

Information Content of Offer-Date Revelations: A Fresh Look at Seasoned Equity Offerings^{*}

Konan Chan
Department of Finance
National Chengchi University, Taiwan
konan@nccu.edu.tw

Nandkumar Nayar
Perella Department of Finance
Lehigh University
Bethlehem, PA 18015
nnayar@lehigh.edu

Ajai K. Singh
Perella Department of Finance
Lehigh University
Bethlehem, PA 18015
aks411@lehigh.edu

Wen Yu
Opus College of Business
University of St. Thomas
Twin Cities, MN 55403
wyu@stthomas.edu

April 8th, 2015

Abstract

Besides the offer-price discount, investment bankers use revisions in the offer size from the amount filed originally to signal the issuer's quality to their buy-side clients. Unlike the offer-price discount, the offer-size revision not only relates to the offer-date price reaction, it also predicts post-SEO performance. Specifically, Improved SEOs, whose offer size exceeds the amount registered originally, experience significantly positive returns during the registration period and on the offer date. Importantly, they do not underperform post-issuance. Their complement, Regular SEOs, exhibit significantly negative returns during the registration period, on the offer date, and underperform their benchmark following issuance.

JEL Classification: G14, G32, G39

Key Words: SEOs, Market Timing, Market Reaction, Revised Proceeds, Registration Period, Offer-date returns

^{*}We thank Mike Lemmon and Jay Ritter for comments on earlier drafts of this manuscript. Chan acknowledges the financial support from General Research Fund (GRF 741608 H) offered by Research Grants Council of Hong Kong. Singh gratefully acknowledges financial support from the Bolton-Perella Chair. Nayar is grateful for financial support from the Hans Julius Bär Chair. Part of the work on this paper was completed when Nayar was with the U.S. Securities and Exchange Commission (SEC). This study expresses the authors' views and does not necessarily reflect those of the SEC, the Commissioners or other members of the SEC staff. Part of the work was completed when Chan was at University of Hong Kong. We thank Jodie Hu and Pei-shan Tung for research assistance. Any errors or omissions in this study are solely the responsibility of the authors.

Corresponding author: Ajai K. Singh, 420 Rauch Hall, Lehigh University, 621 Taylor Street, Bethlehem, PA 18015.
Tel: 610-758-5699, Fax: 610-758-6429. e-mail: aks411@lehigh.edu

Information Content of Offer-Date Revelations: A Fresh Look at Seasoned Equity Offerings

Abstract

Besides the offer-price discount, investment bankers use revisions in the offer size from the amount filed originally to signal the issuer's quality to their buy-side clients. Unlike the offer-price discount, the offer-size revision not only relates to the offer-date price reaction, it also predicts post-SEO performance. Specifically, Improved SEOs, whose offer size exceeds the amount registered originally, experience significantly positive returns during the registration period and on the offer date. Importantly, they do not underperform post-issuance. Their complement, Regular SEOs, exhibit significantly negative returns during the registration period, on the offer date, and underperform their benchmark following issuance.

JEL Classification: G14, G32, G39

Key Words: SEOs, Market Timing, Market Reaction, Revised Proceeds, Registration Period, Offer-date returns

Information Content of Offer-Date Revelations: A Fresh Look at Seasoned Equity Offerings

1. Introduction

Prior research has paid scant attention to the seasoned equity offering (SEO) registration period, the market's reception to the issuer's road-show, and the final offer size relative to the initially filed amount.¹ Our examination of these elements, within the context of our *Amended Proceeds Hypothesis*, yields new insights into the market's reaction and associated valuation consequences. The hypothesis is based on the assumption that the investment banker's primary allegiance is to her buy-side clients, with whom she shares information about the issuer during the SEO's road show. The buy-side clients integrate this information into their own assessment of the issuer to formulate indications of interest, and to trade in the secondary market for the issuer's stock. The investment banker, in turn, synthesizes the information contained in both the aggregated indications of interest as well as the price movement in the stock. Thus, the final offer-size decision is influenced by the informational exchange between the investment banker and her prospective buy-side investors and the associated stock price-reaction during the SEO's registration period.² We posit that the final offer-size decision has important information content about the quality and the post-issuance performance of the issuer. *Bona fide* offers raise more capital than initially filed. Conversely, if the offer is perceived to be weak, the banker keeps the offer size below the filed amount.

In line with our hypothesis, we construct an *ex ante* measure that classifies an observation as an "Improved" SEO if the final offer proceeds exceed the amount filed initially at registration. Additionally, any observation with a post-effective amendment, designated by the SEC as an MEF

¹ Exceptions are Phelps and Kremer (1992) and Galloway, Loderer and Sheehan (1998) who examine revisions in the number of shares offered in the SEO and not the size of the proceeds.

² The registration period is the interim between the SEO's filing with the *Securities & Exchange Commission* (SEC) and the offer date. Issuers and their investment banks conduct the offer's road show during the SEO's registration period. On the offer-date, the offer price (and hence, the offer price discount) and the offer size are revealed.

filing, is also classified as an Improved offer.³ The complement of an Improved offer is defined as a “Regular” SEO. This classification yields an *ex ante* measure relative to the issuers’ post-SEO performance, as it identifies each observation as “Improved” or “Regular” as soon as the offer size is finalized on the offer date.

As noted above, the Improved set of issuers includes a sub-sample of firms who file a post-effective amendment to increase the offer size, designated by the SEC as an MEF filing.⁴ It is our contention (corroborated through discussions with investment bankers) that MEF amendments are filed to accommodate unexpected demand that surfaces after the offer has become effective. It is possible that undecided buy-side investors make a late decision to apply for more shares once the offer price is revealed. It is also possible that investors who are already included in the “pot” make a bid to get more shares than their original indications of interest to the investment banker. The market infers that the MEF filings represent unexpectedly strong demand from the investment banker’s buy-side clients and responds accordingly.

Consistent with the view above, we record a significantly positive offer-date price reaction for Improved MEF offers. We find that the offer-date reaction to the Improved offerings range from significantly positive (for Improved MEF offers) to non-negative for the non-MEF Improved SEOs. In sharp contrast, the offer-date price reactions are significantly negative for the Regular offers. We are the first to report the offer-date price reaction associated with MEF amendments.

It must be noted that, within the Improved SEOs, although the MEF observations have a significantly positive price reaction on the offer date, the average cumulative returns from the second

³ The offering is considered effective when filed documents are complete with signatures from the different parties to the firm-commitment contract, including all transaction details such as the offer price and the gross underwriting spread. The MEF amendment is filed on the offer date only after the original registration has become effective, and allows the issuer to raise a maximum of an additional 20% of the effective amount. It is important to note that all post-effective amendments are not MEF filings. POS AM filings are also post-effective amendments; but they are usually filed to *reduce* (i.e. deregister) the number of shares already registered by the firm.

⁴ Of the 232 MEF filings in our sample, there are 24 observations whose final offer size is slightly below the amount filed originally. These 24 observations could arguably be classified as Regular SEOs. We find that our results are robust to this alternate classification.

day following the SEO's filing to the day before the offer date are relatively higher and more positive for the remaining non-MEF Improved offers. It does not appear to be a case of gamesmanship where the MEF filers hold back their positive information until after the offer becomes effective. We argue that there is no need to hide the good news because there is no guarantee that investor demand will actually materialize after the SEO becomes effective. Thus, for the post-issuance analyses, the Improved offers are treated as a single composite group, which includes both MEF and non-MEF Improved SEOs. The long-term performance of Improved issuers is compared against the performance of firms making Regular offers.

We find that Regular offers significantly underperform their benchmark in the post-issuance period whereas Improved offers do not. The difference in post-issue returns between the Improved and Regular offers is statistically significant and ranges from 0.52% to 0.68% per month depending on the method employed. In addition, Regular SEOs experience deteriorating fundamentals. Improved issuers, on the contrary, make relatively larger investments following their SEOs. These results are consistent with the *Amended Proceeds Hypothesis* and indicate that the final offer size relative to the amount filed initially at announcement has significant valuation implications on the offer date and beyond.

Besides identifying the valuation effects of the post-effective MEF amendments, this paper makes two other contributions to the literature. First, we establish that the SEO classification into Improved and Regular issuers provides a richer information measure than the offer price discount.⁵ Specifically, while both the unexpected offer price discount and the Improved classification are related to the short-term price reaction on the offer date, only the latter is associated with the long-term performance of the issuer.

Second, we provide a plausible resolution of the debate on motivations underlying SEOs. One

⁵ Altinkılıç and Hansen (2003) propose the use of the unexpected offer price discount by the investment banker as a signal to her buy-side clients.

side argues that SEOs are timed by managers to seize windows of opportunity to sell overvalued stock (e.g., Loughran and Ritter, 1995, and Baker and Wurgler, 2000). On the other side is an investment story arguing that equity issuance is motivated by firms' financing needs for investments and general corporate purposes (see, for example, Lyandres, Sun and Zhang, 2008, and DeAngelo, DeAngelo, and Stulz, 2010). Our findings suggest that Regular issuers are engaged in strategic market timing whereas Improved SEOs are more likely undertaken to finance investments. Therefore, market timing and investment financing motivations for SEOs are each supported by distinct sub-samples of SEOs and are not mutually exclusive. The results support the *Amended Proceeds Hypothesis* and indicate that our parsimonious *ex ante* classification separates overvalued issuers from the rest.

The rest of the paper is organized as follows. Section 2 discusses the related literature and our *Amended Proceeds Hypothesis*. Section 3 describes the sample and summary statistics. In Section 4, we present announcement, registration-period, and offer-date market reactions for the different types of SEOs. Section 5 discusses long-run results including long-run stock returns and operating performance. An examination of changes in the issuers' investments in the post-SEO period is also included in Section 5. Section 6 contains robustness checks and examinations of alternative hypotheses. Our conclusions are contained in Section 7.

2. Literature review and *Amended Proceeds Hypothesis*

2.1. Literature review

Seasoned equity offerings (SEOs) typically follow a stock price run-up, and their announcements evoke a significantly negative stock price reaction (Asquith and Mullins, 1986; Masulis and Korwar, 1986; among others). While these stylized facts are well-established, there is considerable debate about the motivation underlying SEOs. The market timing hypothesis argues that managers exploit windows of opportunity to sell overvalued stock. For example, Myers and Majluf

(1984) suggest that the SEO announcement itself reveals to the market that issuers' stock is overvalued. Lucas and McDonald (1990) argue that undervalued firms wait for a stock price run-up before issuing additional equity, whereas overvalued firms issue equity immediately upon the arrival of a value enhancing project.⁶ In either case, the market infers that the issuer is overvalued, as documented by a negative announcement period stock price reaction. Furthermore, Loughran and Ritter (1995, 1997) document long-run underperformance in stock returns and accounting earnings subsequent to the SEO. More recently, Baker and Wurgler (2000, 2002) argue that equity offerings tend to be made when the market as a whole is overvalued and predict negative long-run stock performance following equity issues. Managerial surveys by Graham and Harvey (2001), consistent with the adverse selection argument, reveal that managers are concerned about the timing of their equity issues. These findings are consistent with the notion that managers exploit windows of opportunity to sell overvalued equity.

