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Underwriter relationships and shelf offerings

Mark Humphery-Jenner [a], Sigitas Karpavicius [b], Jo-Ann Suchard [a,*]

[a] UNSW Business School, Australia
[b] Adelaide Business School, The University of Adelaide, Australia

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ABSTRACT

We compare the motivations for switching underwriters between seasoned equity offerings (SEOs) for both shelf offerings and traditional offerings. Shelf offerings have risen in importance and accounted for more than 90% of SEOs in 2015. In traditional offerings, the underwriter is selected before the terms and pricing of the deal are set. In contrast, shelf issuers request proposals or bids from underwriters for the sale of securities and the underwriter is selected based on the pricing, terms and services offered in the bid. The competitive and transactional nature of the shelf registered market may reduce switching costs for the issuer and potentially increases the issuer's bargaining power. This suggests that underwriter switching in shelf offerings might have different, heretofore unexplored, drivers from traditional offerings. The results suggest that cost-considerations motivate switching in shelf offerings whereas underwriter reputation motivates switching in traditional offerings. However, changes in underwriter reputation can themselves be associated with changes in cost. Cost considerations also impact switching from traditional offerings to shelf offerings.

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1. Introduction

Shelf offerings have become an increasingly important mechanism through which to issue equity. Shelf offerings have risen in importance from 3.34% of total SEO proceeds in 1995 to 92.86% of proceeds in 2015. Shelf offerings allow firms to raise capital quickly. On average, a shelf offering is conducted five days after it was announced whereas a traditional SEO takes place 30 days after the filing date (Autore et al., 2008, 2011). Shelf issues generally require less marketing effort from underwriters than traditional SEOs (Gao and Ritter, 2010) and shelf issuers are on average larger and have less information asymmetry than traditional SEO firms (Autore et al., 2008; Bethel and Krigman, 2008).

Shelf offerings also differ in terms of underwriter selection. In a traditional offering, the firm first selects the lead underwriter and then files the required documents with the SEC. The underwriter does not commit to pricing or issue size at the time of selection. Firms that use shelf registrations, generally hire their underwriter at a later stage in the issuance process than is typical for traditional issues. Once a shelf registration is effective and the firm decides to issue equity, it requests proposals or bids from one or more underwriters for the sale of securities. The company weighs the proposals and accepts a bid based on terms and pricing. Thus, the process is effectively a competitive bidding process. This allows the firm to assess the value they are getting from the bid. A proportion of securities is taken off the shelf, and the company and underwriters sign

* Corresponding author.
E-mail addresses: mlhj@unsw.edu.au (M. Humphery-Jenner), sigitas.karpavicius@adelaide.edu.au (S. Karpavicius), j.suchard@unsw.edu.au (J.-A. Suchard).

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a term agreement based on a full scale agreement that was previously filed as an exhibit to the registration statement (Johnson and McLaughlin, 2012).[1]

As firms do not need to name a lead underwriter until after obtaining a shelf registration, issuers are able to use the registration procedure as an invitation for competitive bids (see, e.g., Kidwell et al. (1987)). One reason for this is that a shelf filing acts a credible commitment to underwriters that there is a realistic possibility of a securities issue in the near future. This increases the underwriter's incentives to obtain information and bid their services. Underwriters are likely to place a lower bid for less risky firms and for firms with a greater likelihood of repeat business. In this way, a shelf registration leverages the number of market participants so as to increase industry competition (Gustafson, forthcoming). This suggests that the nature of the underwriting relationship differs significantly between traditional SEOs and shelf offerings.

Prior empirical studies on underwriter switching pre-date the dominance of shelf-registrations and find that approximately one third of firms change their lead underwriter (James, 1992; Krigman et al., 2001; Burch et al., 2005). The prior literature suggests that underwriter switching is potentially motivated by the value of relationship capital, acquisition of additional services such as analyst coverage, lower issue fees and investment bank reputation (James, 1992; Krigman et al., 2001; Cliff and Denis, 2004; Burch et al., 2005; Fernando et al., 2005; Dunbar and Foerster, 2008; Fernando et al., 2015).

Switching in shelf offerings could have different motivations given their aforementioned differences from traditional offerings. Given the recent prominence of shelf offerings, exploring these motivations is increasingly important. The information available to issuers at the time of underwriter selection differs across SEO types. Shelf issuers have a richer information set available at the time of underwriter selection. Traditional issuers are only aware of the reputation and their experience with their previous underwriter (costs, performance, and additional services). If the issuer was satisfied with the previous underwriter's performance, it is more likely to contact that underwriter for the new issue. In comparison, shelf issuers have information on the reputation of interested underwriters who have submitted bids and information included in competing bids such as direct costs, issue size and additional services such as analyst coverage. This might lead to different motivations in selecting underwriters. Whereas the motivations for switching underwriters for a traditional SEO would likely involve issues related to prior underwriting and lending relationships, underwriter ranking and value-added services, switching for a shelf-based offering might reflect cost-considerations. Gustafson, (forthcoming) argues that the competitive and transactional nature of the shelf registered market reduces the switching costs for the issuer and increases the issuer's bargaining power.

We analyze underwriter switching by examining more than 1800 matched-pairs of SEOs from between 1990 and 2015. As we are interested in switching between SEO-underwriters, the sample only includes firms that elect to undertake more than one SEO. We mainly focus on switching between SEOs (as opposed to from the IPO) as an IPO cannot occur by way of a shelf-offering.[2] We test a number of motivations for underwriter switching in SEOs including lower issue fees, the acquisition of underwriter services such as analyst coverage, investment bank reputation (James, 1992; Krigman et al., 2001; Cliff and Denis, 2004; Burch et al., 2005; Fernando et al., 2005; Fernando et al., 2015; Dunbar and Foerster, 2008) and the impact of underwriter relationships from other types of transactions (Drucker and Puri, 2005). We also consider switching offer type from a traditional offering to a shelf offering.

We find that cost considerations are a key motivation for underwriter switching for shelf offerings. Underwriter reputational considerations appear important for both types of SEOs, but are more so for traditional SEOs. Cost considerations appear not to be a direct motivator of switching in traditional offerings, after controlling for changes in underwriter reputation. However, changes in underwriter reputation can themselves be associated with changes in cost. We find broadly consistent results for underwriter reputation when looking at underwriter switching decisions following IPOs. Cost considerations, but not underwriter reputation, impact the switch from traditional SEOs to shelf offerings. Prior underwriter relationships from other types of transactions also impact underwriter switching for both types of SEOs. We run a series of robustness tests to help mitigate economic concerns and ensure the results' robustness.

This paper adds to the literature on the role of investment banks as financial intermediaries in the equity underwriting process. The method by which firms raise equity has significantly changed over the last decade as shelf offerings have become the dominant SEO method. Prior studies on underwriter switching have focused on traditional offerings. We examine the impact of shelf offering on the motivation to switch underwriters. We compare and contrast switching for traditional offerings as against shelf offerings. The distinction is important as shelf offerings proceed by a significantly different mechanism-of-action than traditional offerings; and thus, it is not immediately obvious that the same motivations for switching in traditional offerings would apply to shelf offerings. This may impact the way in which investment banks compete for new SEO underwriting mandates. The paper proceeds as follows. The literature and empirical predictions are in Section 2. Section 3 describes the data and Section 4 presents the empirical findings. Section 5 concludes.

2. Hypothesis development

This section discusses the potential motivations for underwriter switching, both for shelf offerings and for traditional offerings.

[1] The terms of the securities and the underwriting arrangements are set forth in a supplement to the basic prospectus that is filed with the SEC under rule 424(b)(2) by the close of business on the second business day after pricing.

[2] We consider underwriting switching from IPO to SEO in the additional tests in section 4.3.1.

Table 1
Hypotheses and predictions.

Hypothesis	Prediction(s)
Hypotheses 1a, 1b, 1c: Switch due to fees	A negative relationship between the change in costs between issue $n-1$ and issue n and switching (i.e. lower costs lead to switching).
Hypotheses 2a, 2b,2c: Switch due to value-added services	A positive relationship between switching and the change in analyst coverage around SEO n, and a negative relationship between switching the change in analyst coverage around issue $n-1$.
Hypotheses 3a, 3b: Switch due to performance	A negative relationship between the returns earned immediately following issue $n-1$ and switching underwriters for issue n.
Hypotheses 4a, 4b, 4c: Switch due to graduation	Increase in underwriter reputation causes switching: Positive relationship between the change in UW rank, $\Delta Rank$, in the model $\text{Switch}_{i,\,(n-1,n)} = f(\Delta\text{Quality}_{i,\,(n-1,n)}, \text{Controls})$
Hypotheses 5a, 5b: Switch due to nature of the offering	A positive relationship between switching and the difference between (a) decile of UW from *n-1* at time of issue n and (b) decile of the proceeds raised in issue n The firm migrates to a higher quality underwriter as it does a larger issue. There is a positive coefficient on Δ Proceeds/$\text{Assets}_{i,\,(n-1,n)}$ in Δ UW $\text{rank}_{i,\,(n-1,n)} = f(\Delta$ Proceeds/$\text{Assets}_{i,\,(n-1,n)}$, Controls)
Hypotheses 6a, 6b: Switch associated with use of different bank for another non-SEO transaction	A positive relationship between switching and the use of a different bank (from the underwriter used for issue $n-1$).

There are several possible reasons for underwriter switching, and we expect that the motivation differs between shelf offerings and traditional offerings. The main reasons are competition among investment banks based upon fees, issuers' desire to get better access to additional services (i.e., analyst coverage), underwriter performance, the graduation towards a higher ranked investment bank, and the selection of higher (or lower) ranked underwriters for differently large (small) issues. Table 1 summarizes the hypotheses and empirical predictions, and the following sections discuss the basis for them.

2.1. Fees and competition among investment banks

The first motivation we test for switching underwriters relates to costs and fees. James (1992) finds that underwriter spreads in IPOs are lower when firms issue seasoned equity with the same underwriter. The logic is akin to the idea that establishing an underwriter-relationship incurs fixed costs during the first SEO, resulting in lower costs for the second SEO. However, Burch et al. (2005) suggest that loyalty might be associated either with higher or lower fees depending on the value of relationship capital, implying that fees could factor into underwriter switching. A company could rationally switch underwriters if the fee-differential is sufficient to offset the value of remaining with the prior underwriter (including the value of the relationship-capital with that existing underwriter).

We expect that such cost considerations will be more important for shelf offerings as these are relatively short-term interactions, with many shelf offerings occurring shortly after the registration with the SEC, suggesting that there is relatively little relationship-capital associated with underwriter relationships in shelf registrations. We also consider switching offer type. Cost considerations may impact the switching of offer types from traditional offerings to shelf offerings.

Hypothesis 1a. Shelf-issuers switch underwriters to pay lower fees.

Hypothesis 1b. Traditional-issuers switch underwriters to pay lower fees.

Hypothesis 1c. Traditional-issuers switch to shelf offerings to pay lower fees. Traditional issuers who do not switch offering type pay higher fees than those who do.

