrary findings. Once again, we conclude that the holding period determines whether or not one rejects or accepts the null hypothesis.

The last column compares P2 and P3 and reveals that the support for signaling models such as Myers and Majluf (1984) that argue debt reduction will mitigate the negative market response is weakened for the three-day *SRAR* test as the t statistic is now only significant at the 5% level (t = –1.82) and the z statistic is no longer significant (z = –0.97). Mean-

while the positive *t* statistic for the 21-day around-*SRAR* increases from 1.40 to 1.63 offering stronger evidence against theories that argue a less negative market response for an SEO that reduces debt. Thus, even after adjusting for issue costs, we still have some evidence that supports for the notion that reducing debt mitigates negative signaling is a function of the holding period.

From our first round of SEO tests given in Table 2 that are short-run in nature, we discover no consistent support for mainline signaling theories. In particular, damaging evidence is presented against the Leland and Pyle hypothesis as SEOs with greater shareholder (and insider) selling perform better for lengthier holding periods surrounding SEO announcements. As seen from the comparison between P2 and P3, the support for those signaling theories (Myers and Majluf, 1984; Miller and Rock, 1985; Brennan and Kraus, 1987) that argue that debt retirement mitigates the negative signaling is mixed in that the support from three-day announcement period return was totally reversed when one looked at a period that is roughly one calendar month surrounding day 0. While adjusting returns for issuance expenses weakened or strengthened statistics, our general finding about the importance of the holding period for acceptance or rejection of a null holds. In conclusion, we find no consistent short-run support for mainline signaling theories that predict (i) greater negative signaling for greater decreases in ownership percentages or (ii) less negative signaling based on debt reductions.

5. Long-run return results

Table 3 reports long-run compounded abnormal returns (*LRARs*) for six long-run holding periods surrounding SEOs. For the statistical tests in Table 3, we use two-tailed *t* and *z* statistics because if markets are efficient any signaling from the SEO would be expected to occur more within a short-run horizon (as tested in Table 2) as opposed to longer horizons extending up to six years around SEOs, which is what we examine. Over such a long time frame many unexpected and unpredictable events of significance can happen to dwarf any predicted signaling associated with SEOs. Also, as can be seen in Table 3, the significant levels rarely depend on whether the test is one-tailed or two-tailed.

For the null hypothesis tested in Table 3, a positive sign for the test statistic indicates the lower numbered portfolio (P1 versus P2 or P3, and P2 versus P3) performs better. Panel A in Table 3 reports results when an observation is deleted if it has one or more missing monthly returns. Panel B repeats the *LRAR* tests in Panel A by not deleting an observation if it has one or more missing monthly returns. Thus, for Panel B, the long-run return for a chosen holding period is computed using whatever return data is available. To distinguish between the long-run abnormal returns in the two panels, each long-run abnormal return in Panel B is referred to as "*FULL*" indicating that "full" sample of 1,290 observations is used. As seen in Table 3 the choice of sample selection to test long-run price behavior makes no difference as Panel A renders the same results found in Panel B except for the nonparametric *z* test for the three years before an SEO when comparing P1 and P2. Also, the same results for the parametric and nonparametric tests, except for two *z* tests involving the post-one-year *LRAR*, indicate the outliers do not influence our findings. When the post-one-year *LRAR* data was winsorized to control for the impact of outliers, the two insignificant t statistics for the post-one-year *LRAR* tests (P1 versus P2 and P2 versus P3) became significant at the 1% level thereby resembling the significance levels for their corresponding *z* statistics.

Table 3. Long-run return results for portfolios formed according to purpose of the offering

Panel A. *LRAR* variables (days)	H_0: $LRAR_{P1} = LRAR_{P2}$	H_0: $LRAR_{P1} = LRAR_{P3}$	H_0: $LRAR_{P2} = LRAR_{P3}$
Three-year pre-*LRAR* (–36 to –1)	–3.58***; –1.55	0.59; 0.89	4.29***; 2.98***
Two-year pre-*LRAR* (–24 to –1)	–4.35***; –2.91***	1.15; 1.28	5.99***; 5.22***
One-year pre-*LRAR* (–12 to –1)	–7.03***; –4.19***	–0.45; –1.02	6.62***; 6.07***
Post-one-year *LRAR* (+1 to +12)	0.66; 3.10***	0.31 0.27	–0.50; –4.11***
Post-two-year *LRAR* (+1 to +24)	4.05***; 5.04***	0.56; 0.14	–4.22***; –5.95***
Post-three-year *LRAR* (+1 to +36)	4.09***; 4.85***	–0.41; –1.22	–5.79***; –7.25***
Panel B. *FULL* variables (days)	H_0: $LRAR_{P1} = LRAR_{P2}$	H_0: $LRAR_{P1} = LRAR_{P3}$	H_0: $LRAR_{P2} = LRAR_{P3}$
Three-year pre-*FULL* (–36 to –1)	–4.93***; –2.54***	0.16; 0.64	5.29***; 3.87***
Two-year pre-*FULL* (–24 to –1)	–5.18***; –3.43***	0.76; 1.26	6.59***; 5.68***
One-year pre-*FULL* (–12 to –1)	–7.46***; –4.50***	–0.52; –1.03	6.93***; 6.38***
Post-one-year *FULL* (+1 to +12)	0.61; 3.11***	0.33 0.21	–0.41; –4.03***