In contrast, an investment story suggests that the equity issuance is motivated by pressing financing needs. DeAngelo, DeAngelo, and Stulz (2010), Butler, Cornaggia, Grullon, and Weston (2011), among others, recognize that there are alternative investment-based explanations. For example, Zhang (2005) and Carlson, Fisher and Giammarino (2006) argue that the exercise of profitable growth options may produce a similar abovementioned pattern in stock returns for SEO firms. Thus, there is an on-going debate as to which of these competing ideas better explain firms' issuance decisions and it remains an unresolved question whether the firm decides to issue additional equity to strategically time the sale of overvalued stock or to finance genuine corporate capital requirements.⁷

⁶ In Lucas and McDonald (1990), the arrival of value-enhancing projects is independent of the firm's price history and the firm needs the proceeds from the SEO to invest in the projects. The overvalued firms issue equity immediately upon the arrival of the positive NPV project whereas the undervalued firms wait for the undervaluation to 'vanish' before issuing additional equity.

⁷ There is another set of papers that offers explanations quite distinct from those related to either side of the aforementioned debate. Dittmar and Thakor (2007) argue that SEOs are made when the level of agreement (on

A recent strand of literature reports results supportive of both sides of the debate. Notably, Kim and Weisbach (2008) examine the use of the funds raised through stock offerings in a comprehensive sample of more than thirteen thousand international SEOs, and note that both sets of reasons discussed above could motivate equity offerings. They conclude that, "...Like IPOs, one motivation for SEOs appears to be raising capital for Investments" while other SEO firms may be "...issuing equity when their stock price is high, even if the capital raised in the offering is not required for financing investments."(page 283). Although the Kim and Weisbach (2008) results support both motivations for SEOs, their objective is not on *ex ante* identification of market-timers nor is it to examine how their performance differs from other issuers. We next discuss our hypothesis that addresses this issue.

2.2. Amended Proceeds Hypothesis

We assume that the investment banker has her first allegiance to the buy-side clients with whom she has ongoing business. This assumption is justified because the magnitude of benefits of the investment banker's ongoing relation with her buy-side clients far exceeds any derived from a one-time collusion with an issuer.

The filing of the SEO is an informational event that spurs further interest and analyses of the issuer. During the road shows, the investment banker shares information about the issuer with her buy-side clients, who in turn integrate this information into their own analysis about the issuer. Based on this revised assessment of the issuer, buy-side clients formulate their indications of interest, and trade in the secondary market for the issuer's stock. The investment banker, in turn, synthesizes the information contained in both the aggregated indications of interest as well as the price movement in the stock. She permits only *bona fide* offers to raise more capital than the amount filed initially.

firms' future investment plans) is high between managers and stockholders and that the pre-SEO stock-price run-up is evidence of growing consensus between the two. DeAngelo, DeAngelo, and Stulz (2010) find that SEOs are employed to overcome liquidity issues and not for market timing purposes.

Conversely, if the offer is perceived to be weak, the banker keeps the offer size below the originally filed amount to avoid sending a positive signal to her buy-side clients.⁸

Our hypothesis leads to an *ex ante* measure that classifies an offering as an “Improved” SEO if (i) the final offer proceeds exceed the amount filed initially at registration and/or if (ii) there is a post-effective amendment filed by the SEO’s issuing firm on the offer date. The complement is defined as a “Regular” offer. In earlier research, Phelps and Kremer (1993) and Galloway et al. (1998) examine revisions in the shares offered in an SEO. However, the offering proceeds can be greater than the amount filed even while reducing the number of shares issued, relative to the number of shares filed initially. Conversely, the offering proceeds may be smaller than the amount filed even while increasing the number of shares filed at registration. Hence, we contend that revisions in shares offered has lower information content compared to revisions in the dollar size of the offering. Specifically, while the former embeds only quantities, the latter contains both price and quantity information, and is therefore a richer measure.

Our classification is free of look-ahead bias and permits a parsimonious identification of issuers who are more likely to be opportunistic and time their equity offers versus those that issue equity for *bona fide* reasons. The rationale for this classification follows.

2.2.1 Improved SEOs

Investment bankers facilitate genuine issuers (i.e., issuers with *bona fide* growth opportunities) in raising more capital than the amount filed initially. This information about the amount raised relative to the amount filed is finalized only on the offer date when the final prospectus (that contains the offer price and number of shares to be issued) becomes effective. With respect to the offer date price reaction, we posit that the information content of the increased offer size must be viewed in the context of the stock price movement during the registration period. For instance, if the registration

⁸ In the extreme case where both the indications of interest and the stock price movement are highly negative, the stock may actually become undervalued resulting in the withdrawal of the entire offering by the issuer.

period returns are significantly positive, the increased offer size is less of a surprise, and accordingly, the offer-date price reaction will be attenuated. Accordingly, for this set of issuers (i.e., non-MEF Improved SEOs), we hypothesize an insignificant stock price reaction on the offer-date.⁹

On the other hand, the true quality of some genuine issuers may not be fully revealed during the road-show, and since asymmetric information still exists, the stock price adjustment is not complete. In such cases, we posit that the investment banker sets a smaller offer price discount to signal the potential value in the offering. Once the offer price is set and the offer becomes effective, unexpected demand surfaces. The investment banker responds to the unexpected demand and files a post-effective amendment (MEF filing) to further raise the size of the offer. Thus, the filing of the MEF amendment and the associated increase in offer size convey a signal to investors about the unexpected demand for the SEO shares on the offer date.¹⁰ Accordingly, we posit that the offer date reaction should be significantly positive. We further hypothesize that offer-date abnormal return will be positively related to the presence and the size of the MEF amendment.

2.2.2 Regular SEOs

In the case of opportunistic issuers, trades based on more informed posterior beliefs lead to a price decline during the registration period. Given this price decline, two possibilities arise: If the price decline is too severe and the issuer becomes undervalued, managers will choose to withdraw the offering. Otherwise, if the price adjustment is less severe, and does not fully adjust for the overvaluation, managers will proceed with the offering. The issuance in itself signals to the market that the stock remains overvalued. Accordingly, we predict that the offer-date price reaction for such

⁹ It should be noted that for firms whose stock price has increased during the registration period, the banker can keep the offer size unchanged by reducing the number of shares offered. Thus, it is our contention that raising more funds than initially filed, despite leaving the number of shares unchanged, is an active strategy designed to signal the quality of the issuer.

¹⁰ In a majority of cases, the MEF amendment is filed under a distinct and separate filing number from the offer's original filing. The final prospectus bears both the original and the MEF file numbers and consequently, the offer size specified in the final prospectus includes the extra amount arising from the MEF amendment.

opportunistic issuers will be negative. Further, investment bankers with informed posterior beliefs will not permit opportunistic issuers from sending a false signal by raising more capital than the amount filed initially.

Note that the *Amended Proceeds Hypothesis*, is thus, based on the difference between the amount raised and the amount originally filed. This constitutes a separate and distinct signal from the offer price discount as proposed by Altinkılıç and Hansen (2003). We next discuss potential concerns related to our SEO classification scheme and the robustness thereof.

2.2.3 Mimicry

It may appear at first glance that a Regular issuer might easily mimic an Improved offering by low-balling the initial registration amount and subsequently increasing the offer size. We believe that such skullduggery is not likely for the following reasons. Mimicking an Improved issuer requires the final offer size to exceed the amount registered originally. Since the final offer-size decision has to be arrived at jointly by the issuers and their investment bankers, false signaling would imply that the SEO's bankers are complicit in this misrepresentation.

Conversations with investment bankers indicate that they loathe permitting any practices that may hurt their buy-side clients. This is because, for investment bankers, buy-side clients are ongoing business customers, who also direct sizable market-trades through these banks. It is highly unlikely that investment banks would jeopardize their lucrative repeat-business by permitting false signaling. It must also be noted that it is the same investment banker who sets the offer-price discount to signal the quality of the offer to her buy-side clients. It would be hard to argue that the banker chooses to send a false signal in terms of the offer-proceeds revision while sending dependable signals through offer-price discounts, especially since both are sent to the same group of her buy-side investors.

We next discuss post-issuance performance predicated on our classification scheme and related to the predictions short-term offer-date returns made above.

2.3. *Post-issuance performance*

If indeed Regular issuers aim to exploit mispricing and they are still overvalued at their offer date, they are likely to underperform their benchmarks following the SEO. Therefore, the *Amended Proceeds Hypothesis* predicts that Regular SEO firms will exhibit poor post-issue performance and experience deterioration in operating fundamentals after the offering. On the other hand, Improved issuers seek to raise equity to fund genuine corporate capital needs and are likely to perform better than Regular offers in the post-issuance period. The hypothesis also suggests that Improved issuers raise funds to satisfy investment needs. Therefore, the *Amended Proceeds Hypothesis* predicts that Improved issuers will have a better operating performance and invest relatively more than their Regular counterparts.

2.4 *Misclassification*

What if we were to misclassify issuers while testing the *Amended Proceeds Hypothesis*? A misclassification would occur if issuers with positive prospects were mistakenly identified as Regular and/or overvalued issuers were classified as Improved. To the extent that there is misclassification, the empirical evidence will be inconsistent with the predictions of the *Amended Proceeds Hypothesis*. If overvalued issuers were to be misclassified as Improved, then such market-timing issuers will not have genuine projects to invest in. This, in turn, would lead to deteriorating firm performance in the post-issuance period. Consequently, for these misclassified Improved SEOs, evidence of (a) pronounced post-issuance underperformance, and (b) lower investments, or a combination thereof, would run contrary to our *Amended Proceeds Hypothesis*. Likewise, if issuers with good prospects were misclassified as Regular offers, then we would expect to see improved performance for such offers in the post-SEO period, inconsistent with the *Amended Proceeds Hypothesis*. Further, a misclassification of either type of offer would reduce the statistical significance of their differences, making it less likely to separate the two types of SEOs.

3. Data

3.1. Sample selection

Thomson Reuters' Securities Data Corporation (SDC) New Issues database is first used to generate the initial sample of fully-marketed SEOs over the 1997-2010 period. Since we examine post-SEO performance and investment activities up to two years following the issuance, the sample period is from 1997 to 2012. The sample starts in 1997, the beginning of the SEC EDGAR era, when original filings with the SEC became publicly available on its website. We hand-check original documents filed by each issuer on EDGAR to ensure that the screens, described below, have been accurately applied.