2.2. Acquisition of additional services

The second motivation considers the impact of additional services provided by underwriters. Firms are argued to often seek, and underwriters to often compete, on the ability to provide additional services (Chen and Ritter, 2000; Liu and Ritter, 2011). These services include analyst coverage. Krigman et al. (2001) argue that firms switch underwriters in order to access analyst coverage. Cliff and Denis (2004) report a negative relation between underwriter switching and the unexpected amount of post-IPO analyst coverage for firms completing IPOs from 1993 through 2000. Boudry et al. (2011) suggest that analyst behavior can influence the choice of underwriter. In this context, we expect that firms decide to switch underwriter if they are not satisfied by the change in analyst coverage around the SEO.

We analyze whether firms switch underwriters to gain greater analyst coverage. Given that the shelf offering is more expedited and the underwriter plays a less important role in shelf offerings, we expect that value-added services will have a lesser role in underwriter switching in shelf offerings. Conversely, we expect that shelf-issuers might switch to a traditional offering to obtain greater analyst coverage.

Hypothesis 2a. Shelf-issuers switch underwriters to acquire additional analyst coverage.

Hypothesis 2b. Traditional-issuers switch underwriters to acquire additional analyst coverage.

Hypothesis 2c. Shelf-issuers switch to traditional offerings to gain greater analyst coverage.

2.3. Underwriter performance

The third motivation we test is that the issuer penalizes the current underwriter for poor performance. We define the previous (the earlier) SEO within the matched pair as the SEO n – 1 and the current (more recent) SEO as the SEO n. If the underwriter for issue $n-1$ performs poorly, then firms might be more likely to switch underwriters for issue n. Poor performance could include a fall in the stock price post SEO (poor post-SEO stock returns), which the issuer could ascribe to the offer being incorrectly priced. In the M&A field, there is evidence that performance can drive acquirer/advisor matching (Sibilkov and McConnell, 2014). However, in the SEO-area, there is limited evidence to support this motivation for underwriter switching (see e.g. Krigman et al., 2001). Further, prospect theory suggests that firms might not be sensitive to the performance of the SEO (following Loughran and Ritter, 2002). Thus, we expect that while performance might influence underwriter switching, it is not likely to be a strong driver. To the extent that the underwriter engages in a larger suite of value-added activities in a traditional offering, we expect that the underwriter will appear more responsible for poor performance in a traditional offering. Thus, we expect that performance will have more impact on switching for traditional offerings than for shelf offerings.

Hypothesis 3a. Shelf-issuers switch underwriters following poor offering performance.

Hypothesis 3b. Traditional-issuers switch underwriters following poor offering performance.

2.4. Firm-underwriter assortative matching

Initial studies on underwriter graduation consider one sided matching where firms tend to move to an investment bank with greater reputation (Dunbar and Foerster, 2008; Krigman et al., 2001). Burch et al. (2005) find that seasoned equity issuers graduating to more reputable investment banks pay lower fees during the period 1975 to 2001, which could be one motivation for switching. More recent studies have considered two-sided matching between the underwriter and the issuer (Fernando et al., 2005, 2013, 2015; Luo et al., 2010). Fernando et al. (2005) argue that firm quality and underwriter reputation are positively related. Fernando et al. (2005) define a high quality firm as a firm that could positively affect the underwriter's expected profit. Therefore, if an issuer improves in quality from its last security issue, it will switch to a higher reputation underwriter. Similarly, if a firm declines in quality, it will choose a lower reputation underwriter. Fernando et al. (2015) demonstrate that higher reputation investment banks can increase SEO proceeds.

There is some evidence of such two-sided matching both in the traditional SEO market (Fernando et al., 2005, 2013, 2015; Luo et al., 2010) and in the debt market (McKenzie and Takaoka, 2008, 2013). We expect that reputational concerns will be more important for traditional offerings. The underwriter plays a less important role in shelf offerings than in traditional offerings. Thus, the underwriter's quality is likely to be less important for shelf offerings. Nonetheless, we do expect that reputational concerns will influence switching in shelf offerings, albeit to a lesser extent than with traditional offerings. Similarly, we expect that underwriter reputational concerns could encourage firms to switch offer type from a shelf offering to a traditional offering.

We consider both one and two sided matching and make the following predictions:

Hypothesis 4a. Shelf-issuers switch to an underwriter with higher quality.

Hypothesis 4b. Traditional-issuers switch to an underwriter with higher quality.

Hypothesis 4c. Shelf-issuers' switches to traditional offerings are associated with increases in underwriter quality.

Hypothesis 4d. Shelf-issuers switch to an underwriter with higher quality as the issue size increases.

Hypothesis 4e. Traditional-issuers switch to an underwriter with higher quality as the issue size increases.

2.5. Use of banks for other transactions

We expect that firms who undertake a non-SEO transaction following the SEO and use a different investment bank to that used for the SEO, will be more likely to switch underwriters. Firms that conduct a non-SEO transaction following SEO $n-1$ (but before SEO n) are more likely to switch underwriters for SEO n for several reasons. First, the use of the different investment bank indicates that the firm is less loyal to any individual bank. Subsequently, the reduced loyalty is likely to be associated with an increased willingness to switch banks. Second, firms who use a different bank for the intermediate non-SEO transaction will already have divulged firm-specific information to that other investment bank, giving that bank a potential information advantage (following Ergungor et al., 2015). Thus, switching to that other bank for the SEO will involve lower information-related frictions. We note that the willingness to use a different bank for the intermediate transaction could show dissatisfaction with the

underwriter's performance for issue $n - 1$. However, from an empirical perspective, we also control for underwriter performance in order to mitigate the possibility that using a different bank for the intermediate transaction merely proxies for underwriter performance. Subsequently, we make the following hypotheses:

Hypothesis 5a. Shelf issuers that use a different investment bank for a non-SEO transaction following SEO n − 1 (but before SEO n) are more likely to switch underwriters for SEO n.

Hypothesis 5b. Traditional issuers that use a different investment bank for a non-SEO transaction following SEO n − 1 (but before SEO n) are more likely to switch underwriters for SEO n.

3. Data

3.1. Sample composition

The initial sample consists of all seasoned equity offerings of primary or combined primary-secondary common stock, registered with the SEC during the period January 1990 through December 2015, and is obtained from the SDC database (U.S. Common Stock). We eliminate all offerings made by financial firms (with Standard Industrial Classification (SIC) codes 6000-6999), public utility firms (with SIC codes 4900-4999), and limited partnerships as well as rights issues, ADRs, ADSs, units, trust units, private placements, and beneficial interests.[3]

We start with the set of all SEOs between 1980 and 2015 (i.e., we start with SEOs 10 years prior to our sample period).[4] We start in 1980 so that we can determine the cause of switching from 1990 onwards. Not all firms make more than one SEO during that period (meaning that it would not be possible to examine SEO underwriter switching for those companies). For companies that undertake at least two SEOs, we create matched pairs of observations (of SEO n and $n - 1$). The first SEO in the pair can occur from 1980 onwards and the second SEO must occur between 1990 and 2015. We require a minimum of 14 calendar days between the SEOs. The final sample consists of 1815 matched pairs.[5] 66% of firms conducted two SEOs in our sample whereas 12% of firms made 6 or more SEOs. We assume that a firm switches underwriter if the firm chooses the investment bank/banks for its current SEO as a bookrunner or joint bookrunners that was/were neither a bookrunner nor a joint bookrunner in its previous equity issue, i.e. if none of the bookrunners or joint bookrunners from the previous SEO participate in the current SEO as bookrunners or joint bookrunners.[6]

The sample composition by year is in Fig. 1. The figure describes the sample by the year of the second offering in the matched pair and contains the number of offerings by year, split by whether offering n is a shelf offering or a traditional offering and the firm switches underwriter. The figure shows some fluctuation over time in underwriter switching (hence we use year dummies in multivariate models). Further, shelf issuers are less likely to switch in general. Shelf issuers switch underwriters in 42% of cases whereas firms making traditional offerings switch underwriters in 48% of cases.

Some firms also switch offering types. The rate at which firms switch offering types in Table 2. Of the 1101 firms that did a traditional offering for the first SEO in the pair, 292 (or 26.5%) switch to a shelf offering; of the 714 who do a shelf offering, 61 (or 8.5%) switch to a traditional offering. Thus, in total, 19.4% of our sample switches offering type.

3.2. Main hypothesized variables

We construct variables to represent the hypotheses. These include variables to capture the performance of the SEO, the fees and costs of the SEO, analyst coverage around the SEO, and the quality of the underwriter.

3.2.1. Fees and costs

We hypothesize that fees can be one motivation for underwriter switching. We measure the fees for both SEO $n - 1$ and SEO n. We measure both direct fees and indirect fees, as indirect fees can be significant in some contexts (Berg et al., 2016). We measure direct issue costs as the sum of gross spread and other direct expenses as a percentage of total proceeds (see e.g. Lee et al., 1996). Indirect issue costs are the product of −1 and the sum of the abnormal return over the 3-day event window centered around the filing day and the abnormal return over the 3-day event window centered around the issue day (following Lee et al., 1996). For shelf offerings, if a firm conducts more than one offering under the same registration, we allocate an equal portion of the abnormal return around the registration day to each observation. We compute the change in both types of fees between issue n and issue n – 1.

[3] The sample includes SEOs whose proceeds were used to finance M&As. However, we check the results are robust to excluding these SEOs from the sample. The sample also includes small firms (less than $75 million market capitalization) that were allowed to use shelf offerings from 2008 (Gustafson and Iliev, 2017).

[4] A small number of traditional offerings are not shelf eligible. We obtain similar results, if we exclude these from the sample.

[5] Approximately 80% of pairs of SEOs are of the same type of offering (either both shelf or both traditional). We obtain similar results, if we exclude the pairs of SEOs with differing offering types from the sample.

[6] We control for the mergers of underwriters over the last decade.

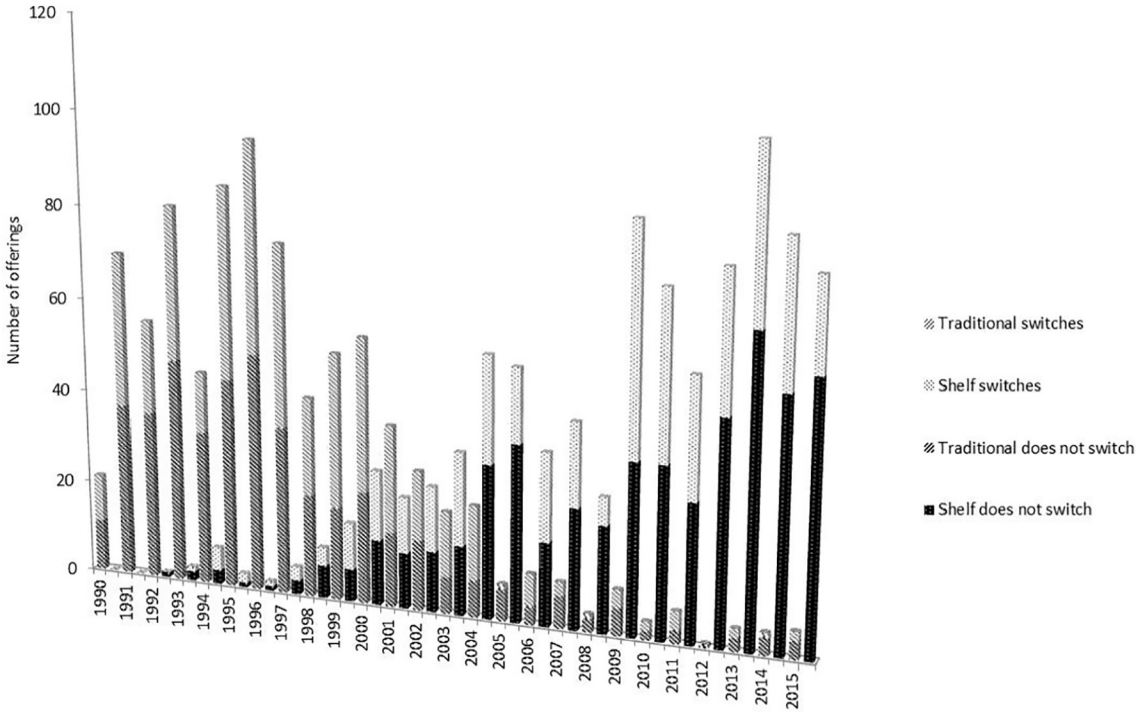


Fig. 1. Sample composition by year. This figure contains the number of offerings by year, split by whether offering *n* is a shelf offering or a traditional offering and the firm switches underwriter.