Table 3 (cont.). Long-run return results for portfolios formed according to purpose of the offering

Panel B. *FULL* variables (days)	H_0: $LRAR_{P1} = LRAR_{P2}$	H_0: $LRAR_{P1} = LRAR_{P3}$	H_0: $LRAR_{P2} = LRAR_{P3}$
Post-two-year *FULL* (+1 to +24)	4.20***; 5.30***	0.81; 0.52	–4.05***; –5.77***
Post-three-year *FULL* (+1 to +36)	4.43***; 5.31***	0.07; –0.49	–5.46***; –6.80***

Notes: This table reports long-run compounded abnormal return (LRAR) results for various long-run holding periods when portfolios are formed according to the use of the proceeds. The portfolio number followed by its size and proceeds usage are all described below (where "P" refers to portfolio):

P1 (n = 216): use of proceeds is almost totally for selling shareholders and includes more selling by insiders;

P2 (n = 664): use of proceeds is primarily (or totally) for investment-related purposes including one or more of the following: expansion, merger, or other growth-enhancing purposes such as R&D or sales & marketing; and

P3 (n = 410): use of proceeds is primarily (or totally) for debt reduction.

The first column in Panel A describes the LRAR variable being tested. The last three columns in Panel A give nonpaired two-tailed parametric *t* statistic results when testing the null: H_0: $LRAR_{P1} = LRAR_{P2} = LRAR_{P3}$. Each t statistic is followed by a two-tailed nonparametric (Wilcoxon rank-sum) *z* statistic. In the H_0 tested, a positive sign for the test statistic indicates the lower numbered portfolio (P1 versus P2 or P3 and P2 versus P3) performs better. Panel B repeats Panel A except observations are kept if they have a missing monthly value such that the reported long-run abnormal return (referred to as *FULL*) is computed based on how many monthly returns are available. This rendered a "full" sample with no missing observations. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

The findings given in Table 3 are straightforward in revealing definite conclusions. First, as seen from the significant negative coefficients when comparing P1 and P2, SEOs that are undertaken for investment related purposes (P2) perform significantly more positive before their announcement dates compared to SEOs involving current selling shareholders (P1) where the latter include more selling insiders. In brief, P2 outperforms P1 from one year to three years before SEOs. However, the opposite occurs after the SEO is announced as P1 outperforms P2 from one year to three years after SEOs. As seen in both panels of Table 3, the results are overwhelmingly statistically significant.

Second, as seen when comparing P1 and P3, all statistics are insignificant indicating that SEOs undertaken to raise cash for selling shareholders (P1) perform similar to SEOs that raise cash for debt reduction (P3). Thus, at least for these two portfolios, we find no difference in the long-run market response. For these two purposes the firms undergoing SEOs may very well be homogenous in the sense argued by DeAngelo, DeAngelo and Stulz (2007) who find that SEOs in general are largely motivated by liquidity needs such that all SEOs are the same and their stock price behavior should generally be similar.

Third, as seen when comparing P2 and P3, SEOs that are undertaken for investment related purposes (P2) perform significantly more positive before the announcement date compared to SEOs that reduce debt (P3). In brief, P2 outperforms P3 from one year to three years before SEOs. The opposite occurs after the SEO is announced as P3 outperforms P2 from one year to three years after SEOs. These results are also overwhelmingly statistically significant (with all tests significant if winsorization is used).

Although not reported in Table 3, we combined pre-SEO and post-SEO *LRARs* to determine if significant differences between portfolios exist if we take into account long-run holding periods that surround SEOs. For a holding period that includes the two years surrounding SEOs, we found statistically significant evidence that SEOs undertaken for investment purposes (P2) outperform those undertaken for selling shareholder purposes (P1) or for debt reduction purposes (P3). However, as we increase the holding period from two years around SEOs to longer periods, this evidence disappeared. For example, for a four-year holding period around SEOs, P2 was underperforming P1. By the time we considered six years around SEOs, we found P2 was underperforming both P1 and P3 and the differences were both statistically significant especially when comparing P2 with P3. In a sense, this result is consistent with the "liquidity" needs finding of DeAngelo, DeAngelo and Stulz (2007) in that all SEOs are ultimately done for a liquidity motive and so any grouping of SEOs should not be expected to consistently explain stock price performance for all holding periods.