The initial screen excludes offers below \$25 million. We also exclude offers by financial firms, rights offers, dual-class offers, unit offerings, shelf registration (Rule 415) offerings, and Rule 429 filings under which shares registered (but unissued) in a previous filing are added to the shares filed in the current offer. We also remove pure secondary offers where the entire proceeds of the SEO go to selling shareholders and the firm receives none. We then remove all F-1, F-3, and other foreign issuers' filings. Finally, we drop accelerated offers (Gao and Ritter, 2010), whose registration period (from filing to public offering) is less than 6 days. Throughout the paper, we define an Improved SEO as an offer whose total dollar amount of proceeds has been increased from its original filing amount, and/or an offer with a post-effective amendment. The remaining offers are classified as Regular SEOs.¹¹

3.2. Firm characteristics

Panel A of Table 1 presents the mean and median characteristics for the full sample and the subsamples of Improved versus Regular SEOs. It would appear that the amount actually issued is approximately the same as the original amount filed for the overall sample. Specifically, for the full

¹¹ Among the Regular SEOs, there are only two issues whose total dollar value of final proceeds is the same as the original amount filed. Our results are robust to dropping these two issues.

sample, the average proceeds and the amount filed initially are approximately \$137 million each. However, consistent with the *Amended Proceeds Hypothesis*, Improved offers start smaller at filing but end up significantly larger by the offer date. Specifically, Improved SEOs increase their average offer proceeds to \$156.53 million from the \$128.15 million amount filed whereas Regular issuers drop from an average \$146.51 million at filing to \$116.76 million by the offer date.

[Insert Table 1 here]

The change in proceeds may be partially caused by the price movements during the registration period. In this respect, the registration period average daily abnormal return is significantly positive for Improved offers (0.66%) and significantly negative (-0.32%) for Regular SEOs.¹² However, it is not solely the registration period return that causes the increase/decrease in the dollar amount from filing to offer. Specifically, the change in proceeds is also due to an increase/decrease in the number of shares filed versus shares issued for the Improved and Regular issuers, respectively. The Improved SEOs increase the number of shares from an average of 4.61 million shares at filing to 5 million shares offered. The Regular SEOs reduce the number of shares from 5.25 million shares filed to an average 4.96 million shares offered. These results indicate that the increase/decrease in the final offering proceeds, and thus our Improved/Regular classification captures not only stock price appreciation/decline during the registration period but also the revisions to increase/decrease the number of shares offered in the SEO process.

The average firm size prior to the offer is \$0.844 billion. For the full sample, the average total shares offered are about 23% of total shares outstanding a day prior to the offer date. The average book-to-market ratio is 0.21, suggesting that the sample firms have relatively high growth opportunities.

The comparison between the two types of SEOs shows that Improved SEOs generally receive

¹² In Table 1, we report a daily average abnormal return for the registration period because the number of days in registration is not uniform across observations.

more proceeds, and have a higher share price and a lower average book-to-market ratio prior to the issuance. The lower book-to-market ratio for the Improved SEO firms suggests that they exhibit relatively higher market valuation and higher growth prospects.

Among other data variables, we hand collect the offer-date, last reported trading price for the issuer's common stock, and the SEO offer price from the original prospectus filed with SEC. This is an important issue because it affords us accuracy in variable measurement. First, prior literature employs spikes in trading volume and/or press release dates (when available) to identify offer dates. In comparison, we identify the precise offer date from the original prospectus. Second, prior literature typically uses the pre-offer day closing price as the benchmark to estimate the offer-price discount, an important determinant of offer-date returns. Instead, we use the last reported trading price stated in the final prospectus to compute the offer price discount. The last reported trading price is used by the issuer and its investment banks in the offer's pricing meeting as the basis against which to set the offer price. Hence, its use provides a more accurate measurement of the offer-price discount. In our sample, the average offer-price discount for the full sample is 2.98%. However, there is a significant difference between the averages for Improved (2.67 %) and Regular (3.31%) offers.

Institutional investors are considered to be sophisticated players and better informed relative to other market participants, and their trades have informational value.¹³ In the context of SEOs, Gibson, Safieddine, and Sonti (2004) and Chemmanur, He, and Hu (2009) demonstrate that institutional investors are prescient when it comes to investing in SEOs. Therefore, we examine institutional ownership before the offering and also the change thereof in the SEO quarter. As reported in Table 1, the pre-SEO institutional ownership is significantly higher for Improved issuers. While the increase in institutional ownership is statistically higher for Improved issuers during the SEO quarter, it surprisingly increases for both types of issuers. This suggests that not all institutional

¹³ For example, see Yan and Zhang (2009).

investors are equally prescient in identifying the quality of the issuer.¹⁴

We next present in Panel B of Table 1 summary statistics of the MEF and non-MEF subsamples within the Improved issuer sample. It is interesting to note that although the registration period average daily abnormal return is positive and significant for both subsamples, it is significantly higher for the non-MEF Improved sample. Further, the offer price discount is significantly smaller for the MEF Improved offers. These two results taken together suggest that when the investment banker believes that the market price has not adjusted fully for a bona fide issuer, she signals this belief by setting a smaller offer price discount.

4. Stock price response

4.1. Market reactions surrounding SEO announcement and offer dates

We first report, in Table 2, the market's response to Regular and Improved offers without considering the MEF status of the latter. Specifically, we document the stock price response prior to, and surrounding the offer date.¹⁵ Consistent with prior studies, we report in Panel A that both Improved and Regular SEOs experience a significant run-up in stock price over event days (-46, -1) relative to their announcement date. The mean difference in the pre-filing stock price run-up is statistically indistinguishable between the two types of offerings. However, the median is marginally significant and higher for Improved offerings at the 0.1 level.

Following the pre-filing price run-up, the market reacts negatively when the offer is filed (see Panel B of Table 2) for both Regular and Improved issuers. We measure the price reaction over the event window (0, +1), where the filing day is event day 0. The average abnormal return for the Regular issuers is significantly more negative, but the median abnormal return is not significantly

¹⁴ Besides the variables discussed thus far, there are several measures shown in Panel A of Table 1 where there is no significant difference between Improved and Regular SEOs. These are: Fraction of Primary shares, Underwriter reputation, Length of registration period, Age, Return Volatility, and Leverage.

¹⁵ As mentioned previously, we hand collect offer dates from the original prospectuses on the SEC's web site and do not rely on trading volume spikes or other means used in prior literature.

different between the two at filing. The significant differences between Regular and Improved Issuers emerge in the Registration period. As shown in Panel C, the differences are economically and statistically significant regardless of whether we examine the raw, abnormal or daily average abnormal returns.

[Insert Table 2 here]

Lastly, in Panel D of Table 2, we report the offer date reaction. Both raw and abnormal returns are significantly different for the two types of SEOs; significantly positive for the Improved sample, and significantly negative for the Regular offerings.¹⁶ If the sample is pooled, then we note that for the full sample, the stock price reaction on the offer date is insignificant. The full sample result is consistent with prior studies and highlights the importance of separating the two types of SEOs.

In the above discussion, we have not considered the MEF status of the Improved offerings and we proceed to do so below. The results to incorporate the MEF filings and their pairwise differences across other SEO types appear in Table 3. We begin our discussion with the filing-date event window (0, +1) where the filing day is day 0. The average abnormal return for the non-MEF Improved SEOs is the least negative (-1.62%) and is statistically smaller than the price reaction for both the MEF Improved (-3.15%) and for Regular SEOs (-3.57%). At this stage, the market responds alike to the MEF and the Regular SEOs; the paired difference between the two types is insignificant. These results suggest that, at least on the filing date, investors are unable to distinguish between MEF and Regular issuers.

[Insert Table 3 here]

¹⁶ We also examine revisions in the shares offered. The Improved subsample contains 66 observations where the number of shares offered is reduced from those filed initially, while the Regular subsample includes 277 such observations. The mean offer date return for the former is +1.035%, while it is -2.77% for the latter. The difference between the two is highly significant statistically using both parametric and non-parametric tests. This is consistent with our argument that the dollar offer size revision is a richer information measure than just the revision in shares offered as in Phelps and Kremer (1992) and Galloway et al. (1998).

However, as investors and managers learn from each other with additional information exchange during the registration period, the market reacts differently to the different types of SEOs. Specifically, for MEF Improved SEOs, we document a positive 7.88% abnormal price run-up (that corresponds to an average daily abnormal return of 0.45%) during the registration period. For the MEF subsample, there is a significantly positive offer-date abnormal return of 4.25%. This is a new and interesting result because even though the number of shares offered is increased through the post-effective amendment, the market reacts positively. Our finding runs contrary to the theory and prior evidence on price pressure.

For non-MEF Improved SEOs, we document a significantly positive 16.91% abnormal price run-up (that corresponds to an average daily abnormal return of 0.81%) during the registration period. The registration period return for the non-MEF Improved sub-sample is significantly higher than that of the MEF Improved offers. The offer-date abnormal return (0.18%) for the non-MEF Improved SEOs is not significantly different from zero. In Table 2, we reported a positive and significant abnormal return on the offer date for Improved offerings as a whole; that result is driven by the MEF-Improved SEOs. The difference between the MEF and Non-MEF Improved offer date abnormal returns is economically and statistically significant (t -value of 5.47). The significantly positive offer date reaction supports our contention that the filing of the MEF amendment reveals unexpected demand for the issuer's stock.

In contrast to both types of Improved offers, investors continue to react negatively to Regular SEOs during the registration period and on the offer date. The average daily abnormal return for the Regular SEOs is -0.32% per day during the registration period. In the offer-date window, the average abnormal return is -2.10%. The pair-wise differences in average daily return between Regular SEOs and both types of Improved (MEF and non-MEF, respectively) are highly significant during the registration period and on the offer date. These differences are both economically meaningful and statistically significant.

The above results are consistent with our *Amended Proceeds Hypothesis*. Our findings indicate that consistent with adverse selection, all SEO types evoke a negative response at announcement (filing date). However, upon further scrutiny of the information revealed during the firm's road show, only Regular SEOs continue to be regarded negatively. Conversely, for Improved offers, the substantial price run-up during the registration period suggests that the market reassesses the firm's prospects and reacts favorably.