Table 2
Number of firms switching offering type.
This table contains the numbers of firms that switch from shelf offerings to traditional offerings and vice-versa.

	Traditional for SEO n	Shelf for SEO n	Total
Traditional for SEO n-1	809	292	1101
Shelf for SEO n-1	61	653	714
Total	870	945	1815

3.2.2. Analyst coverage

The measure of analyst coverage is the natural logarithm of sum of one and the number of analysts with estimates of current quarter EPS before the SEO, as reported in the I/B/E/S. The change in analyst coverage around the SEO $n-1$ (Δ Coverage (n – 1)) is measured as the difference in analyst following 3 months after the SEO $n-1$ and 3 months before the SEO $n-1$. A significant negative coefficient for the change in analyst coverage around the SEO $n-1$ would support the view that firms that obtained significantly fewer analysts following after the previous SEO, hired another investment bank to underwrite their subsequent SEO. Firms with greater analyst coverage tend to have less information asymmetry and greater visibility among current and potential investors; thus, we expect a positive relationship between underwriter switching and analyst coverage. To test the hypothesis that firms switch underwriters to gain additional analyst coverage, we construct Δ Coverage (n) which is measured as the difference in analyst following 3 months after the SEO *n* and 3 months before the SEO *n*. A significant positive coefficient for Δ Coverage (n) would support the hypothesis.

3.2.3. Performance

We hypothesize that the performance of offering $n-1$ will influence whether the firm switches underwriters for offering *n*. For example, the firm's management might interpret poor stock price performance after the SEO as a mispricing of the issue by the underwriter, or that the underwriter placed seasoned shares with transient rather than long-term investors. We measure performance by using the firm's market adjusted return from 10 days to 90 days after offering $n-1$ (the results are qualitatively similar if we use other return-windows, such as the window from 10 days to 60 days after offering *n*-1). The market return is the return on the CRSP value-weighted index. The rationale for using market adjusted returns (as opposed to market model returns) is that they are less sensitive to thin trading or to changes in the firm's beta. We analyze returns from 10 days after the offering (as opposed to from the day of the offering) to avoid the returns being biased by the market's initial reaction to the offering (which could reflect underpricing).[7]

[7] In unreported tests, we also examine short run-variables (first day return, discount, undepricing).

3.2.4. Underwriter quality

We create measures for whether the underwriter is a "top" underwriter and for the underwriter's quality. We define top underwriters as those with the largest SEO market share in year t and include as "top" underwriters Credit Suisse First Boston (CS First Boston Corp, Credit Suisse), Goldman Sachs & Co, Merrill Lynch, Morgan Stanley (Morgan Stanley Dean Witter, Morgan Stanley & Co), Lehman Brothers, JP Morgan, Bear Stearns & Co Inc., and Salomon Smith Barney (Salomon Brothers). Following Megginson and Weiss (1991), we also rank underwriters on the basis of their market share in the year of SEO n and SEO n – 1, as described below. We update the market share of underwriters annually. We rank underwriters from zero to 20 in terms of their market share, with 20 connoting a higher market share of underwriter activity. We then calculate (1) the quality of the underwriter for SEO $n - 1$, (2) the quality of the underwriter for the SEO n, (3) the quality of the underwriter used for SEO $n - 1$ at the time of SEO n, and (4) the difference in the quality of the underwriter used for SEO n and SEO $n - 1$. Measure number (3) is important when examining the incentive to migrate to a higher-quality underwriter when the company increases its issue size. This variable (in conjunction with the issue size) helps to capture whether companies move to a higher quality underwriter when they pursue a larger SEO. Measure (4) is used to examine the incentive to switch in general.

3.2.5. Use of banks for other non-SEO transactions

Hypotheses 6a and 6b pertain to the use of a different bank to undertake a non-SEO transaction between SEO n and SEO $n - 1$. We construct an indicator, "Different bank for transaction between issue n – 1 and n," that equals one if the firm both conducts another transaction between SEO n and SEO $n - 1$ and uses a different investment bank from the one used in SEO $n - 1$. The transactions we consider are convertible and non-convertible debt issues, syndicated loans, equity private placements, units and rights issues, M&As, and preferred stock issues.

3.2.6. Control variables

We control for several corporate factors that could influence underwriter switching. These include firm size, relative issue size, Tobin's Q, leverage, stock exchange, secondary shares, number of offers after IPO, prior lending relationships, bank underwriters, firm risk, days between SEOs, M&A activity, stock returns, director ownership and institutional ownership. The definition of the control variables and justification for inclusion, is in the Appendix 1.

4. Empirical results

4.1. Summary statistics, univariate, and bivariate analysis

We start with a univariate analysis of underwriter switching. Table 3 contains the summary statistics for shelf offerings, traditional offerings, and the whole sample. Table 3 suggests that there are significant differences in the characteristics of issue n and issue $n - 1$. The main findings are that for both shelf offerings and traditional offerings, direct costs are significantly lower for issue n than for issue $n - 1$. The market share of the underwriter used for issue n is significantly higher than that used for issue $n - 1$, suggesting a graduation to higher quality underwriters. The change in analyst coverage is smaller around issue n than around issue $n - 1$. This suggests that acquiring additional analyst coverage might not be a significant driver of underwriter switching. Further, corporate and issue characteristics are significantly different for issue n than for issue $n - 1$, suggesting that controlling for those characteristics is important.

The bivariate analysis in Table 4 provides some preliminary support for our hypotheses. Row 10 looks at the differences between shelf issuers and traditional issuers for those who switch underwriters. It gives some insight into the differences in motivation for switching between the offering types. Shelf-issuers who switch generally see a smaller improvement in underwriter quality, but do experience a reduction in direct costs, suggesting that quality considerations are more important for traditional SEO firms and costs are more important for shelf issuers.

We further explore the decision to graduate to higher quality underwriters in Table 5. Table 5 examines whether firms who use a [non-]top underwriter (as defined above) in issue $n - 1$ subsequently use a [non-]top underwriter in issue n. Table 5 only contains statistics for the set of companies who switch underwriters (as the goal is to examine whether the firms who switch end up hiring a higher quality underwriter). Table 5 shows that of the 302 traditional issuers who use a non-top underwriter for the first SEO, 128 firms (or 42% of firms) graduate to a top underwriter. Similarly, of the 259 shelf-issuers who use a non-top underwriter for the first SEO, 29% (75 firms) switch to a top underwriter. 54% of the traditional-issuers who use a top underwriter for the first SEO and switch underwriters also use one for the second SEO; 53% of shelf-issuers do the same. Overall, these results suggest that underwriter reputation is a significant consideration for both traditional and shelf issuers, but is potentially more important in traditional offerings.

There are some time-trends in underwriter-quality graduation. Table 6 divides the sample over time on the basis of issue method and switching direction using top underwriter dummy during the sample period. The results show that the bulk of traditional offers who switch underwriters do so in the earlier part of the sample (i.e., 1995–2002). By contrast, many of the switching firms for shelf offerings are in the later part of the sample.

Table 3
Summary statistics by offering type.
This table contains summary statistics by offering-type and by offering number (i.e. by offering n and offering $n-1$). Variable definitions are in Appendix 1. Superscripts ***, **, and * denote significant differences in means at 1%, 5%, and 10%, respectively.

	All SEOs				Shelf offerings				Traditional offerings			
Variable	*n-1* issue	*n* issue	Difference		*n-1* issue	*n* issue	Difference		*n-1* issue	*n* issue	Difference	
Direct issue cost	0.053	0.049	0.004	***	0.051	0.049	0.003	***	0.054	0.050	0.004	***
Indirect issue cost	0.045	0.049	-0.004		0.049	0.055	-0.006		0.041	0.042	-0.001	
Δ Coverage	0.170	-0.064	0.234	***	0.099	-0.212	0.311	***	0.246	0.095	0.151	
Post-SEO Performance	0.065	0.007	0.059	***	0.045	-0.003	0.048	***	0.087	0.017	0.070	***
UW Mkt Share	5.212	6.135	-0.923	***	5.786	6.456	-0.670	***	4.590	5.787	-1.198	***
ln(MV of assets)	5.799	6.327	-0.528	***	6.126	6.477	-0.351	***	5.444	6.164	-0.720	***
Tobin's Q	3.065	2.986	0.078		3.153	2.987	0.166	**	2.969	2.986	-0.017	
Debt/MV of Assets	0.129	0.134	-0.005	*	0.129	0.141	-0.012	***	0.129	0.126	0.003	
NYSE/Amex	0.310	0.323	-0.014	***	0.294	0.294	0.000		0.326	0.355	-0.029	***
Pre-SEO Performance	0.374	0.357	0.017		0.354	0.290	0.064		0.395	0.429	-0.034	*
MSE	0.039	0.037	0.002	*	0.041	0.039	0.002	***	0.036	0.035	0.001	***
Proceeds	96.5	138.5	-42.0	*	114.2	157.8	-43.6	***	77.3	117.6	-40.3	***
Proceeds/MV of Assets	0.215	0.179	0.035	***	0.180	0.148	0.032	***	0.252	0.213	0.038	***
Secondary shares (%)	0.118	0.090	0.028	***	0.051	0.022	0.029	***	0.191	0.164	0.027	***
Number of offers after IPO	2.193	3.288	-1.095	***	2.668	3.814	-1.146	***	1.677	2.717	-1.040	***
M&A dummy	0.050	0.068	-0.018	***	0.060	0.073	-0.013		0.039	0.063	-0.024	**
Loan -5y	0.140	0.214	-0.074	***	0.236	0.320	-0.084	***	0.036	0.099	-0.063	***
Bank UW	0.044	0.074	-0.030	***	0.077	0.125	-0.048	***	0.008	0.018	-0.010	**
Inst. ownership	0.440	0.585	-0.145	***	0.516	0.632	-0.116	***	0.358	0.534	-0.176	***
Dir Ownership	0.018	0.023	-0.006	***	0.014	0.014	0.001		0.021	0.034	-0.013	***

4.2. Multivariate analysis

This section presents the results on the determinants of underwriter switching. We examine this by using a framework similar to that in Krigman et al. (2001). We use a logit framework to examine the factors that influence the likelihood that a firm switches underwriters. The dependent variable is an indicator that equals one if the company switches underwriters between issue n and issue $n-1$. We include year dummies and cluster standard errors by firm. We run models that contain variables representing, the change in direct and indirect issue costs, changes in analyst coverage, performance in issue n and changes in underwriter rank. We also control for other issue and issuer factors that might influence underwriter switching.