Conclusion

This paper examines seasoned equity offerings (SEOs) based on the use of proceeds. We find evidence consistent with signaling theories that predict a less negative three-day announcement period response when SEO firms use proceeds for debt reduction as opposed to investment purposes. However, the opposite occurs for lengthier short-run holding periods. Of further importance, when we analyze longer short-run holding periods, we find that firms perform better when the purpose is to get cash for either investment purposes or for selling

shareholders (where about half of these selling shareholder are insiders). These findings are generally damaging (i) to signaling theories premised on Leland and Pyle (1977) as firms with greater insider ownership decreases actually perform better, and (ii) to signaling theories based on Myers and Majluf (1984) that suggest a debt reduction can mitigate the negative response. For long-run horizons, there is consistent evidence to indicate that the use of proceeds is related to price performance either before or after SEOs. In particular, SEOs undertaken for investment purposes perform significantly better for up to three years before SEOs and significantly poorer for up to three years after SEOs. On one hand, the different pre-SEO and post-SEO price performances based on the purpose of the SEO do not support DeAngelo, DeAngelo and Stulz (2007) who argue that SEOs are undertaken for liquidity needs and, in this sense, are homogeneous so that differences in long-run holding periods should not be expected. On the other hand, from an investor's framework of maximizing profit by investing for long-run horizons *around SEOs*, the chosen "around" holding period would determine how the purpose might be related to stock price performance. In this sense, this result is consistent with the "liquidity" needs finding of DeAngelo, DeAngelo and Stulz (2007) in that all SEOs are ultimately done for a liquidity motive and so any grouping of SEOs should not be expected to consistently explain stock price performance for all holding periods.

Our findings offer motivation and direction for future research. For example, future SEO research can go beyond our univariate comparison based on proceeds usage, by expanding to multivariate analysis while controlling for characteristics that have been found to be related to returns surrounding SEOs. Such attributes include firm characteristics (firm size, financial condition, industry and share ownership structure), security characteristics (exchange listing, listed stock options, security volatility and market microstructure properties), and offering characteristics (offer size, offer price, underwriting syndicate, capital market conditions, and disclosure). For example, research (Lang and Lundholm, 2000) indicates that firms can voluntarily disclose more information around the time of SEOs. Future research can control for disclosure among other variables when determining how the purpose fares within multivariate analysis. Additionally, future research can delve into the proceeds usage so as to differentiate the capital structure story from the behavioral story. The capital structure literature argues that capital structure choices are irrelevant to the firm value, while behavioral models (Barberis, Shleifer, and Vishny, 1998; Hong and Stein, 1999) suggest that the persistence of the SEO post-under performance anomaly is explained by investors' conservatism, overconfidence and self-attribution associated with a high degree of information asymmetry and the slow diffusion process of information to the market price setters.

References

1. Asquith, P. and D. Mullins, Jr., 1986, "Equity Issues and Offering Dilution", *Journal of Financial Economics* 15, 61-89.
2. Baker, M. and J. Wurgler, 2002, "Market Timing and Capital Structure", *Journal of Finance* 57, 1-32.
3. Barber, B. and J. Lyon, 1997, "Detecting Long-Run Abnormal Stock Returns: The Empirical Power and Specification of Test Statistics", *Journal of Financial Economics* 43, 341-372.
4. Barberis, N., Shleifer, A. and R. Vishny, 1998, "A Model of Investor Sentiment", *Journal of Financial Economics* 49, 307-343.
5. Bhushan, R., 1989, "Firm Characteristics and Analyst Following", *Journal of Accounting and Economics* 11, 255-274.
6. Brennan, M. and A. Kraus, 1987, "Efficient Financing under Asymmetric Information", *Journal of Finance* 42, 1225-1243.
7. Ching, K., M. Firth and O. Rui, 2006, "The Information Content of Insider Trading around Seasoned Equity Offerings", *Pacific-Basin Finance Journal* 14, 91-117.
8. Clarke, J., C. Dunbar, K. Kahle, 2001, "Long-Run Performance and Insider Trading in Completed and Canceled Seasoned Equity Offerings", *Journal of Financial and Quantitative Analysis* 36, 415-430.
9. DeAngelo, H., L. DeAngelo and R. Stulz, 2007, "Fundamentals, Market Timing, and Seasoned Equity Offerings", USC Finance Department Working Paper.
10. Gerard, B. and V. Nanda, 1993, "Trading and Manipulation around Seasoned Equity Offerings", *Journal of Finance* 48, 1993, 213-246.
11. Hong, H. and J. Stein, "A Unified Theory of Underreaction, Momentum Trading, and Overreaction in Asset markets", *Journal of Finance* 54, 2143-2184.
12. Hull, R., 1999, "Leverage Ratios, Industry Norm, and Stock Price Reaction: An Empirical Investigation", *Financial Management* 28, 32-45.
13. Hull, R. and R. Fortin, 1993, "Issuance Expenses and Common Stock Offerings for Over-the-Counter Firms", *Journal of Small Business Finance* 3, 1-17.
14. Hull, R. and R. Moellenberndt, 1994, "Bank Debt Reduction Announcements and Negative Signaling", *Financial Management* 23, 21-30.
15. Hull, R. and R. Kerchner, 1996, "Issue Costs and Common Stock Offerings", *Financial Management* 25, 54-66.