4.2. SEO classification and offer-date returns

Altinkılıç and Hansen (2003) report that the offer price discount is a significant determinant of the offer date return. In this section, we examine whether our SEO classification has independent explanatory power to explain the variability in the offer date return controlling for the offer price discount. Our examination is in keeping with the analysis in Altinkılıç and Hansen (2003) along with additional variables based on our classification. *Improved Dummy* is an indicator variable that equals one if it is an improved offering, and zero otherwise. Similarly, *MEF Dummy* equals one if it is an MEF offering and zero otherwise. In addition to the indicator variables, we define two new variables:

$$\text{Improved degree} = \left(\frac{\$ \text{Amount Issued}}{\$ \text{Amount Filed Initially}} \right) - 1,$$

and

$$\text{MEF degree} = \left(\frac{\$ \text{MEF Amount}}{\$ \text{Amount Filed Initially}} \right) - 1$$

We first compute the offer price discount as $(LRP - OP)/LRP$ where LRP is the last reported price and OP is the offer price, both of which are stated in the SEO's final prospectus. Next, we determine the *Unexpected offer price discount* as the residual from regressing the offer price discount on its determinants. The variables used in this first stage regression are: (a) *Return volatility*, in percentage, is the standard deviation of average daily market-adjusted returns in the period (-46, -1) preceding the offer date, (b) *Natural log of market value of equity* in millions measured on day -1

prior to the offer, (c) *Reciprocal of stock price* on day -1 relative to the SEO offer date, (d) *Underwriter reputation* is the lead underwriter's reputation ranking obtained from Professor Jay Ritter's website, (e) *Exchange* is an indicator variable that equals one if the sample stock is listed on the Nasdaq, and zero otherwise, (f) *Relative offer size*, in percentage, is the total number of shares offered scaled by total shares outstanding (on day -1 relative to the SEO offer date), and (g) *Registration period average daily abnormal return*, in percentage, is the average daily market-adjusted returns over the registration period.

[Insert Table 4 here]

Our results for this estimation appear in Model 1 of Table 4. The significant determinants of the offer price discount (OPD) are: *Return volatility*, *Natural log of market value of equity*, *Reciprocal of stock price*, and *Underwriter reputation*. The OPD is positively associated with *Return volatility* in line with larger pricing uncertainty faced by the investment banker. Larger firms have smaller OPD and this is consistent with lower asymmetric information for such firms. As argued in Altinkılıç and Hansen (2003) that there is a higher premium for value uncertainty, we also find that the OPD is higher for issuers with lower stock prices. Lastly, higher reputation investment bankers are associated with lower OPD.

In the second stage regression, we examine variables related to the offer date return including the *Unexpected offer price discount* computed as the residual from our first stage regression described above. Our results employing continuous versions of our SEO classification variables along with variables previously used in the first stage regression are reported in Model 2 of Table 4. Consistent with Altinkılıç and Hansen (2003), we also find that the offer date return is significantly and inversely related to the *Unexpected offer price discount*. Our new variables, *Improved degree* and *MEF degree* are both significant and positively associated with the offer date return despite controlling for the *Unexpected offer price discount*. Lastly, in Model 3 of Table 4, we present results employing indicator variable versions of our SEO classification scheme, namely, *MEF Dummy* and

Improved Dummy. The results are qualitatively similar to those in Model 2 of Table 4. The independent explanatory power of our SEO classification variables, both in continuous and indicator variable format, over and above the *Unexpected offer price discount*, supports our *Amended Proceeds Hypothesis*.

5. Long-run stock return performance

The *Amended Proceeds Hypothesis* predicts differential post-SEO performance based on the status of the SEO as an Improved or Regular offering.¹⁷ In this section, we test the prediction. Specifically, we ask: do Regular SEO firms exhibit inferior performance? Do Improved SEO issuers invest more and perform better than Regular firms? To this end, we examine long-run post-offer stock returns.

We employ two methods to track long-run stock returns of SEOs. The first approach employs calendar-time portfolio regressions. The cross-sectional dependence, commonly observed in the popular buy-and-hold abnormal return (BHAR) measure, which leads to poorly specified test statistics (Fama 1998; Lyon, Barber, and Tsai 1999; Brav 2000), is less of a concern under this technique. Further, in running calendar-time portfolio regressions we use monthly returns that can greatly mitigate the skewness problem in the BHAR method (Fama, 1998; Mitchell and Stafford, 2000).

From February 1997 to December 2012, we form a portfolio of firms that have conducted SEOs in the past two years.¹⁸ We regress monthly portfolio returns against the Fama-French (1993) three factors as follows:

$$R_{p,t} - R_{f,t} = \alpha + \beta(R_{m,t} - R_{f,t}) + sSMB_t + hHML_t + e_t \quad (1)$$

¹⁷ As discussed in the introductory section, for the post-issuance analyses, the Improved offers are treated as a single composite group and their long-term performance is compared against the performance of Regular offers.

¹⁸ We also examine the post-issue stock performance based on a three-year holding horizon and the results are qualitatively similar.

where R_p is the SEO portfolio return, R_f is the risk-free rate, R_m is the market portfolio return, SMB is the small-firm portfolio return minus the big-firm portfolio return, HML is the high book-to-market portfolio return minus the low book-to-market portfolio return. The abnormal returns are measured by the regression intercept (alphas) in equation (1). Since SEOs generally follow a price run-up (Asquith and Mullins, 1986; Lucas and McDonald, 1990), we also perform the Carhart (1997) four-factor regression by adding the momentum factor to equation (1) as shown below:

$$R_{p,t} - R_{f,t} = \alpha + \beta(R_{m,t} - R_{f,t}) + sSMB_t + hHML_t + mWML_t + e_t \quad (2)$$

where WML is the past winner portfolio return minus the past loser portfolio return.¹⁹

We apply two portfolio formation schemes, namely equal-weighted (EW) and log value-weighted (LW) approaches, to compute the calendar-time portfolio returns. Previous studies argue that the abnormal performance (if any) of corporate events occurs in small stocks only (Fama 1998; Brav, Geczy, and Gompers 2000). A value-weighted approach is an alternative that can mitigate this small firm effect. However, the results based on a value-weighted approach can be dominated by just a few extremely large firms in the sample. Therefore, we use a log value-weighted approach (by taking the natural logarithm of market capitalization of sample firms as the weight to compute portfolio returns) to reduce the potential impact of including very large issuers.

Table 5 shows the two-year abnormal stock returns based on calendar-time portfolio regressions. Panels A and B report the long-run abnormal returns for Improved and Regular SEOs, respectively. In Panel A, we find that Improved SEOs do not exhibit any significant long-run abnormal returns. In other words, their returns are commensurate with their risk factors. Conversely, with the exception of the equal-weighted four-factor model, Regular SEOs generate significantly *negative* long-run returns. In Panel C, we compare Improved versus Regular SEOs. The differences

¹⁹ Risk factors are from Professor Ken French's website <http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/>.

in alpha estimates between the two SEO groups are economically meaningful, ranging from 0.52% to 0.56% per month, and are statistically significant.

[Insert Table 5 here]

This asymmetric pattern in the long-run returns between the Improved and Regular issuers is possibly because good news “travels early” while negative information is held back. For Improved offers, good news is revealed during the road show and at the offer date. Since the impact of this new information is captured in the stock returns through the offer date, no long-run abnormal returns would occur. Indeed, their long-run stock performance matches their benchmark. On the other hand, Regular issuers have the incentive to postpone the disclosure of negative information. Therefore, when the additional negative information is subsequently released, there is a further negative reaction by the market resulting in long-run underperformance.²⁰

In our estimations for Table 5, we drop calendar months with less than 15 stocks in the portfolio to avoid the possibility that months with few observations bias our results. An alternate solution is to run weighted least squares (WLS) regressions where the weight is the number of observations in each month (see Ikenberry and Ramnath, 2002). In WLS, we can retain all observations but assign a greater (lesser) weight to calendar months with more (fewer) observations. Our empirical findings using this technique are reported in Table 6 and indicate that the long-run underperformance of Regular offerings is even more pronounced relative to the results reported in Table 5.

[Insert Table 6 here]

We also examine the post-issue stock returns using Fama-MacBeth (1973) monthly cross-sectional regressions, the results of which appear in Table 7.²¹ In Model 1 of Panel A, the Improved

²⁰ Titman, Wei, and Xie (2006) and Lyandres, Sun, and Zhang (2008) find a strong negative relation between corporate investments and future stock returns. Accordingly, we experiment with using a four-factor model by including the investment factor into the Fama-French model. Our results are robust to this modification.

²¹ Similar to the calendar-time portfolio regressions, the Fama-MacBeth procedure employs monthly returns, which mitigates the skewness problems in buy-and-hold returns. More importantly, we can use firms’ market capitalization and book-to-market ratio, rather than factor realizations, to control for the size and book-to-market effects in stock

SEOs outperform Regular SEOs by 0.54% per month (t-stat of 1.76), controlling for firm size and book-to-market ratio. The return difference between the Improved and Regular groups is consistent with the magnitude we previously reported in Table 5.²²

[Insert Table 7 here]

Next, we test if the *Improved degree* variable is associated with post-issuance stock returns. Model 2 in Panel A of Table 7 shows that *Improved degree* is significantly positively related to post-issue returns; for a 10% increase in final proceeds over the original filing amount, the long-run return increases by 13.5 basis points per month. The results in Panel A Models 1 and 2 indicate that Regular SEOs significantly underperform Improved SEOs in the post-issuance period. Also, as predicted by our *Amended Proceeds Hypothesis*, the more firms revise their offer size upward (downward) relative to the original filing amount, the better (worse) their post-issuance stock returns.²³

As discussed previously, there are two separate and independent signals revealed on the offer date, namely (a) whether the SEO is Improved or Regular, and (b) the offer price discount. The results in Panel A have established that Improved offers have better long-run performance than Regular SEOs. We next test the efficacy of the offer price discount (and the related, unexpected offer price discount) in the same context. The results are reported in Panels B and C, respectively of Table 7. We find that neither the offer price discount nor the unexpected offer price discount is significant

returns. Daniel and Titman (1997) argue that firm characteristics (such as size and B/M) better explain cross-sectional stock returns than factor loadings. Hence, this approach may capture abnormal returns more accurately. For sample firms that do not have a positive book-to-market ratio, we include a book-to-market indicator variable. We drop 33 months with smaller than 15 observations in the regression to avoid measurement errors in estimating the regression coefficients. However, our results are similar when imposing different minimum numbers of stocks in a calendar month.

²² One may note that the size and B/M variables are insignificant in the regressions in Table 7. As we run the regressions within the SEO sample, the coefficients of size and B/M measure how much variation of cross-section returns within SEOs would be captured by size and B/M. While there is some difference in B/M (and size) between Improved and Regular groups, this difference is not large enough to explain the cross-sectional returns among SEOs. Moreover, in unreported results, we include the past return (either past three-month or six-month returns) as a control variable in regressions. Our conclusion remains unchanged.

²³ In unreported results, we also run event-time cross-sectional regressions by regressing post-issuance two-year buy-and-hold returns on Improved dummy (and control variables) and find a significantly positive relationship for the *Improved dummy*. The Improved degree variable is also positively related to long-run returns in similar tests.

when included as explanatory variables in the Fama-French regressions. More importantly, the Improved variables are robust to the inclusion of the offer price discount variable.