4.2.1. Costs

Costs are generally lower in shelf offerings than in traditional SEOs (Autore et al., 2008; Bethel and Krigman, 2008). Costs significantly influence underwriter switching for shelf offerings. We capture the impact of costs by examining changes in both direct

Table 4
Bivariate statistics.
This table contains bivariate statistics that compare the main hypothesized variables for switching firms classified by whether the firm does a shelf offering or a traditional offering. Variable definitions are in Appendix 1. Superscripts ***, **, and * denote significant differences in means at 1%, 5%, and 10%, respectively.

	Δ Direct issue costs (n-1, n)	Δ Indirect issue costs (n-1, n)	Δ Coverage (n-1)	Δ Coverage (n)	Δ UW rank (n-1, n)	Post-SEO performance (n-1)
All SEOs						
[1] Switches	−0.004	−0.011	0.151	−0.090	2.071	0.041
[2] Does not switch	−0.003	0.013	0.185	−0.044	0.580	0.085
[3] = [1]–[2] difference	−0.001**	−0.025***	0.034	0.046	1.491***	−0.044***
Shelf offerings						
[4] Switches	−0.004	−0.012	0.078	−0.204	1.008	0.023
[5] Does not switch	−0.002	0.016	0.115	−0.218	0.918	0.061
[6] = [4]–[5] difference	−0.002**	−0.028***	0.037	−0.014	0.090	−0.038*
Traditional SEOs						
[7] Switches	−0.005	−0.010	0.221	0.019	3.089	0.058
[8] Does not switch	−0.004	0.010	0.269	0.165	0.174	0.114
[9] = [7]–[8] difference	0.000	−0.020**	0.048	0.146	2.915***	−0.056***
Shelf offerings − traditional SEOs						
[10] Switches	0.001	−0.002	0.143	0.223	−2.081***	−0.035
[11] Does not switch	0.002***	0.006	0.154	0.383*	0.744***	−0.053***

Table 5
Switching and underwriter ranks.
This table contains statistics on the number of companies that switch from a top (or non-top) underwriter to a non-top (or top) underwriter. Top underwriters are those with the largest SEO market share and include Credit Suisse First Boston (CS First Boston Corp, Credit Suisse), Goldman Sachs & Co, Merrill Lynch, Morgan Stanley (Morgan Stanley Dean Witter, Morgan Stanley & Co), Lehman Brothers, JP Morgan, Bear Stearns & Co Inc., and Salomon Smith Barney (Salomon Brothers).

	Traditional SEOs			Shelf offerings		
	Non-top underwriter for SEO n	Top underwriter for SEO n	Total	Non-top underwriter for SEO n	Top underwriter for SEO n	Total
Non-top underwriter for SEO n-1	174	128	302	184	75	259
Top underwriter for SEO n-1	53	61	114	65	74	139
Total	227	189	416	249	149	398

costs and indirect costs between issue $n-1$ and issue n. The logic behind costs being a regressor is that the proposed cost structure in issue n (and how it compares to the prior costs structure) will influence whether the issuer switches underwriters.

The results are in Table 7 and show a significant and negative relationship between changes in direct costs and switching for shelf issuers. There is no such direct relationship for traditional offerings. While it is true that switching to a higher reputation underwriter often conveys lower costs (something that we explore in Section 4.3.3),[8] the costs variable is not itself a significant determinant of switching after controlling for underwriter reputation. Thus, while costs might also motivate switching in traditional offerings, their direct effect is weaker than with shelf offerings. The results suggest that costs are a greater concern during shelf offerings and that lower direct costs impact underwriter switching for shelf offerings. Table 3 shows that issue proceeds in dollar terms are greater for n than for n-1 shelf offerings; however, the relative issue size decreases for n shelf offering. Thus, our multivariate results on issue costs are unlikely to be by the effect of scale economies on costs.

These results are reconcilable with the results in prior literature. Burch et al. (2005) suggest that equity issuers pay lower fees on repeat offerings with the same underwriter; however, debt issuers are penalized with higher fees. Their results are also consistent with the idea that should a firm be offered a lower fee than they would pay with their existing bank, then they could decide to switch. Indeed, Becher et al. (2014) find that dynamic (i.e., switching) firms tend to pay significantly lower fees than static firms when issuing debt and equity and undertaking takeovers. Our results are also consistent with the finding in Krigman et al. (2001) that fees can be a significant motivation for switching in traditional offerings. While cost considerations are not statistically significantly associated with switching after controlling for the change in underwriter reputation, in Section 4.3.3 we do show that changes in underwriter reputation are associated with changes in costs, implying an indirect cost effect in traditional offerings.

Cost considerations also influence switching between offering types. We explore the factors associated with changes in offering types in Table 8. Columns 1–3 look at the likelihood of switching from a shelf to a traditional offering; Columns 4–6 examine switching from a traditional offering to a shelf. Direct costs are relevant. If the first SEO is a traditional offering, and the firm does not switch, then direct costs are likely higher. This is because the negative coefficient on Δ Direct issue costs (n-1,n) implies that an increase in fees is negatively related to switching offering type. This is broadly consistent with Hypothesis 1c because it implies that firms who switch from traditional to shelf offerings experience lower fees whereas those that do another traditional offering have higher fees.

We further explore the impact of switching offering types on fees in Table 9. Here, we look at the drivers of underwriter fees when firms switch from a traditional offering to a shelf offering. The dependent variable is the change in direct offering costs. The main regressor of interest is an indicator that equals one if the firm switches offering type. We look at both the full sample of firms that did a traditional offering for the first SEO in the pair, and the sub-sample of those firms that switch underwriters. We find that fees are significantly lower for the firms that switch offering type from a traditional offering to a shelf offering. This suggests that fees impact the decision to switch offer type from a traditional to a shelf offering.

4.2.2. Acquisition of additional services

There is little support for the idea that value-added services drive the decision to switch underwriters. We hypothesize a negative coefficient on Δ Coverage (n − 1), which would imply that firms are less likely to switch if the prior SEO had generated analyst coverage. However, in Table 7, we find a statistically insignificant coefficient. This implies that the improvements in analyst coverage around SEO n − 1 do not significantly influence future loyalty, perhaps because such analyst coverage is presumed to continue even if they switch underwriters. We hypothesize a positive coefficient on Δ Coverage (n), which would imply that firm's switch due to the lure of increased analyst coverage. However, we find a statistically insignificant coefficient for shelf offerings and a negative coefficient for traditional offerings suggesting that firms do not switch underwriters to achieve increased analyst coverage. We find similar insignificant results when looking at analyst

[8] Table 15 shows that for traditional offerings, an increase in underwriter reputation is associated with a decrease in issue costs. Nevertheless, in Table 7, costs are not significantly associated with underwriting switching in traditional offers after controlling for the change in underwriter reputation.

Table 6
Switching and underwriter quality over time.
This table presents the sample breakdown regarding underwriter reputation, issue method of SEO *n*, and firm loyalty. Top underwriter dummy equals one if one of the bookrunners is a top underwriter, and zero otherwise. Top underwriters are those with the largest SEO market share and include Credit Suisse First Boston (CS First Boston Corp, Credit Suisse), Goldman Sachs & Co, Merrill Lynch, Morgan Stanley (Morgan Stanley Dean Witter, Morgan Stanley & Co), Lehman Brothers, JP Morgan, Bear Stearns & Co Inc., and Salomon Smith Barney (Salomon Brothers). Column Down (Up) shows the number of firms that have switched down (up). Column Same shows the number of firms that had the underwriter with the same rank measured by top underwriter dummy in both SEOs.

Panel A: All firms.

	All SEOs				Traditional SEOs				Shelf offerings			
Year		Same	Up	Total	Down	Same	Up	Total	Down	Same	Up	Total
1990	0	16	5	21		16	5	21				0
1991	6	53	11	70	6	53	11	70				0
1992	3	46	8	57	3	45	8	56		1		1
1993	5	67	12	84	4	65	12	81	1	2		3
1994	1	45	8	54	1	41	4	46		4	4	8
1995	10	67	12	89	10	64	12	86		3		3
1996	8	76	14	98	8	74	14	96		2		2
1997	5	63	13	81	5	57	13	75		6		6
1998	1	45	8	54		36	7	43	1	9	1	11
1999	2	45	23	70	1	35	17	53	1	10	6	17
2000	5	64	17	86	3	42	12	57	2	22	5	29
2001	4	45	14	63	2	25	12	39	2	20	2	24
2002	5	38	14	57	3	16	11	30	2	22	3	27
2003	5	46	6	57		21	1	22	5	25	5	35
2004	9	61	10	80	5	18	1	24	4	43	9	56
2005	2	56	4	62		7	1	8	2	49	3	54
2006	6	37	5	48		10	1	11	6	27	4	37
2007	3	44	7	54	1	7	2	10	2	37	5	44
2008	3	25	5	33	1	3		4	2	22	5	29
2009	15	69	12	96	2	7	1	10	13	62	11	86
2010	10	60	7	77		4		4	10	56	7	73
2011	8	50	5	63		7		7	8	43	5	56
2012	2	64	13	79		1		1	2	63	13	78
2013	6	95	7	108		5		5	6	90	7	103
2014	5	70	15	90	1	4		5	4	66	15	85
2015	3	69	12	84		4	2	6	3	65	10	78
Total	132	1416	267	1815	56	667	147	870	76	749	120	945

Panel B: Switching firms.

	AllSEOs				Traditional SEOs				Shelf offerings			
Year	Down	Same	Up	Total	Down	Same	Up	Total	Down	Same	Up	Total
1990	0	7	3	10		7	3	10				0
1991	6	18	9	33	6	18	9	33				0
1992	3	10	7	20	3	10	7	20				0
1993	5	17	12	34	4	17	12	33	1			1
1994	1	12	5	18	1	9	3	13		3	2	5
1995	10	22	11	43	10	20	11	41		2		2
1996	8	25	13	46	8	24	13	45		1		1
1997	5	24	13	42	5	21	13	39		3		3
1998	1	18	6	25		15	6	21	1	3		4
1999	2	21	20	43	1	17	15	33	1	4	5	10
2000	5	28	15	48	3	20	10	33	2	8	5	15
2001	3	20	12	35	2	11	10	23	1	9	2	12
2002	3	14	12	29	2	3	10	15	1	11	2	14
2003	5	24	5	34		13	1	14	5	11	4	20
2004	8	23	8	39	5	10	1	16	3	13	7	23
2005	2	13	2	17		1		1	2	12	2	16
2006	6	16	4	26		6	1	7	6	10	3	19
2007	3	14	4	21	1	1	1	3	2	13	3	18
2008	2	3	2	7	1			1	1	3	2	6
2009	13	31	9	53	1	2	1	4	12	29	8	49
2010	9	22	7	38		2		2	9	20	7	36
2011	7	20	3	30		4		4	7	16	3	26
2012	2	22	6	30				0	2	22	6	30
2013	6	28	5	39		2		2	6	26	5	37
2014	2	24	6	32		1		1	2	23	6	31
2015	1	17	4	22		1	1	2	1	16	3	20
Total	118	493	203	814	53	235	128	416	65	258	75	398

coverage and switches in offering type in Table 8. Thus, it does not appear that the prospect of a future increase in coverage drives the choice of underwriter, possibly suggesting that analysts will cover "important" companies whether or not they are the recipients of underwriter services at the bank.