16. Jegadeesh, N., 2000, "Long-Term Performance of Seasoned Equity Offerings: Benchmark Errors and Biases in Expectations", *Financial Management* 29, 5-30.
17. Jensen, M., 1986, "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers", *American Economic Review* 76, 323-329.
18. Jensen, M. and W. Meckling, 1976, "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure", *Journal of Financial Economics* 3, 305-360.
19. Johnson, D., J. Serrano and G. Thompson, 1996, "Seasoned Equity Offerings for New Investments", *The Journal of Financial Research* 19, 91-103.
20. Kothari, S. and J. Warner, 1997, "Measuring Long-Horizon Security Price Performance", *Journal of Financial Economics* 43, 301-339.
21. Lang, M., and R. Lundholm, 2000, "Voluntary Disclosure and Equity Offerings: Reducing Information Asymmetry or Hyping the Stock?", *Contemporary Accounting Research* 17, 623-62.
22. Lee, I., 1997, "Do Firms Knowingly Sell Overvalued Equity?", *Journal of Finance* 52, 1439-1466.
23. Leland, H. and D. Pyle, 1977, "Informational Asymmetries, Financial Structure, and Financial Intermediation", *Journal of Finance* 32, 371-387.
24. Li, X. and X. Zhao, 2006, "Propensity Score Matching and Abnormal Performance after Seasoned Equity Offerings", *Journal of Empirical Finance* 13, 351-370.
25. Loughran, T. and J. Ritter, 1995, "The New Issues Puzzle", *Journal of Finance* 50, 23-51.
26. Lyon, J., B. Barber and C. Tsai, 1999, "Improved Methods for Tests of Long-Run Abnormal Stock Returns", *Journal of Finance* 54, 165-201.
27. Masulis, R., 1983, "The Impact of Capital Structure Change on Firm Value: Some Estimates", *Journal of Finance* 38, 107-126.
28. Masulis, R., and A. Korwar, 1986, "Seasoned Equity Offerings: An Empirical Investigation", *Journal of Financial Economics* 15, 91-118.
29. Mikkelson, W. and M. Partch, 1986, "Valuation Effects of Security Offerings and the Issuance Process", *Journal of Financial Economics* 15, 31-60.
30. Miller, M. and K. Rock, 1985, "Dividend Policy under Asymmetric Information", *Journal of Finance* 40, 1031-1051.
31. Mitchell, M. and E. Stafford, 2000, "Managerial Decisions and Long-Term Stock Price Performance", *Journal of Business* 73, 287-329.
32. Myers, S. and N. Majluf, 1984, "Corporate Financing and Investment Decisions when Firms Have Information that Investors Do Not Have", *Journal of Financial Economics* 13, 187-221.
33. Rangan, S., 1998, "Earnings Management and the Performance of Seasoned Equity Offerings", *Journal of Financial Economics* 50, 101-122.
34. Spiess, D.K. and J. Affleck-Graves, 1995, "Underperformance in Long-Run Stock Returns following Seasoned Equity Offerings", *Journal of Financial Economics* 38, 243-267.
35. Trueman, B., 1986, "The Relationship between the Level of Capital Expenditures and Firm Value", *Journal of Quantitative Analysis* 21, 115-129.
36. Vermaelen, T., 1981, "Common Stock Repurchases and Market Signaling: An Empirical Study", *Journal of Financial Economics* 9, 139-183.
37. Viswanathan, S. and B. Wei, 2008, "Endogenous Events and Long-Run Returns", *Review Financial Studies* 21, 855-888.