6. Robustness tests

A body of research finds that institutional investors avoid investing in offers that decline subsequently. Gibson, Safieddine, and Sonti (2004) find that issuers who experience an increase in institutional ownership around their offer outperform SEO firms whose institutional ownership declines. Chemmanur, He, and Hu (2009) confirm and extend these findings. They document that institutional investors possess private information about SEOs and are able to “...identify and obtain more allocations in SEOs with better long-run stock returns”.²⁴ Institutional investors are considered to be sophisticated players and better informed relative to other market participants, and their trades have informational value.²⁵ Therefore, to examine the market demand for additional share issuance, we investigate and compare the institutional demand for both the Improved and Regular SEOs.²⁶

Specifically, we examine whether the change in the percentage of institutional ownership surrounding the offer date subsumes the Improved SEO variables, *Improved dummy* and *Improved degree*, in evaluating long-run post-issuance stock returns. We again employ Fama-MacBeth regressions using monthly returns as in Table 7. The results from these estimations are presented in Table 8 and show that post-issuance returns are not significantly related to the change in institutional ownership (*Change in IO*). Once the change in institutional ownership is introduced in the regressions, the *Improved dummy* becomes insignificant. Nonetheless, *Improved degree* remains

²⁴ The dataset used by Chemmanur, He and Hu (2009) is proprietary and unique. In general, it is not possible to determine aggregate institutional ownership until the quarterly ownership reports (used by Gibson, Safieddine, and Sonti 2004) become publicly available after the SEO. Thus, the institutional ownership data provides an *ex post* measure of the SEO firms' performance.

²⁵ For example, see Yan and Zhang (2009).

²⁶ One possibility is that during the registration period, managers and investment bankers reveal “new” information to market the offer and institutional investors react to this new information. Alternatively, institutional investors are pleasantly surprised during the road shows, by firms' intent to undertake their preferred activities through SEOs, and in response, institutional investors reveal their unanticipated high demand for the offer. Based on the enthusiastic feedback from the market, managers and investment bankers decide to increase the offer size, resulting in Improved SEOs.

significant even after controlling for *Change in IO* and the offer price discount variable (Panel B) or the unexpected offer price discount (Panel C).

[Insert Table 8 here]

While stock returns are an important measure of long-run performance, we also examine other metrics to demonstrate robustness of our long-run stock return findings. The long-run metrics that we employ are (a) changes in operating performance as measured by financial statement metrics, and (b) changes in corporate investments. These metrics are employed as dependent variables in multiple regressions with controls for book-to-market and size of the issuers along with our measures of Improved SEOs, namely *Improved dummy* and *Improved degree*, respectively. A summary of our results is provided in Table 9. In each test, the difference between Improved and Regular SEOs is significant. These results hold irrespective of the Improved measure employed (*Improved dummy* or *Improved degree*). The results are robust to controls for the change in institutional ownership and the inclusion of offer price discount variables.²⁷ The evidence is consistent with and supports our long-run post-issuance stock return results.

[Insert Table 9 here]

7. Conclusion

This paper examines previously neglected aspects of the seasoned equity offer (SEO) process. Specifically, we pay special attention to the SEO registration period, the market's reception to the issuer's road-show, and the final offer size relative to the initially filed amount. Our study is based on the assumption that the investment banker's primary loyalty rests with her buy-side clients. Accordingly, she uses the offer size revision as an unambiguous signal of the SEO's quality. We posit that the investment banker does not permit a false signal to be sent to her buy-side clients by allowing an inferior issuer to raise more capital than the amount filed originally. This argument forms

²⁷ Detailed description of the actual tests and tabulated results are available upon request.

the core of our *Amended Proceeds Hypothesis*. Accordingly, we hypothesize that an offer size larger than the amount filed initially should lead to a more favorable outcome in the post-offer period. The reverse is predicted for firms whose offer size is reduced.

To test our hypothesis, we create a parsimonious measure based on information known as of the offer date. Specifically, if the SEO proceeds exceed the dollar value filed initially and/or if the issuer files a post-effective amendment, we classify such an offer as an “Improved” SEO; else the observation is classified as a “Regular” offer.²⁸ The Improved issuer sample thus includes a subset of firms who file a post-effective amendment to increase their offer size. Such amendments are designated by the SEC as MEF filings to accommodate unexpected demand that surfaces after the offer has become effective. Investors infer that the MEF filings represent unexpectedly strong demand from the banker’s buy-side clients, and respond with a significantly positive offer-date price reaction for Improved MEF offers.

Prior literature has found that the average stock price reaction on the offer date is statistically insignificant. For our full sample, we obtain similar results. However, if we disaggregate the sample observations into Improved and Regular offers, we find significant differences between the abnormal returns associated with each sub-sample. Specifically, we find that the offer-date reactions to the Improved offerings are significantly positive. In sharp contrast, the offer-date price reactions are significantly negative for the Regular offers. These findings indicate that SEOs are not homogeneous, and that they should not be pooled together into a single sample.

Our results indicate that the offer-price discount and the offer proceeds revision represent separate signals, each with its own information content. However, the SEO classification into Improved and Regular issuers provides a richer information measure than the offer price discount. Both the unexpected offer price discount and the Improved classification are related to the short-term

²⁸ Our classification scheme is based on information revealed on the offer-date. Thus, from an empirical perspective, it is an *ex ante* measure with respect to post-SEO performance.

price reaction on the offer date but only the latter is associated with the long-term performance of the issuer. Specifically, we find that Regular issuers significantly underperform their benchmarks in the post-offer period. On the other hand, Improved SEO firms do not. The return difference between the two groups is approximately 0.5% to 0.7% per month. These return-based results are corroborated by Regular SEO firms exhibiting deteriorating fundamentals and lower investments relative to Improved issuers in the post-SEO period. The results are consistent with our *Amended Proceeds Hypothesis*, and are robust to other factors known to affect performance of SEO firms such as institutional investor demand. Both the short-term and the long-term results are robust to controlling for the offer-price discount.

The above results inform the ongoing debate in the SEO literature. There is one view that SEOs are timed by managers to seize windows of opportunity to sell overvalued stock. There is a competing alternate perspective based on an investment story that argues that equity issuance is motivated by firms' financing needs for investments and general corporate purposes. Our findings support the idea that Regular issuers are engaged in strategic market timing whereas Improved SEOs are more likely undertaken to finance investments. Thus, both perspectives on the motivation underlying SEOs are supported by distinct sets of SEOs, and are not mutually exclusive. Our parsimonious *ex ante* classification separates overvalued issuers from the rest.

References

- Altinkılıç, O., Hansen, R., 2003. Discounting and underpricing in seasoned equity offers. *Journal of Financial Economics* 69, 285–323.
- Asquith, P., Mullins, D., Jr., 1986. Equity issues and offering dilution. *Journal of Financial Economics* 15, 61-89.
- Baker, M., Wurgler, J., 2000. The equity shares in new issues and aggregate stock returns. *Journal of Finance* 55, 2219-2257.
- Baker, M., Wurgler, J., 2002. Market timing and capital structure. *Journal of Finance* 57, 1-32.
- Barber, B., Lyon, J.D., 1996. Detecting abnormal operating performance: The empirical power and specification of test statistics. *Journal of Financial Economics* 41, 359-399.
- Brav, A., 2000. Inference in long-horizon event studies: A Bayesian approach with application to initial public offerings. *Journal of Finance* 55, 1979-2016.
- Brav, A., Geczy, C., Gompers, P., 2000. Is the abnormal return following equity issuances anomalous? *Journal of Financial Economics* 56, 403-416.
- Butler, A., Cornaggia, J., Grullon, G., Weston, J., 2011. Corporate financing decisions, managerial market timing, and real investment. *Journal of Financial Economics* 101, 666-683.
- Carhart, M., 1997. On persistence in mutual fund performance. *Journal of Finance* 52, 57-82.
- Carlson, M., Fisher, A., Giammarino, R., 2006. Corporate investment and asset pricing dynamics: Implications for SEO event studies and long-run performance. *Journal of Finance* 61, 1009-1034.
- Chemmanur, T.J., He, S., Hu, G., 2009. The role of institutional investors in seasoned equity offerings. *Journal of Financial Economics* 94, 384-411.
- Daniel, K., Titman, S., 1997. Evidence on the characteristics of cross sectional variation in stock returns. *Journal of Finance* 52, 1-33.
- DeAngelo, H., DeAngelo, L., Stulz, R., 2010. Seasoned equity offerings, market timing, and corporate life cycle. *Journal of Financial Economics* 95, 275-295.
- Dittmar, A., Thakor, A., 2007. Why do firms issue equity? *Journal of Finance* 62, 1-54.
- Dow, J., Gorton, G., 1997. Stock market efficiency and economic efficiency: Is there a connection? *Journal of Finance* 52, 1087-1129.
- Fama, E. F., 1998. Market efficiency, long-term returns, and behavioral finance. *Journal of Financial Economics* 49, 283-306.
- Fama, E.F., French, K.R., 1993. Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics* 33, 3-56.
- Fama, E.F., MacBeth J., 1973. Risk, return and equilibrium: Empirical tests. *Journal of Political Economy* 81, 607-636.
- Galloway, T.M., Loderer, C. F. and Sheehan D. P., 1998. What Does the Market Learn from Stock Offering Revisions? *Financial Management* 27, 5-16.
- Gao, X., Ritter, J., 2010. The marketing of seasoned equity offerings. *Journal of Financial Economics* 97, 33-52.

- Gibson, S., Safieddine, A. and Sonti, R., 2004. Smart investments by smart money: Evidence from seasoned equity offerings. *Journal of Financial Economics* 72, 581-604.
- Graham, J.R., Harvey, C.R., 2001. The theory and practice of corporate finance: Evidence from the field. *Journal of Financial Economics* 60, 187-243.
- Grullon, G., Michaely, R., 2004. The information content of share repurchase programs. *Journal of Finance* 59, 651–680.
- Ikenberry, D. and S. Ramnath, 2002. Underreaction to self-selected news events: The case of stock splits. *Review of Financial Studies* 15, 489–526.
- Kim, W., Weisbach, M. S., 2008. Motivations for public equity offers: An international perspective. *Journal of Financial Economics* 87, 281-307.
- Loughran, T., Ritter, J., 1995. The new issue puzzle. *Journal of Finance* 50, 23-51.
- Loughran, T., Ritter, J., 1997. The operating performance of firms conducting seasoned equity offerings. *Journal of Finance* 52, 1823-1850.
- Lucas, D. J., McDonald, R., 1990. Equity issues and stock price dynamics. *Journal of Finance*, 45, 1019-1043.
- Lyandres, E., Sun, L., Zhang, L., 2008. The new issue puzzle: Testing the investment-based explanation. *Review of Financial Studies* 21, 2825-2855.
- Lyon, J., Barber, B., Tsai, C., 1999. Improved methods for test of long-run abnormal stock returns. *Journal of Finance* 54, 165-201.
- Masulis, R., Korwar, A., 1986. Seasoned equity offerings: An empirical investigation. *Journal of Financial Economics* 15, 91-118.
- Mitchell, M., Stafford, E., 2000. Managerial decisions and long-term stock price performance. *Journal of Business* 73, 287-329.
- Myers, S. C., Majluf, N., 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13, 187-221.
- Phelps, K.L. and Kremer, J.W., 1992. Altered Common Stock Offerings. *Financial Review* 27, 125-139.
- Titman, S., Wei, K. C. J., Xie, F., 2004. Capital investments and stock returns. *Journal of Financial and Quantitative Analysis* 39, 677–700.
- Yan, X., Zhang, Z., 2009. Institutional investors and equity returns: Are short-term institutions better informed? *Review of Financial Studies* 22, 893-924.
- Zhang, L., 2005. The value premium. *Journal of Finance* 60, 67-103.