Table 7
Underwriter switching in shelf and traditional offerings.
This table contains models that examine explanations for underwriter switching in shelf offerings and traditional offerings. We split the sample by whether SEO *n* is a shelf offering or a traditional offering. The table controls for corporate characteristics and offering characteristics. The models include year dummies and standard errors clustered by issuer. Variable definitions are in Appendix 1. The models are logit models and the table reports marginal effects. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, %%, and 10%, respectively.

Dependent variable	Switches underwriter between issue n and n-1							
Model	Logit, year dummies, issuer clustering (marginal effects reported)							
Sample	Shelf offerings				Traditional offerings			
Δ UW quality (n-1,n)		0.004				0.019***		
		[0.133]				[0.000]		
Decile of UW from *n-1* at time of issue *n*			-0.028***				-0.052***	
			[0.000]				[0.000]	
Difference between (a) decile of UW from *n-1* at time of issue *n* and (b) decile of the proceeds raised in issue *n*				0.024***				0.034***
				[0.004]				[0.000]
Different bank for transaction between issue *n*-1 and n	0.190***	0.185***	0.172**	0.183***	0.336***	0.328***	0.339***	0.335***
	[0.007]	[0.008]	[0.013]	[0.009]	[0.000]	[0.000]	[0.000]	[0.000]
Transaction between issue *n*-1 and n	-0.082	-0.078	-0.086	-0.088	-0.235***	-0.227***	-0.226***	-0.231***
	[0.215]	[0.237]	[0.190]	[0.181]	[0.000]	[0.001]	[0.001]	[0.001]
Post-SEO Performance (n-1)	-0.012	-0.018	-0.017	0.000	-0.082	-0.103	-0.101	-0.065
	[0.854]	[0.780]	[0.789]	[0.997]	[0.281]	[0.196]	[0.190]	[0.390]
Post-SEO Performance (n)	0.027	0.030	0.040	0.040	0.111	0.117	0.138*	0.135*
	[0.684]	[0.660]	[0.548]	[0.555]	[0.150]	[0.139]	[0.069]	[0.078]
Δ Direct issue costs (n-1,n)	-3.356**	-3.572**	-3.306**	-3.335**	-3.794	-1.634	-0.972	-3.576
	[0.015]	[0.011]	[0.018]	[0.018]	[0.181]	[0.612]	[0.742]	[0.218]
Δ Indirect issue costs (n-1,n)	-0.256**	-0.261**	-0.256**	-0.271**	-0.159	-0.192	-0.193	-0.223
	[0.028]	[0.025]	[0.027]	[0.021]	[0.284]	[0.211]	[0.214]	[0.147]
Δ Coverage (n-1)	-0.001	-0.001	-0.001	-0.001	0.009	0.012	0.012	0.009
	[0.818]	[0.857]	[0.821]	[0.824]	[0.392]	[0.249]	[0.265]	[0.389]
Δ Coverage (n)	-0.003	-0.004	-0.003	-0.003	-0.017*	-0.020**	-0.020**	-0.018*
	[0.530]	[0.495]	[0.578]	[0.606]	[0.079]	[0.036]	[0.038]	[0.060]
ln(MV of assets (n))	-0.083***	-0.085***	-0.050**	-0.092***	-0.040	-0.038	0.015	-0.057**
	[0.000]	[0.000]	[0.027]	[0.000]	[0.146]	[0.193]	[0.613]	[0.042]
Tobin'sQ(n)	0.009	0.007	0.007	0.011	0.003	0.004	-0.001	0.006
	[0.267]	[0.421]	[0.389]	[0.175]	[0.762]	[0.713]	[0.941]	[0.564]
Debt/MV of Assets (n)	0.131	0.111	0.156	0.159	0.103	0.060	0.029	0.123
	[0.466]	[0.541]	[0.385]	[0.377]	[0.591]	[0.774]	[0.887]	[0.529]
NYSE/Amex (n)	-0.052	-0.052	-0.053	-0.042	0.149***	0.162***	0.184***	0.164***
	[0.415]	[0.422]	[0.413]	[0.512]	[0.008]	[0.004]	[0.001]	[0.004]
Pre-SEO Performance (n)	-0.102**	-0.102**	-0.093**	-0.090**	-0.087	-0.076	-0.076	-0.087
	[0.016]	[0.016]	[0.031]	[0.038]	[0.175]	[0.270]	[0.241]	[0.176]
MSE (n)	-0.904	-0.812	-0.780	-1.086	6.756***	7.089***	8.033***	7.006***
	[0.445]	[0.491]	[0.521]	[0.367]	[0.003]	[0.003]	[0.002]	[0.003]
Proceeds/MV of Assets (n)	0.035	-0.001	0.058	-0.003	0.314**	0.282**	0.349**	0.261*
	[0.844]	[0.994]	[0.755]	[0.985]	[0.021]	[0.032]	[0.015]	[0.051]
Secondary shares (%) (n)	-0.082	-0.104	-0.086	-0.068	-0.065	-0.063	-0.037	-0.068
	[0.737]	[0.671]	[0.711]	[0.773]	[0.470]	[0.503]	[0.692]	[0.457]
Number of offers after IPO (n)	0.017	0.017	0.017	0.018	-0.007	-0.002	-0.017	-0.013
	[0.127]	[0.130]	[0.135]	[0.123]	[0.769]	[0.947]	[0.506]	[0.584]
M&A dummy (n)	-0.148**	-0.155**	-0.162**	-0.147*	-0.061	-0.102	-0.065	-0.056
	[0.049]	[0.040]	[0.031]	[0.052]	[0.521]	[0.272]	[0.511]	[0.574]
Time Between SEOs	0.187***	0.189***	0.194***	0.189***	0.229***	0.237***	0.222***	0.245***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Loan -5y (n-1)	-0.068	-0.067	-0.077	-0.074	-0.238**	-0.239**	-0.243**	-0.244**
	[0.282]	[0.291]	[0.226]	[0.240]	[0.030]	[0.023]	[0.022]	[0.020]
Bank UW (n-1)	-0.078	-0.073	-0.066	-0.069	0.203	0.211	0.239	0.239
	[0.392]	[0.426]	[0.488]	[0.464]	[0.348]	[0.405]	[0.362]	[0.282]
Total institutional holdings (n)	-0.271***	-0.273***	-0.257***	-0.282***	-0.173	-0.242**	-0.134	-0.177
	[0.002]	[0.002]	[0.003]	[0.001]	[0.118]	[0.032]	[0.226]	[0.109]
Dir Ownership (n)	0.029	0.001	0.036	0.044	-0.589**	-0.634**	-0.663**	-0.697**
	[0.952]	[0.998]	[0.937]	[0.925]	[0.030]	[0.018]	[0.018]	[0.013]
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	881	881	881	881	793	793	793	793
Pseudo R-Squared	0.2029	0.2050	0.2132	0.2100	0.2141	0.2484	0.2418	0.2277

We also consider if the quality of analyst coverage impacts underwriting switching (Krigman et al., 2001). We identify top rated analysts from Thomson Reuters which is available for 2006–2015. We include change in top rated analyst in the models from Table 7 for a subsample of issues between 2006 and 2015. The change in top rated analyst variable is insignificant suggesting that firms do not switch underwriters to achieve increased analyst quality.

Table 8
Determinants of offer-type switching.
This table contains regressions that analyze the likelihood of switching offer type. The dependent variable is an indicator that equals one if the firm switches offer type and equals zero otherwise. Columns 1–3 look at the likelihood of switching from a shelf offering to a traditional offering. Columns 4–6 look at switching from a traditional offering to a shelf offering. The models contain year fixed effects and cluster standard errors by firm. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Dependent variable	Switches offering type between issue n and n-1					
Model	Logit, year dummies, issuer clustering (marginal effects reported)					
Sample	First offering is a shelf			First offering is traditional		
Δ UW quality (n-1,n)	-0.001			-0.001		
	[0.278]			[0.660]		
Decile of UW from *n-1* at time of issue *n*		-0.002			0.005	
		[0.429]			[0.280]	
Difference between (a) decile of UW from *n-1* at time of issue *n*			-0.004			0.003
and (b) decile of the proceeds raised in issue *n*			[0.113]			[0.542]
Different bank for transaction between issue *n*-1 and n	-0.027	-0.028	-0.026	0.059**	0.056**	0.060**
	[0.094]	[0.083]	[0.096]	[0.145]	[0.161]	[0.142]
Transaction between issue n-1and n	0.009	0.010	0.012	-0.036	-0.033	-0.039
	[0.705]	[0.679]	[0.602]	[0.364]	[0.401]	[0.330]
Post-SEO Performance (n-1)	0.021*	0.021**	0.019**	-0.001	-0.005	0.002
	[0.364]	[0.393]	[0.374]	[0.986]	[0.892]	[0.961]
Δ Direct issue costs (n-1,n)	0.556	0.539	0.533	-2.206**	-2.510**	-2.151**
	[0.371]	[0.401]	[0.374]	[0.096]	[0.067]	[0.100]
Δ Indirect issue costs (n-1,n)	0.125	0.127	0.127	-0.129	-0.133	-0.135
	[0.020]	[0.020]	[0.011]	[0.118]	[0.106]	[0.104]
Δ Coverage (n-1)	0.003*	0.003	0.004*	0.003	0.004	0.003
	[0.090]	[0.101]	[0.078]	[0.602]	[0.560]	[0.627]
Δ Coverage (n)	0.006	0.006	0.006	-0.001	-0.001	-0.001
	[0.002]	[0.003]	[0.004]	[0.831]	[0.831]	[0.851]
ln(MV of assets (n))	-0.004	-0.002	-0.004	0.044***	0.038**	0.044***
	[0.581]	[0.776]	[0.613]	[0.008]	[0.029]	[0.009]
Tobin's Q (n)	-0.004	-0.005	-0.004	-0.021***	-0.020***	-0.021***
	[0.430]	[0.382]	[0.394]	[0.006]	[0.007]	[0.005]
Debt/MV of Assets (n)	-0.136**	-0.136**	-0.140**	0.101	0.095	0.103
	[0.025]	[0.026]	[0.018]	[0.379]	[0.401]	[0.370]
NYSE/Amex (n)	-0.002	-0.001	0.002	0.029	0.029	0.031
	[0.940]	[0.949]	[0.917]	[0.442]	[0.451]	[0.419]
Pre-SEO Performance(n)	-0.043***	-0.043***	-0.046***	-0.114***	-0.112***	-0.115***
	[0.009]	[0.010]	[0.005]	[0.001]	[0.001]	[0.001]
MSE (n)	-0.830	-0.745	-0.783	3.690***	3.592***	3.726***
	[0.193]	[0.212]	[0.209]	[0.001]	[0.002]	[0.001]
Proceeds/MV of Assets (n)	0.184***	0.178***	0.179***	-0.175	-0.190*	-0.183*
	[0.000]	[0.000]	[0.000]	[0.114]	[0.094]	[0.099]
Secondary shares (%) (n)	0.076*	0.071*	0.068*	-0.428***	-0.433***	-0.426***
	[0.067]	[0.090]	[0.096]	[0.000]	[0.000]	[0.000]
Number of offers after IPO (n)	-0.001	-0.001	-0.001	0.027*	0.027*	0.026*
	[0.720]	[0.718]	[0.799]	[0.076]	[0.070]	[0.085]
M&A dummy (n)	0.027	0.026	0.026	-0.032	-0.029	-0.037
	[0.558]	[0.561]	[0.568]	[0.472]	[0.526]	[0.398]
Time Between SEOs	0.020	0.020	0.020	-0.022	-0.021	-0.022
	[0.017]	[0.016]	[0.015]	[0.253]	[0.267]	[0.256]
Loan -5y (n-1)	-0.012	-0.015	-0.015	0.097	0.098	0.096
	[0.529]	[0.422]	[0.419]	[0.240]	[0.228]	[0.243]
Bank UW (n-1)	0.003	0.010	0.001	0.148	0.147	0.151
	[0.920]	[0.775]	[0.984]	[0.294]	[0.294]	[0.276]
Total institutional holdings (n)	0.026	0.030	0.028	-0.091	-0.093	-0.096
	[0.407]	[0.343]	[0.357]	[0.171]	[0.153]	[0.147]
Dir Ownership (n)	0.147*	0.152*	0.153*	-0.092	-0.093	-0.098
	[0.071]	[0.062]	[0.060]	[0.575]	[0.562]	[0.563]
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	561	561	561	832	832	832
Pseudo R-Squared	0.2697	0.2686	0.2724	0.5143	0.5154	0.5145