Table 1
Summary Statistics

This table reports the mean (median) values of firm characteristics prior to the stock issuance. The seasoned equity offerings (SEOs) sample is obtained from Thomson Financials' Securities Data Corporation (SDC) database for the period 1997-1010. *Improved SEOs* are offers whose total dollar proceeds are greater than the amount filed originally at registration and/or are MEF offerings. *MEF* offerings are SEOs whose issuers file a post-effective amendment on the offer date. The remaining observations are classified as *Regular SEOs*. *Proceeds*, in millions, is the total number of shares offered times the offer price. *Amount filed*, in millions, is the total dollar amount filed originally at registration. *Shares offered*, in millions, is the total number of shares offered in the SEO. *Shares filed*, in millions, is the total number of shares filed originally at registration, obtained from the original registration statements filed with the *Securities and Exchange Commission* (SEC). *Relative offer size*, in percentage, is the total number of shares offered scaled by total shares outstanding (on day -1 relative to the SEO offer date). *Primary*, in percentage, is the proportion of primary shares in the offer. *Underwriter reputation* is the lead underwriter's reputation ranking obtained from Professor Jay Ritter's website. *Days in registration* is the number of trading days from the filing of the SEO's registration statement with the SEC to its offer date. *Registration period average daily abnormal return*, in percentage, is the average daily market-adjusted returns over the registration period. *Age*, in years, is the total number of trading days, scaled by 250 days, from its first day listed on CRSP to day -1 prior to the offer. *Size*, in millions, is the market value of equity on day -1 prior to the offer. *B/M* is the ratio of book equity value (Compustat item 60 + item 74) at the fiscal year-end before the SEO to the firm's market value of equity on day -1 prior to the offer. *Share price* is the closing price at day -1 relative to the SEO offer date. *Offer price discount*, in percentage, is calculated as $(LRP - OP)/LRP$ where LRP is the last reported price obtained from the original prospectus and OP is the SEO offer price. *Return volatility*, in percentage, is the standard deviation of average daily market-adjusted returns in the period (-46, -1) preceding the offer date. *Leverage*, in percentage, is the ratio of total debt (Compustat item 9 + item 34) to total assets (Compustat item 6) prior to the offer. *Institutional ownership* is the percentage of shares owned by the 13F institutions before the offer quarter, obtained from Thomson Reuters. $\Delta(\text{Institutional ownership})$ is the change in the 13F institutional holdings in the SEO quarter. All variables are winsorized at 1% and 99%. The column *Difference* reports the *t*-values of mean differences between the Improved and Regular SEOs (in Panel A) or between MEF Improved and Non-MEF Improved SEOs (in Panel B). The *p*-values of median score tests for the differences are presented in brackets. ***, **, and * denote 1%, 5% and 10% level of significance respectively.

Table 1 (continued)

Panel A				
	Full Sample	Improved SEOs (1)	Regular SEOs (2)	Difference (1) – (2)
Amount filed (10 ⁶)	136.96 (94.44)	128.15 (88.08)	146.51 (101.50)	-2.09** [0.00]***
Proceeds (10 ⁶)	137.45 (92.57)	156.53 (106.85)	116.76 (78.18)	4.43*** [0.00]***
Registration period average daily abnormal return (%)	0.18 (0.08)	0.64 (0.44)	-0.32 (-0.24)	17.10*** [0.00]***
Shares filed (10 ⁶)	4.92 (3.80)	4.61 (3.45)	5.25 (4.03)	-2.79*** [0.00]***
Shares offered (10 ⁶)	4.98 (3.82)	5.00 (4.01)	4.96 (3.80)	0.17 [0.36]
Size (10 ⁶)	844.18 (420.52)	907.39 (460.47)	775.64 (386.96)	1.49 [0.00]***
Relative offer size (%)	22.83 (20.50)	23.34 (21.20)	22.28 (20.25)	1.35 [0.24]
B/M	0.21 (0.17)	0.20 (0.15)	0.23 (0.19)	-3.16*** [0.00]***
Share price	31.39 (24.11)	35.02 (26.44)	27.45 (22.46)	4.80*** [0.00]***
Offer price discount (%)	2.98 (2.15)	2.67 (2.08)	3.31 (2.35)	-3.15*** [0.07]*
Institutional ownership (%)	40.30 (36.44)	41.98 (38.58)	38.49 (33.87)	2.27** [0.01]**
Δ (Institutional ownership) (%)	15.24 (14.15)	16.52 (14.88)	13.86 (13.20)	3.43*** [0.02]**
Primary (%)	77.06 (86.54)	77.42 (86.62)	76.67 (86.28)	0.46 [0.70]
Underwriter reputation	8.02 (8.00)	8.018 (8.00)	8.019 (8.00)	-0.02 [0.79]
Days in registration	24.40 (19.00)	24.20 (19.00)	24.60 (19.00)	-0.35 [0.68]
Age	5.50 (2.48)	5.82 (2.56)	5.14 (2.42)	1.48 [0.79]
Return volatility (%)	4.36 (3.85)	4.38 (3.93)	4.35 (3.80)	0.26 [0.15]
Leverage (%)	19.16 (11.45)	18.91 (10.18)	19.44 (12.97)	-0.38 [0.16]

Table 1 (continued)

Panel B			
	MEF Improved Sample (1)	Non-MEF Improved Sample (2)	Difference (1) – (2)
Amount filed (10 ⁶)	121.70 (84.61)	134.00 (92.74)	-1.09 [0.28]
Proceeds (10 ⁶)	148.78 (101.72)	163.54 (111.41)	-1.10 [0.59]
Registration period average daily abnormal return (%)	0.45 (0.25)	0.81 (0.66)	-4.13*** [0.00]***
Shares filed (10 ⁶)	4.43 (3.45)	4.78 (3.57)	-1.24 [0.40]
Shares offered (10 ⁶)	5.04 (4.03)	4.96 (3.74)	0.27 [0.28]
Size (10 ⁶)	877.75 (426.97)	934.25 (494.62)	-0.46 [0.28]
Relative offer size (%)	23.03 (21.19)	23.61 (21.29)	-0.53 [1.00]
B/M	0.20 (0.14)	0.19 (0.15)	0.39 [0.55]
Share price	32.47 (25.22)	37.33 (28.03)	-1.98** [0.07]*
Offer price discount (%)	2.28 (1.59)	3.03 (2.49)	-3.12*** [0.00]***
Institutional ownership (%)	46.67 (44.65)	37.79 (34.74)	4.22*** [0.00]***
Δ (Institutional ownership) (%)	15.65 (14.88)	17.29 (14.98)	-1.51 [0.96]
Primary (%)	79.72 (92.04)	75.33 (82.61)	1.91* [0.00]***
Underwriter reputation	7.97 (8.00)	8.06 (8.00)	-0.84 [0.64]
Days in registration	22.97 (19.00)	25.32 (19.00)	-1.50 [0.62]
Age	5.53 (2.76)	6.09 (2.52)	-0.81 [0.86]
Return volatility (%)	4.26 (3.87)	4.48 (4.10)	-1.27 [0.20]
Leverage (%)	16.48 (8.42)	21.11 (13.12)	-2.40** [0.07]*

Table 2
Stock Returns Prior to and Around Improved and Regular SEOs

This table reports the mean (median) buy-and-hold raw and abnormal returns in percentage, for various event windows relative to the announcement and offering dates of the SEO. The *Raw return* is calculated by compounding daily returns of SEO firms. The *Abnormal return* is the compounded return of SEO firms minus the CRSP value-weighted index return compounded over the same window. *Prior to Filing (-46, -1)* is the return from event day -46 to day -1 prior to the filing date. *Filing Date (0, +1)* is from day 0 to day +1 relative to the SEO filing. The *Registration Period* is from day 2 after the registration to day -1 prior to the SEO offer date. *Offer Date (0, +1)* is from day 0 to day +1 relative to the SEO offer date. The number of days in the registration period differs across sample firms. Therefore, we also report *Average daily abnormal return*, the average daily abnormal returns (relative to CRSP value-weighted index returns) over the registration period. *Improved SEOs* are seasoned equity offerings whose total dollar value of proceeds is greater than the amount filed originally at registration and/or are offerings whose issuers file a post-effective MEF amendment on the offer date. The remaining SEOs are classified as *Regular SEOs*. All variables are winsorized at top and bottom 1%. The column *Difference* reports the *t*-values of mean differences between the Improved and Regular SEOs. The *p*-values of median score tests for the differences are presented in brackets. ***, **, and * denote 1%, 5%, and 10% level of significance, respectively.

	Full Sample	Improved SEOs (1)	Regular SEOs (2)	Difference (1) – (2)
Panel A: Prior to Filing (-46, -1)				
Raw return (%)	37.19*** (24.15)***	39.52*** (26.55)***	34.65*** (22.74)***	1.45 [0.13]
Abnormal return (%)	33.46*** (21.72)***	35.32*** (23.62)***	31.44*** (19.47)***	1.17 [0.06]*
Panel B: Filing Date (0, +1)				
Raw return (%)	-2.84*** (-2.95)***	-2.19*** (-2.45)***	-3.55*** (-3.13)***	3.12*** [0.06]*
Abnormal return (%)	-2.93*** (-3.16)***	-2.35*** (-2.93)***	-3.57*** (-3.40)***	2.89*** [0.17]
Panel C: Registration Period (filing date +2, offer date -1)				
Raw return (%)	4.51*** (1.50)***	14.97*** (10.15)***	-6.83*** (-6.72)***	17.96*** [0.00]***
Abnormal return (%)	3.23*** (0.03)**	12.62*** (8.39)***	-6.94*** (-6.21)***	16.92*** [0.00]***
Average daily abnormal return (%)	0.18*** (0.08)***	0.64*** (0.44)***	-0.32*** (-0.24)***	17.10*** [0.00]***
Panel D: Offer Date (0, +1)				
Raw return (%)	0.18 (-0.15)	2.22*** (1.57)***	-2.04*** (-2.12)***	7.76*** [0.00]***
Abnormal return (%)	0.09 (-0.26)	2.12*** (1.55)***	-2.10*** (-2.28)***	7.77*** [0.00]***

Table 3
Stock Returns Prior to and Around MEF and non-MEF Improved and Regular SEOs

This table reports the mean (median) buy-and-hold raw and abnormal returns in percentage, for various event windows relative to the filing and offering dates of the SEO. The *Raw return* is calculated by compounding daily returns of SEO firms. The *Abnormal return* is the compounded return of SEO firms minus the CRSP value-weighted index return compounded over the same window. *Prior to Filing (-46, -1)* is the return from day -46 to day -1 prior to the filing date. *Filing Date (0, +1)* is from day 0 to day +1 relative to the SEO filing. *Offer Date (0, +1)* is from day 0 to day +1 relative to the SEO offer date. The number of days in the registration period differs across sample firms. Therefore, we also report *Average daily abnormal return*, the average daily abnormal returns (relative to CRSP value-weighted index returns) over the registration period. *MEF Improved SEOs* file the MEF amendment on the offer date. *Non-MEF Improved SEOs* are seasoned equity offerings without MEF amendments whose offer size, measured in total dollar value of proceeds, is greater than the amount filed originally. The remaining SEOs are classified as *Regular SEOs* and their offer size is less than the amount filed originally. The *Difference* reports the *t*-values of mean differences. The *p*-values of median score tests for the differences are presented in brackets. ***, **, and * denote 1%, 5%, and 10% level of significance, respectively.

SEO sample examined	Prior to Filing (-46, -1)		Filing Date (0, +1)		Registration Period (filing date +2, offer date -1)			Offer Date (0, +1)	
	Raw Return (%)	Abnormal Return (%)	Raw Return (%)	Abnormal Return (%)	Raw Return (%)	Abnormal Return (%)	Average Daily Abnormal Return (%)	Raw Return (%)	Abnormal Return (%)
Full Sample	37.19*** (24.15)***	33.46*** (21.72)***	-2.84*** (-2.95)***	-2.93*** (-3.16)***	4.51*** (1.50)***	3.23*** (0.03)**	0.18*** (0.08)***	0.18 (-0.15)	0.09 (-0.26)
MEF Improved	36.15*** (24.51)***	32.25*** (22.32)***	-2.86*** (-3.05)***	-3.15*** (-3.27)***	9.69*** (5.13)***	7.88*** (3.85)***	0.45*** (0.25)***	4.33*** (3.29)***	4.25*** (2.80)***
Non-MEF Improved	42.57*** (27.65)***	38.08*** (24.22)***	-1.59*** (-2.10)***	-1.62*** (-2.27)***	19.75*** (14.83)***	16.91*** (12.31)***	0.81*** (0.66)***	0.30 (0.00)	0.18 (-0.15)
Regular Sample	34.65*** (22.74)***	31.44*** (19.47)***	-3.55*** (-3.13)***	-3.57*** (-3.40)***	-6.83*** (-6.72)***	-6.94*** (-6.21)***	-0.32*** (-0.24)***	-2.04*** (-2.12)***	-2.10*** (-2.28)***

Differences

MEF Improved - Non-MEF Improved	-1.43 [0.44]	-1.33 [0.44]	-2.10** [0.26]	-2.63*** [0.09]*	-5.08*** [0.00]***	-4.77*** [0.00]***	-4.13*** [0.00]***	5.40*** [0.00]***	5.47*** [0.00]***
Non-MEF Improved - Regular	1.89* [0.15]	1.62 [0.06]*	3.72*** [0.01]**	3.81*** [0.03]**	16.70*** [0.00]***	15.57*** [0.00]***	16.14*** [0.00]***	3.56*** [0.00]***	3.52*** [0.01]**
MEF Improved - Regular	0.39 [0.47]	0.21 [0.22]	1.30 [0.81]	0.81 [0.94]	11.00*** [0.00]***	10.44*** [0.00]***	10.79*** [0.00]***	9.68*** [0.00]***	9.77*** [0.00]***

Table 4
Cross-Sectional Analysis of Offer Date Returns

This table reports offer date return regressions. *Improved SEOs* are offers whose total dollar proceeds are greater than the amount filed originally at registration and/or are MEF offerings. *MEF* offerings are SEOs whose issuers file a post-effective amendment on the offer date. The remaining observations are classified as *Regular SEO*. In Model (1), we first report the offer price discount regression. The offer price discount is calculated as $(LRP - OP)/LRP$ where LRP is the last reported price and OP is the SEO offer price, both of which are obtained from the offering prospectus. We compute the *Unexpected offer price discount* based on the regression residual in Model (1). We then apply the *Unexpected offer price discount* to regressions in Models (2) and (3). Model (2) reports the offer date return regression using continuous Improved and MEF measures. Model (3) reports the regression result using Improved and MEF dummy variables. *Exchange* is a dummy variable that is equal to one if the offering is conducted on Nasdaq and zero otherwise. All other variables are as defined in Table 1.

Model	(1)	(2)	(3)
Dependent variable	Offer price discount	Offer date return	Offer date return
Intercept	0.060 (6.66)***	3.376 (-1.38)	2.373 (-0.97)
Unexpected offer price discount		-77.429 (-8.70)***	-76.335 (-8.57)***
MEF degree		24.079 (6.47)***	
Improved degree		0.024 (2.74)***	
MEF dummy			3.313 (4.59)***
Improved dummy			2.406 (3.50)***
Return volatility	0.004 (8.66)***	-0.269 (-1.97)**	-0.216 (-1.58)
Natural log of market value of equity	-0.006 (-5.00)***	-0.085 (-0.27)	-0.124 (-0.39)
Reciprocal of stock price	0.077 (3.92)***	-9.350 (-1.78)*	-8.171 (-1.55)
Underwriter reputation	-0.002 (-2.33)**	-0.291 (-1.34)	-0.313 (-1.44)
Exchange	-0.003 (-1.12)	0.717 (-0.96)	0.720 (-0.97)
Relative offer size	0.000 (-0.83)	-0.011 (-1.24)	-0.012 (-1.30)
Registration period average daily abnormal return (%)	0.001 (1.32)	-0.451 (-1.59)	-0.235 (-0.91)
Adjusted R-Square	0.130	0.156	0.158
F-value	21.03***	18.30***	18.51***

Table 5
Two-Year Stock Performance based on Calendar Time Portfolio Regression

This table presents the two-year abnormal stock returns following SEOs. *Improved SEOs* are seasoned equity offerings whose total dollar amount of proceeds has been increased from the original filing amounts and/or are offerings whose issuers file a post-effective MEF amendment on the offer date. The remaining SEOs are classified as *Regular SEOs*. The abnormal stock returns are measured by alphas in the following Fama-French (1993) three-factor and Carhart (1997) four-factor regressions using the OLS regression approach:

$$R_{pt} - R_{ft} = \alpha + \beta(R_{mt} - R_{ft}) + sSMB_t + hHML_t + e_t,$$

$$R_{pt} - R_{ft} = \alpha + \beta(R_{mt} - R_{ft}) + sSMB_t + hHML_t + mWML_t + e_t$$

where R_p is the SEO portfolio return, R_f is the risk-free rate, R_m is the CRSP value-weighted market index return, SMB is the small-firm portfolio return minus the big-firm portfolio return, HML is the high book-to-market portfolio return minus the low book-to-market portfolio return, and WML is the past winner portfolio return minus the past loser portfolio return. The regression is run from February 1997 to December 2012 and includes firms that have conducted SEOs in any of the past two years. Panel A and B show the abnormal returns for the Improved and Regular SEOs, respectively. Panel C shows the difference between Improved and Regular SEOs by regressing the return difference between two groups against factors. The numbers in parentheses are t -statistics. ***, **, and * denote 1%, 5%, and 10% level of significance respectively. Results are reported for two portfolio weighting schemes, equal weight (EW) and log value weight (LW). We drop months with less than 15 observations in the portfolio.

	Fama-French Three Factor Model				Carhart Four-Factor Model				
	α	β	s	h	α	β	s	h	m
Panel A: Improved SEOs									
EW	-0.13%	1.47	1.09	-0.32	-0.02%	1.42	1.11	-0.35	-0.13
	(-0.49)	(25.58)	(14.92)	(-3.96)	(-0.07)	(23.71)	(15.46)	(-4.37)	(-2.64)
LW	-0.23%	1.45	1.05	-0.36	-0.19%	1.43	1.06	-0.37	-0.05
	(-0.90)	(25.67)	(14.73)	(-4.53)	(-0.74)	(23.86)	(14.70)	(-4.62)	(-0.94)
Panel B: Regular SEOs									
EW	-0.54%	1.38	0.91	-0.46	-0.44%	1.30	0.93	-0.52	-0.15
	(-1.90)	(23.01)	(11.86)	(-5.60)	(-1.59)	(20.39)	(12.46)	(-6.37)	(-3.20)
LW	-0.70%	1.39	0.94	-0.44	-0.64%	1.35	0.96	-0.48	-0.08
	(-2.65)	(25.15)	(13.26)	(-5.88)	(-2.46)	(22.44)	(13.46)	(-6.18)	(-1.77)
Panel C: Difference between Improved and Regular SEOs									
EW	0.53%	0.11	0.19	0.15	0.52%	0.12	0.19	0.15	0.01
	(1.90)	(1.89)	(2.47)	(1.73)	(1.82)	(1.87)	(2.40)	(1.75)	(0.28)
LW	0.56%	0.07	0.12	0.09	0.56%	0.07	0.12	0.09	0.00
	(2.09)	(1.30)	(1.62)	(1.09)	(2.06)	(1.20)	(1.60)	(1.07)	(-0.03)

Table 6
Two-Year Stock Performance based on Calendar Time Portfolio Regression
Using the WLS Regression Approach

This table presents the two-year abnormal stock returns following SEOs using the weighted least square (WLS) regression approach where the weight is the number of observations in each calendar month. The abnormal stock returns are measured by alphas in the following Fama-French (1993) three-factor and Carhart (1997) four-factor regressions:

$$R_{pt} - R_{ft} = \alpha + \beta(R_{mt} - R_{ft}) + sSMB_t + hHML_t + e_t,$$

$$R_{pt} - R_{ft} = \alpha + \beta(R_{mt} - R_{ft}) + sSMB_t + hHML_t + mWML_t + e_t$$

where R_p is the SEO portfolio return, R_f is the risk-free rate, R_m is the CRSP value-weighted market index return, SMB is the small-firm portfolio return minus the big-firm portfolio return, HML is the high book-to-market portfolio return minus the low book-to-market portfolio return, and WML is the past winner portfolio return minus the past loser portfolio return. The regression is run from February 1997 to December 2012 and includes firms that have conducted SEOs in any of the past two years. *Improved SEOs* are offers whose total dollar proceeds are greater than the amount filed originally at registration and/or are offerings whose issuers file a post-effective MEF amendment on the offer date. The remaining sample observations are classified as *Regular SEO*. Panel A and B show the abnormal returns for the Improved and Regular SEOs, respectively. Panel C shows the difference between Improved and Regular SEOs by regressing the return difference between two groups against factors. The numbers in parentheses are t -statistics. ***, **, and * denote 1%, 5%, and 10% level of significance respectively. Results are reported for two portfolio weighting schemes, equal weight (EW) and log value weight (LW).