4.2.3. Performance

There is little support in Table 7 for the hypotheses that firms switch underwriters due to poor performance after the initial SEO (as proxied by the market adjusted return from 10-days to 90-days after the SEO). The coefficients are insignificant across

Table 9
Offering fees and issue-type switching.
This table contains OLS regressions that analyze the relationship between switching offering type and offering fees. The main variable of interest here is the indicator "Switch Offering type between n-1 and n", which equals one if the firm changed offering type (either form a shelf to a traditional, or a traditional to a shelf, as applicable). The models contain year fixed effects and cluster standard errors by firm. Brackets contain p-values, and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Traditional first	
	Full sub-sample	Switches underwriter
Column	[1]	[2]
Switch offering type between n-1 and n	−0.205**	−0.371***
	[0.021]	[0.007]
Δ UW quality (n-1,n)	−0.014	−0.016
	[0.001]	[0.003]
Post-SEO performance (n-1)	−0.392***	−0.438***
	[0.000]	[0.005]
Post-SEO performance (n)	0.155*	0.098
	[0.093]	[0.488]
Δ Coverage (n-1)	−0.013	−0.022
	[0.284]	[0.440]
Δ Coverage (n)	−0.009	−0.013
	[0.431]	[0.487]
ln(MV of assets (n))	−0.031	−0.089*
	[0.312]	[0.095]
Tobin's Q (n)	−0.026*	−0.050**
	[0.079]	[0.013]
Debt/MV of assets (n)	−0.046	−0.035
	[0.850]	[0.929]
NYSE/Amex (n)	0.060	0.058
	[0.393]	[0.629]
Pre-SEO performance(n)	−0.276***	−0.252*
	[0.004]	[0.061]
MSE (n)	0.355	−4.062
	[0.911]	[0.337]
Proceeds/MV of assets (n)	−0.327*	−0.465*
	[0.084]	[0.092]
Secondary shares (%) (n)	−0.286***	−0.538**
	[0.010]	[0.014]
Number of offers after IPO (n)	0.061**	0.062
	[0.028]	[0.235]
M&A dummy (n)	0.137	0.219
	[0.215]	[0.270]
Time between SEOs	−0.078**	−0.139**
	[0.039]	[0.039]
Loan-5y (n-1)	−0.228	−0.449
	[0.190]	[0.244]
Bank UW (n-1)	−0.078	1.090**
	[0.774]	[0.042]
Total institutional holdings (n)	−0.271*	−0.437*
	[0.055]	[0.056]
Dir ownership (n)	−0.232	−0.095
	[0.374]	[0.866]
Year fixed effects	Yes	Yes
Observations	1100	540
R-squared	0.117	0.174
Adj. R-squared	0.0780	0.0970

all the models in Table 7. We also consider short term performance and in unreported tests, we find that first day returns, the discount, or the extent of underpricing in issue $n-1$ to be insignificantly related to the likelihood of switching.

4.2.4. Firm-underwriter assortative matching

We consider both one sided and two sided matching. There is some evidence to support one sided matching (underwriter graduation) in Table 7. We capture underwriter graduation with two main proxies. First, ΔUW quality (n − 1,n) represents the change in the quality of the underwriter used in issue n from issue $n-1$. Second, "Decile of UW from n – 1 at time of issue n" captures the quality of the underwriter used in issue $n-1$ at the time of issue n. We make two main findings. First, there is a significant and positive relationship between the change in underwriter quality and switching for traditional offerings, but this is insignificant for shelf offerings. This suggests that companies are more likely to switch to "upgrade" in terms of underwriter quality, especially for traditional offerings. Second, there is a significant and negative relationship between the rank of the underwriter used in issue $n-1$ and the likelihood of switching. This implies that a firm is less likely to switch away from a high

quality underwriter. This result is similar to the finding in Krigman et al. (2001).[9] We find little evidence that underwriter quality influences offer type switching in Table 8. For both shelf offerings and traditional offerings, all underwriter reputation variables are statistically insignificant and are near zero in magnitude.

Two sided matching where the switch in underwriter quality reflects, in part, a matching of the quality of underwriters with the nature of the issue (Fernando et al., 2005, 2013), is captured in two ways. We first model the decision to switch underwriters as a function of the difference between the size of the current offer and the current ranking of the old underwriter. That is, we examine whether the firm might perceive the current offer to be larger than the old underwriter's rank would warrant. Specifically, we model switching as a function of the decile-rank of the proceeds that the firm is raising and the decile rank of the underwriter from issue $n - 1$ at the time of issue n (as in Fernando et al., 2013). The results are in Columns 4 and 8 of Table 7. The main finding is that there is a positive and significant relationship between switching and the difference between the rank of the amount being raised and the quality of the underwriter at issue $n - 1$ (as in Fernando et al., 2013). That is, if the amount being offered is larger than the old underwriter's rank would 'justify' the firm is more likely to switch. This is the case for both shelf offerings and for traditional offerings.

We next consider how changes in the characteristics of the offering influence switching to a higher (or lower) ranked underwriter. We model this in Table 10. The dependent variable in the models is the change in underwriter quality. For each underwriter we rank the underwriters in terms of their market share and assign them a ranking from 0 to 20. The change in underwriter rank ranges from −20 to 20. We model the change in underwriter rank using both OLS and Tobit models (with a lower bound of −20 and an upper bound of 20). The results in Table 10 show that switching to a higher ranked underwriter is more likely if the firm's size increases, or if the firm issues a relatively larger SEO than it did previously. This is statistically significant for both shelf offerings and traditional offerings. However, it appears to be more pronounced with shelf offerings, with the coefficient on Δ Proceeds/Assets (n-1,n) being significantly larger for shelf offerings at the 5% level.

Overall, the results indicate that firms may graduate to higher quality underwriters for larger issues. The coefficient estimate for the "Switches Underwriter" indicator is positive and statistically significant for traditional SEO firms, implying that they tend to choose more reputable underwriters if they switch. The result is consistent with the graduation hypothesis and our previous findings. The coefficient estimate for the "Switches Underwriter" indicator is insignificant for shelf issuers suggesting that they do not emphasize underwriter quality as much.

4.2.5. The use of banks for other non-SEO transactions

The next tests analyze the impact of using a different bank for another non-SEO transaction on switching between two SEOs. We do this by constructing an indicator (denoted "Different bank for transaction between issue n – 1 and n") that equals one if the firm conducts a transaction between SEO $n - 1$ and SEO n and uses a different bank for that transaction to that used for SEO $n - 1$. The other transactions we consider are M&As, debt issues, syndicated loans, convertible issues and preferred share issues.

The results are in Table 7 and present two key findings. First, the coefficient on "Different bank for transaction between issue n –1 and n" is significant and positive for shelf offers and traditional offers. This suggests that using a different bank between the two SEOs significantly increases the likelihood of using a different bank for offer n than for offer $n - 1$. The willingness to use a different bank for another transaction connotes a lower level of loyalty and a lower level of satisfaction with the bank used for offer $n - 1$; and thus, a greater willingness to switch. The coefficient is slightly larger for shelf offerings, suggesting that shelf offerings connote a lower degree of underwriter loyalty. The results are consistent with Drucker and Puri (2005) who find that.

prior lending relationships are important factors in determining underwriter selection in future equity offerings.

In addition, we explicitly consider the impact of the type of transaction that the firm used a different bank for in Table 11. We include syndicated loans, debt issues, convertible issues and acquisitions. We exclude rights issues, unit issues, and private placements due to a small number of observations. Firms that use a different bank for acquisitions and convertible issues are more likely to switch underwriters. In addition, firms that use a different bank for debt issues are more likely to switch underwriters for traditional offers.

4.2.6. Control variables and other corporate factors that influence switching

The control variables in Table 7 are mostly statistically insignificant but are largely consistent with expectations. The Bank UW dummy is significant and negative for the shelf-offering sample. This suggests that companies that have an existing lending relationship with their underwriter are less likely to switch. The variable is insignificant for the traditional offering sample, potentially because of the large number of situations in which issuing firms have a lending relationship with the underwriter for SEO $n - 1$. Similarly, traditional issuers who have obtained a loan in the prior five years are less likely to switch, consistent with the idea that firms generally retain the same investment bank for multiple offers.

Firms who undertake shelf offerings and also announced a takeover in the calendar month of the SEO are less likely to switch. However, as indicated above, if they used a different bank for that takeover, they will be more likely to switch. The longer the time between SEOs the greater is the likelihood of switching. This is similar to the finding that a longer time between IPO and SEO increases the likelihood of changing underwriters between IPO and SEO (as per Krigman et al., 2001). A longer time between SEOs indicates a weaker relationship between the issuer and the investment bank. Further, given that corporate characteristics,

[9] Krigman et al. (2001) find a negative relationship between switching and the change in underwriter rank (where a lower rank is better). We find a positive relationship between switching and the change in underwriter quality (where higher quality is better).

Table 10
Factors influencing change in underwriter rank.
This table contains models that examine the factors that influence changes in underwriter quality. We split the sample by whether SEO *n* is a shelf offering or a traditional offering. Panel A uses the full sample of firms (whether or not they switch underwriters); Panel B restricts the sample to the firms that switch underwriters. The dependent variable is the change in underwriter quality. The underwriter quality score rangers from 0 to 20 and represents the bank's ranking in terms of market share. Because the dependent variable is the change in quality, the dependent variable ranges from −20 to +20. The models in Columns 1–3 are OLS models. Columns 4–6 contain tobit models with a lower bound of −20 and an upper bound of 20. Variable definitions are in Appendix 1. All models include year dummies and cluster standard errors by issuer. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Dependent variable	Δ UW rank (n-1,n)					
Model	OLS, year dummies, issuer clustering			Tobit, year dummies, issuer clustering		
Sample	All	Shelf in issue *n*	Traditional in issue *n*	All	Shelf in issue *n*	Traditional in issue *n*
Panel A: Full Sample						
Switches underwriter	1.478***	0.630	2.622***	1.515***	0.648	2.677***
	[0.000]	[0.168]	[0.000]	[0.000]	[0.153]	[0.000]
Δ ln(MV of assets (n-1,n))	2.761***	3.647***	1.916***	2.783***	3.683***	1.926***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Δ Proceeds/Assets (n-1,n)	4.177***	7.292***	2.300**	4.209***	7.319***	2.328**
	[0.000]	[0.001]	[0.038]	[0.000]	[0.000]	[0.034]
Δ Tobin's Q (n-1,n)	0.035	-0.047	0.054	0.037	-0.047	0.059
	[0.665]	[0.600]	[0.656]	[0.645]	[0.593]	[0.626]
Δ Debt/MV of Assets (n-1,n)	1.225	3.857*	-0.392	1.258	3.951*	-0.398
	[0.417]	[0.069]	[0.851]	[0.403]	[0.060]	[0.848]
Δ ROE	-0.261	-0.007	-3.353	-0.263	-0.010	-3.389*
	[0.366]	[0.980]	[0.106]	[0.360]	[0.970]	[0.096]
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,815	945	870	1,815	945	870
(Pseudo) R-squared	0.106	0.135	0.123	0.0168	0.0215	0.0197
Panel B: Firm must switch underwriters						
Δ ln(MV of assets (n-1,n))	3.974***	5.220***	2.813***	4.038***	5.320***	2.846***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Δ Proceeds/Assets (n-1,n)	4.547***	8.628***	2.633**	4.618***	8.684***	2.707**
	[0.000]	[0.005]	[0.044]	[0.000]	[0.003]	[0.036]
Δ Tobin's Q (n-1,n)	-0.021	-0.039	-0.051	-0.018	-0.039	-0.045
	[0.838]	[0.722]	[0.753]	[0.861]	[0.715]	[0.780]
Δ Debt/MV of Assets (n-1,n)	1.971	6.585*	-1.419	2.065	6.916*	-1.422
	[0.469]	[0.088]	[0.713]	[0.446]	[0.068]	[0.708]
Δ ROE	-0.545	-0.256	-4.829	-0.553	-0.262	-4.964
	[0.156]	[0.531]	[0.140]	[0.150]	[0.512]	[0.118]
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	814	398	416	814	398	416
(Pseudo) R-squared	0.148	0.226	0.130	0.0223	0.0350	0.0197

and executives, change over time, a longer time from the initial SEO would imply that there is less relationship-specific information embedded with the initial underwriter. Thus, the cost of transferring to another underwriter will be lower, resulting in an increased likelihood of switching.

4.3. Additional tests and robustness checks

4.3.1. Switching at IPO stage

To further explore the drivers of switching for shelf offerings and traditional offerings, we collect data on the IPOs for the firms in our sample. We analyze whether firms that IPO'd, switch underwriters for their first SEO after that IPO. We consider the IPOs of all firms that undertook their first SEO in our sample from 1990 to 2015. We examine the drivers of underwriter switching when the first SEO is a shelf offering and when it is a traditional offering.

We use similar variables as in the prior analysis. However, we do not use "indirect" costs as these cannot be measured prior to an IPO. For underwriter reputation, we measure the change in underwriter quality between the IPO and the first SEO.

We examine the likelihood of switching underwriter between IPO and SEO in samples of firms that undertake their first SEO via a shelf (Table 12) or via a traditional offering (Table 13). The dependent variable is a "loyalty" indicator that equals one if the firm remains with the lead underwriter it used in its IPO. We estimate the models using logit (in Columns 1–3 of both tables) and a linear probability model (LPM) (Columns 4–6). We include a LPM because of the large number of indicator variables and the relatively small sample size. We report marginal effects for the logit results. The regressions include year effects, industry effects, and cluster standard errors by firm. We also include control variables that are analogous to those used in the SEO switching results, but estimated at the time of the IPO.

We find some evidence underwriter quality influences switching between IPO and SEO when conducting a traditional SEO (but not for shelf offerings). Specifically, higher underwriter quality at both the IPO stage and the SEO stage is associated with keeping the same underwriter. That is, if IPO underwriter was high quality, then the firm is more likely to keep that underwriter.

Table 11
Type of transaction where issuer uses a different investment bank.
This table contains models that examine explanations for underwriter switching in shelf offerings and traditional offerings. We split the sample by whether SEO *n* is a shelf offering or a traditional offering. The table controls for corporate characteristics and offering characteristics. The models include year dummies and standard errors clustered by issuer. Variable definitions are in Appendix 1. The models are logit models and the table reports marginal effects. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, %%, and 10%, respectively.

Dependent variable	Switches underwriter between issue n and n-1							
Model	Logit, year dummies, issuer clustering (marginal effects reported)							
Sample	Shelf offerings				Traditional offerings			
Δ UW quality (n-1,n)		0.005				0.019***		
		[0.127]				[0.000]		
Decile of UW from *n-1* at time of issue *n*			-0.031***				-0.053***	
			[0.000]				[0.000]	
Difference between (a) decile of UW from *n-1* at time of issue *n* and (b) decile of the proceeds raised in issue *n*				0.027***				0.036***
				[0.001]				[0.000]
Different bank for syndicated loan between issue n-1 and n	0.018	0.007	-0.028	-0.009	0.082	0.057	0.151	0.154
	[0.865]	[0.945]	[0.786]	[0.928]	[0.717]	[0.802]	[0.491]	[0.449]
Syndicated loan between issue n-1 and n	-0.058	-0.053	-0.038	-0.041	-0.025	0.033	-0.077	-0.091
	[0.541]	[0.577]	[0.692]	[0.660]	[0.915]	[0.886]	[0.731]	[0.665]
Different bank for acquisition between issue n-1 and n	0.182*	0.183*	0.200**	0.203**	0.315***	0.301***	0.313***	0.307***
	[0.075]	[0.076]	[0.046]	[0.049]	[0.000]	[0.000]	[0.000]	[0.000]
Acquisition between issue n-1 and n	-0.090	-0.089	-0.121	-0.123	-0.187***	-0.179**	-0.203***	-0.194***
	[0.278]	[0.288]	[0.126]	[0.138]	[0.007]	[0.012]	[0.004]	[0.006]
Different bank for convertible issue between issue n-1 and n	0.383***	0.379***	0.374***	0.387***	0.338***	0.341***	0.332***	0.345***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Convertible issue between issue n-1 and n	-0.047	-0.045	-0.046	-0.047	-0.131**	-0.143**	-0.118*	-0.128*
	[0.483]	[0.506]	[0.491]	[0.484]	[0.047]	[0.041]	[0.087]	[0.057]
Different bank for debt issue between issue n-1 and n	0.188	0.191	0.159	0.176	0.249**	0.210*	0.257**	0.249**
	[0.342]	[0.322]	[0.432]	[0.370]	[0.015]	[0.068]	[0.020]	[0.022]
Debt issue between issue n-1 and n	-0.171*	-0.177*	-0.181*	-0.173*	-0.166*	-0.118	-0.157	-0.158
	[0.095]	[0.081]	[0.062]	[0.082]	[0.083]	[0.248]	[0.127]	[0.116]
Post-SEO Performance (n-1)	-0.019	-0.027	-0.027	-0.009	-0.084	-0.103	-0.102	-0.067
	[0.770]	[0.688]	[0.679]	[0.895]	[0.271]	[0.193]	[0.183]	[0.380]
Post-SEO Performance (n)	0.012	0.014	0.027	0.025	0.108	0.116	0.136*	0.133*
	[0.857]	[0.832]	[0.690]	[0.712]	[0.172]	[0.153]	[0.083]	[0.092]
Δ Direct issue costs (n-1,n)	-3.129**	-3.348**	-3.117**	-3.125**	-3.967	-2.017	-1.414	-3.897
	[0.023]	[0.017]	[0.027]	[0.028]	[0.163]	[0.524]	[0.637]	[0.182]
Δ Indirect issue costs (n-1,n)	-0.240**	-0.244**	-0.244**	-0.260**	-0.137	-0.177	-0.169	-0.200
	[0.039]	[0.035]	[0.034]	[0.025]	[0.350]	[0.247]	[0.270]	[0.186]
Δ Coverage (n-1)	-0.002	-0.002	-0.002	-0.002	0.010	0.013	0.013	0.010
	[0.724]	[0.756]	[0.718]	[0.717]	[0.363]	[0.222]	[0.252]	[0.362]
Δ Coverage (n)	-0.003	-0.004	-0.003	-0.003	-0.015	-0.019**	-0.019*	-0.017*
	[0.521]	[0.494]	[0.588]	[0.589]	[0.112]	[0.049]	[0.052]	[0.083]
ln(MV of assets (n))	-0.078***	-0.081***	-0.042*	-0.089***	-0.042	-0.042	0.015	-0.060**
	[0.000]	[0.000]	[0.071]	[0.000]	[0.156]	[0.173]	[0.635]	[0.049]
Tobin's Q (n)	0.009	0.007	0.007	0.011	0.003	0.005	-0.001	0.006
	[0.269]	[0.416]	[0.403]	[0.176]	[0.750]	[0.642]	[0.958]	[0.550]
Debt/MV of Assets (n)	0.224	0.206	0.252	0.246	0.176	0.108	0.100	0.202
	[0.251]	[0.297]	[0.202]	[0.211]	[0.397]	[0.634]	[0.643]	[0.342]
NYSE/Amex (n)	-0.017	-0.016	-0.011	-0.002	0.165***	0.180***	0.202***	0.181***
	[0.795]	[0.810]	[0.869]	[0.980]	[0.003]	[0.001]	[0.000]	[0.001]
Pre-SEO Performance (n)	-0.093**	-0.092**	-0.083*	-0.078*	-0.101	-0.087	-0.091	-0.102
	[0.030]	[0.031]	[0.057]	[0.075]	[0.120]	[0.202]	[0.164]	[0.116]
MSE (n)	-1.218	-1.109	-1.093	-1.450	6.201***	6.558***	7.565***	6.474***
	[0.293]	[0.337]	[0.355]	[0.220]	[0.007]	[0.007]	[0.004]	[0.007]
Proceeds/MV of Assets (n)	0.059	0.018	0.083	0.015	0.316**	0.282**	0.349**	0.257*
	[0.752]	[0.922]	[0.669]	[0.935]	[0.023]	[0.035]	[0.016]	[0.060]
Secondary shares (%) (n)	-0.105	-0.130	-0.111	-0.090	-0.080	-0.076	-0.047	-0.082
	[0.676]	[0.606]	[0.639]	[0.710]	[0.382]	[0.426]	[0.619]	[0.378]
Number of offers after IPO (n)	0.017	0.017	0.017	0.017	-0.007	-0.002	-0.018	-0.014
	[0.138]	[0.142]	[0.142]	[0.131]	[0.768]	[0.948]	[0.488]	[0.567]
M&A dummy (n)	-0.125	-0.131	-0.132	-0.119	-0.062	-0.108	-0.059	-0.051
	[0.124]	[0.108]	[0.110]	[0.154]	[0.516]	[0.254]	[0.560]	[0.616]
Time Between SEOs	0.193***	0.196***	0.203***	0.195***	0.229***	0.235***	0.224***	0.245***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Loan -5y (n-1)	-0.049	-0.048	-0.064	-0.059	-0.201	-0.207*	-0.207*	-0.206*
	[0.444]	[0.455]	[0.316]	[0.351]	[0.109]	[0.081]	[0.085]	[0.089]
Bank UW (n-1)	-0.129	-0.127	-0.125	-0.124	0.023	0.027	0.093	0.100
	[0.121]	[0.133]	[0.139]	[0.142]	[0.923]	[0.919]	[0.743]	[0.687]
Total institutional holdings (n)	-0.274***	-0.274***	-0.258***	-0.286***	-0.200*	-0.262**	-0.163	-0.203*
	[0.002]	[0.002]	[0.004]	[0.001]	[0.075]	[0.023]	[0.153]	[0.074]
DirOwnership(n)	0.066	0.043	0.075	0.083	-0.624**	-0.675**	-0.682**	-0.716**
	[0.901]	[0.934]	[0.877]	[0.868]	[0.024]	[0.014]	[0.017]	[0.013]
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	881	881	881	881	793	793	793	793
Pseudo R-Squared	0.2170	0.2193	0.2290	0.2258	0.2235	0.2558	0.2513	0.2379