	Fama-French Three Factor Model				Carhart Four-Factor Model				
	α	β	s	h	α	β	s	h	m
Panel A: Improved SEOs									
EW	0.07%	1.56	1.01	-0.36	0.24%	1.49	1.05	-0.40	-0.17
	(0.26)	(26.21)	(16.00)	(-4.72)	(0.95)	(24.97)	(17.21)	(-5.47)	(-4.25)
LW	-0.07%	1.55	0.97	-0.39	0.00%	1.52	0.99	-0.40	-0.06
	(-0.26)	(26.96)	(16.04)	(-5.28)	(-0.00)	(25.45)	(16.13)	(-5.47)	(-1.61)
Panel B: Regular SEOs									
EW	-0.73%	1.35	0.94	-0.42	-0.52%	1.26	0.98	-0.48	-0.19
	(-2.93)	(24.51)	(15.10)	(-5.75)	(-2.19)	(22.88)	(16.51)	(-6.85)	(-4.92)
LW	-0.84%	1.35	0.96	-0.44	-0.74%	1.31	0.97	-0.47	-0.10
	(-3.65)	(26.52)	(16.51)	(-6.58)	(-3.19)	(24.54)	(16.95)	(-7.02)	(-2.58)
Panel C: Difference between Improved and Regular SEOs									
EW	0.68%	0.16	0.10	0.05	0.67%	0.17	0.09	0.06	0.02
	(2.77)	(2.93)	(1.57)	(0.73)	(2.65)	(2.91)	(1.48)	(0.78)	(0.44)
LW	0.67%	0.14	0.04	0.05	0.65%	0.15	0.04	0.06	0.02
	(2.84)	(2.71)	(0.77)	(0.74)	(2.70)	(2.74)	(0.68)	(0.81)	(0.52)

Table 7
Fama-MacBeth Monthly Cross-Sectional Return Regressions

This table shows the Fama-MacBeth (1973) monthly cross-sectional return regressions. The dependent variable is the monthly raw return. Monthly regressions are carried out from February 1997 to December 2012 by including firms that have conducted SEOs in any of the past two years. The averages and associated *t*-statistics of the time-series of monthly coefficients are reported. *Size* is the log market value of equity in millions prior to offerings. *B/M* is the book-to-market ratio measured prior to offerings. *B/M dummy* equals to 1 if B/M is non-positive, and zero elsewhere. When B/M is negative, we assign it a zero. Improved SEOs are offers whose total dollar proceeds are greater than the amount filed originally at registration and/or are offerings whose issuers file a post-effective MEF amendment on the offer date. The remaining sample observations are classified as Regular SEO. *Improved dummy* equals 1 if a SEO is an Improved offering, and zero elsewhere. *Improved degree* is the total dollar proceeds divided by the total filing amount, and minus one. Improved degree is winsorized at top and bottom 1% to control for outliers. *OPD* is the offer price discount, defined as $(LRP - OP)/LRP$ where LRP is the last reported price and OP is the SEO offer price. *Unexpected OPD* is the residual of regression model (1) in Table 4. Panels B and C report results by including *OPD* and *Unexpected OPD*, respectively. Months with less than 15 stocks are excluded from the analysis. ***, **, and * denote 1%, 5%, and 10% level of significance respectively.

Panel A: Monthly Cross-Sectional Return Regression		
Model	(1)	(2)
Intercept	0.0072 (0.43)	0.0069 (0.41)
Size	-0.0005 (-0.24)	-0.0002 (-0.06)
B/M	0.0082 (0.41)	0.0102 (0.52)
B/M dummy	-0.0059 (-0.65)	-0.0048 (-0.55)
Improved dummy	0.0054* (1.76)	
Improved degree		0.0135** (2.43)

Table 7 (continued)

Panel B: Monthly Cross-Sectional Return Regression with OPD			
Model	(1)	(2)	(3)
Intercept	0.0145 (0.88)	0.0142 (0.83)	0.0135 (0.78)
Size	-0.0010 (-0.44)	-0.0015 (-0.64)	-0.0010 (-0.44)
B/M	0.0027 (0.14)	0.0052 (0.26)	0.0073 (0.37)
B/M dummy	-0.0057 (-0.61)	-0.0053 (-0.56)	-0.0044 (-0.48)
OPD	-0.0360 (-0.61)	-0.0282 (-0.47)	-0.0272 (-0.46)
Improved dummy		0.0053* (1.74)	
Improved degree			0.0139** (2.52)
Panel C: Monthly Cross-Sectional Return Regression with Unexpected OPD			
Model	(1)	(2)	(3)
Intercept	0.0126 (0.77)	0.0132 (0.78)	0.0126 (0.74)
Size	-0.0010 (-0.42)	-0.0016 (-0.66)	-0.0011 (-0.48)
B/M	0.0050 (0.25)	0.0072 (0.36)	0.0095 (0.47)
B/M dummy	-0.0055 (-0.60)	-0.0052 (-0.54)	-0.0042 (-0.45)
Unexpected OPD	-0.0464 (-0.75)	-0.0361 (-0.58)	-0.0319 (-0.52)
Improved dummy		0.0054* (1.75)	
Improved degree			0.0140** (2.52)

Table 8
Robustness Checks of Cross-Sectional Return Regressions
by Controlling for Changes in Institutional Ownership

This table reports robustness checks of Fama-MacBeth monthly return regressions by controlling for changes in institutional ownership. *Size* is the log market value of equity in millions prior to offerings. *B/M* is the book-to-market ratio measured prior to offerings. *B/M dummy* equals to 1 if B/M is non-positive, and zero elsewhere. When B/M is negative, we assume it to be a zero. *Change in IO* is the change in percentage institutional ownership, obtained from the Thomson Reuters 13F database, around the SEO offering quarter. Improved SEOs are offers whose total dollar proceeds are greater than the amount filed originally at registration and/or are offerings whose issuers file a post-effective MEF amendment on the offer date. The remaining sample observations are classified as Regular SEO. *Improved dummy* equals 1 if a SEO is an Improved offering, and 0 elsewhere. *Improved degree* is the total dollar proceeds divided by the total filing amount, minus one. It is winsorized at top and bottom 1% to control for outliers. *OPD* is the offer price discount, defined as $(LRP - OP)/LRP$ where LRP is the last reported price and OP is the SEO offer price. *Unexpected OPD* is the residual of regression model (1) in Table 4. Panels B and C report results by including OPD and unexpected OPD, respectively. Months with less than 15 stocks are excluded from the analysis. ***, **, and * denote 1%, 5%, and 10% level of significance respectively.

Panel A: Monthly Cross-Sectional Return Regressions		
Model	(1)	(2)
Intercept	0.0040 (0.23)	0.0049 (0.28)
Size	-0.0001 (-0.04)	0.0001 (0.06)
B/M	0.0033 (0.16)	0.0052 (0.26)
B/M dummy	-0.0064 (-0.73)	-0.0052 (-0.60)
Change in IO	0.0192 (1.18)	0.0126 (0.77)
Improved dummy	0.0037 (1.22)	
Improved degree		0.0108* (1.94)

Table 8 (continued)

Panel B: Monthly Cross-Sectional Return Regressions with OPD		
Model	(1)	(2)
Intercept	0.0074 (0.41)	0.0084 (0.45)
Size	-0.0006 (-0.24)	-0.0003 (-0.13)
B/M	0.0014 (0.07)	0.0031 (0.16)
B/M dummy	-0.0058 (-0.63)	-0.0048 (-0.53)
Change in IO	0.0181 (1.12)	0.0117 (0.72)
OPD	-0.0065 (-0.11)	-0.0105 (-0.18)
Improved dummy	0.0038 (1.24)	
Improved degree		0.0110** (2.01)
Panel C: Monthly Cross-Sectional Return Regressions with Unexpected OPD		
Model	(1)	(2)
Intercept	0.0081 (0.46)	0.0088 (0.50)
Size	-0.0008 (-0.34)	-0.0005 (-0.22)
B/M	0.0031 (0.15)	0.0049 (0.24)
B/M dummy	-0.0058 (-0.63)	-0.0047 (-0.52)
Change in IO	0.0180 (1.09)	0.0117 (0.70)
Unexpected OPD	-0.0150 (-0.24)	-0.0157 (-0.25)
Improved dummy	0.0039 (1.28)	
Improved degree		0.0111** (2.02)

Table 9
Summary of Other Post-Issuance Long-Run Performance Metrics

The change in operating performance (OP) is the difference in EBITDA (operating income before depreciation, Compustat item 13) between year 0 and year 2, divided by total assets at year -1, the fiscal year-end immediately prior to offerings. EBITDA is chosen because it is not affected by changes in capital structure or by special items and taxes that influence other measures of earnings (Barber and Lyon, 1996). The abnormal change in OP is the difference between a sample firm's change in OP and the change in OP of the corresponding matching firm matched on industry, pre-event OP and pre-event change in OP (Grullon and Michaely, 2004). Investment (INV) is the sum of capital expenditures (Compustat item 128) and research and development expenses (Compustat item 46). The change in INV is the difference in investments between year 0 and year 2, divided by total assets at event year -1, the fiscal year-end immediately prior to offerings. The abnormal change in INV is the difference between a sample firm's change in INV and the change in INV of the corresponding matching firm matched on industry, pre-event investment and pre-event change in investment. For changes in operating performance (investments), the results are similar when we scale the change in EBITDA (INV) by total assets at year 0, the fiscal year-end immediately following offerings. ***, **, and * denote 1%, 5%, and 10% level of significance respectively.

Metric	Improved Dummy	Improved Degree
Changes in Operating performance		
Two-year post-issuance EBITDA (per Barber and Lyon, 1996)	Positive ***	Positive **
Two-year abnormal EBITDA (per Grullon and Michaely, 2004)	Positive ***	Positive ***
Changes in investments		
Two-year post-issuance changes in investment	Positive ***	Positive ***
Two-year post-issuance abnormal changes in investment	Positive **	Positive ***