Further, if the underwriter for the SEO is high quality, then the firm is more likely to have retained it from the IPO. However, we find only limited evidence of a *change* in underwriter quality between IPO and SEO having an impact. This suggests that firms might stay with a high quality underwriter, but there is little evidence in our sample of firms switching up to a high quality one. Issue costs appear not to be a significant factor in our sample.

4.3.2. Correlations in control variables and principal component analysis

One concern is that the correlations among the control variables could feed into collinearity with the main regressors of interest and influence the results. We address this concern by using a principal component analysis (PCA) of the control variables. In so doing, we retain only principal components that have an eigenvalue of at least one. This leaves us with five principal components.

We report the results for these tests in Table 14. The results are qualitatively similar to those in the main regressions (Table 7). Underwriter reputation and direct costs influence switching in shelf offerings. Overall, these regressions support our main results.

4.3.3. Collinearity between cost and underwriter reputation

It is important to analyze how direct costs alter with underwriter quality. Such correlations could help to explain why the costs or underwriter quality variables are significant in Table 7. This raises two questions: (1) in our sample, are changes in underwriter quality correlated with changes in offering costs; and (2) if so, does this drive the results.

We first examine t the pairwise correlations between the change in underwriter quality and the change in direct and indirect issue costs in Table 15 The main findings are (a) indirect issue costs are not significantly correlated with changes in underwriter quality for either shelf or traditional offerings, (b) direct issue costs are only significantly correlated with changes in underwriter quality for traditional offerings (not for shelf offerings), (c) for traditional offerings, better quality underwriters are significantly associated with lower direct costs.

We next run regressions of the percentage change in fees as a function of the change in underwriter quality. We results are in Table 16. The dependent variable is the percentage change in direct costs. Columns 1–4 allow the firm to switch offering type (i.e., shelf to traditional, or vice versa) between SEO n-1 and SEO n. Columns 5–8 require that both SEOs in the pair be of the same type (i.e., both shelf or both traditional). Columns 1, 3, 5, and 7 do not require the firm to switch underwriter between SEOs; Columns 2, 4, 6, and 8 do require an underwriter switch.

The main findings are (a) direct costs are not significantly related to underwriter quality for shelf offerings, (b) for traditional offerings, higher reputation underwriters are associated with lower fees. This is most pronounced when we require both SEOs in the pair to be traditional offerings.

We address this correlation issue by orthoganalizing the cost variable and the reputation variables in each regression.[10] As it is not clear whether costs or reputation should be orthoganalized first, we use both orderings. The results are in Table 17. Panel A uses variables where reputation is orthoganalized first; Panel B uses variables where costs are orthoganalized first. The main finding is that direct costs still induce switching for shelf offerings and reputation remains important for traditional offerings. These results are qualitatively similar to those in the reported regressions in Table 7 of the manuscript.

4.3.4. Other robustness tests

4.3.4.1. Tech period. The high-tech boom (and subsequent bust) involved significant IPO activity. This could potentially create an outlying structural break in underwriting activity. Subsequently, in unreported robustness tests, we ensure that the results are robust to omitting cases where issue *n* occurs between 1999 and 2001.

4.3.4.2. Financial crisis period. The financial crisis period saw several investment banks close and restructure and significantly affected equity issuance. Thus, this period could be systematically different form the rest of the sample and bias the results. The reported regressions include year fixed effects to help to mitigate this issue. Nevertheless, in unreported robustness tests, we find qualitatively similar results if we omit the financial crisis period.

4.3.4.3. Timing of the second SEO. We ensure that the results are robust to issues concerning the timing of the second SEO. The results are robust to focusing on situations where there is at least a year between the two SEOs in the pair. This helps to mitigate concerns that the conduct of multiple issues in a short period might contaminate the results.

4.3.4.4. SEOs used to finance takeovers. The core sample includes SEOs that are used to finance takeovers. However, they can involve qualitatively different characteristics, such as the additional involvement of a M&A bank, which can drive the choice of underwriter. They account for around 70 of the observations in Table 7, split roughly evenly between traditional offers and shelf offers. Nevertheless, in unreported robustness tests, we find qualitatively similar results if we exclude these SEOs from the sample.

4.3.4.5. Information risk. We include an additional control for an issuer characteristic, information risk as Luo et al. (2010) suggest that information risk impacts underwriter matching. We use the change in information risk (measured as the standard deviation

[10] We do this by using the Stata command orthog. The basic syntax is orthog v1 v2, gen(y1 y2). Thereafter, the variables will be orthogonal to one-another. Stata manual instructs that the order of orthogonization matters, and that the most 'important' variable should be listed first.

Table 12
Post-IPO underwriter loyalty if the first SEO is a shelf.
This table contains regressions that analyze the likelihood of keeping the same lead underwriter for the first SEO after an IPO if that first SEO is via a shelf. The sample contains all firms that have made at least two SEOs (so feature in the core underwriter switching sample). The dependent variable is an indicator that equals one if the firm uses the same lead underwriter for the first SEO after the IPO as it uses for the IPO. Columns 1–3 use logit models (and we report marginal effects); Columns 4–6 contain linear probability models (estimated using OLS). All models include year and industry fixed effects, and cluster standard errors by firm. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Dependent Variable	Keeps same underwriter					
Model type	Logit (Marginal Effects Reported)			OLS		
Column	[1]	[2]	[3]	[4]	[5]	[6]
UW quality (IPO)	0.023			0.003		
	[0.512]			[0.784]		
UW quality (SEO)		-0.063**			-0.005	
		[0.037]			[0.585]	
Δ UW quality (IPO,SEO)			-0.137**			-0.027
			[0.024]			[0.205]
Δ Directissuecosts (IPO,SEO)	4.163	5.373	9.497	0.157	0.194	0.204
	[0.323]	[0.124]	[0.150]	[0.700]	[0.613]	[0.617]
Post-IPO Performance (IPO)	-0.212	0.108	-0.075	-0.097	-0.070	-0.074
	[0.733]	[0.819]	[0.890]	[0.630]	[0.733]	[0.692]
Δ Coverage (IPO)	0.108	0.231**	0.346*	0.026	0.034	0.016
	[0.244]	[0.029]	[0.089]	[0.623]	[0.503]	[0.756]
Δ Coverage (SEO1)	0.188	0.081	0.199	0.072*	0.068	0.072*
	[0.213]	[0.561]	[0.301]	[0.089]	[0.120]	[0.084]
ln(MV of assets (SEO1))	0.722*	1.490***	1.875*	0.114	0.140	0.178
	[0.077]	[0.007]	[0.068]	[0.334]	[0.236]	[0.191]
Tobin's Q (SEO1)	-0.053	-0.088	0.005	-0.019	-0.016	-0.028
	[0.314]	[0.192]	[0.955]	[0.619]	[0.687]	[0.418]
Debt/MV of Assets (SEO1)	2.472	5.220**	4.512	0.172	0.270	-0.007
	[0.227]	[0.013]	[0.208]	[0.846]	[0.755]	[0.994]
NYSE/Amex (SEO1)	-0.502	-0.762***	-0.915***	-0.097	-0.091	-0.164
	[0.182]	[0.000]	[0.000]	[0.708]	[0.733]	[0.560]
Pre-SEO Performance (SEO1)	-0.060	0.168	-0.067	-0.105	-0.084	-0.117
	[0.875]	[0.720]	[0.826]	[0.516]	[0.605]	[0.453]
MSE (SEO1)	7.141	9.546	14.567	2.143	2.520	2.916
	[0.341]	[0.215]	[0.177]	[0.310]	[0.209]	[0.132]
Proceeds/MV of Assets (SEO1)	1.199	2.108	4.884*	0.184	0.189	0.464
	[0.441]	[0.199]	[0.099]	[0.844]	[0.835]	[0.649]
Secondary shares (%) (SEO1)	-3.547**	-5.193***	-5.778*	-0.643	-0.710	-0.629
	[0.041]	[0.007]	[0.088]	[0.177]	[0.147]	[0.164]
M&A dummy (SEO1)	-0.204	-0.717***	-0.732***	0.016	-0.120	0.022
	[0.801]	[0.000]	[0.000]	[0.977]	[0.824]	[0.968]
Loan -5y (SEO1)	-0.143	-0.630***	-0.326	-0.084	-0.092	-0.121
	[0.694]	[0.006]	[0.425]	[0.630]	[0.591]	[0.478]
Bank UW (SEO1)				0.216	0.224	0.251
				[0.480]	[0.455]	[0.455]
Total institutional holdings (SEO1)	0.582	-0.174	-0.061	0.427	0.405	0.344
	[0.412]	[0.822]	[0.934]	[0.244]	[0.273]	[0.344]
Dir Ownership (SEO1)	149.750	310.265*	380.194	0.662	10.672	0.843
	[0.257]	[0.053]	[0.194]	[0.987]	[0.791]	[0.983]
Yearf ixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	57	57	57	72	72	72
R-squared				0.504	0.506	0.528
Pseudo R-Squared	0.4529	0.5024	0.5867			

of residual accruals for the 5 years prior to the SEO) in the models in Tables 7 and 10. Information risk does not impact underwriter switching and the results are qualitatively similar to Table 7. Changes in the underwriter's rank are not impacted by information risk of the firm and the results are qualitatively similar to Table 10.

4.3.4.6. Syndicated offers. We use an alternative measure of switching to consider underwriter syndication Syndicated offers are mostly shelf offerings and account for a 13.3% of the sample. We re-estimate the models in Table 7 for syndicated offers where the dependent variable represents the syndicate switch (equal to 1 if most of the underwriters did not participate in the previous SEOs). The results are consistent with Table 7 for shelf offerings.

4.3.4.7. Continuous shelf offerings. Shelf offerings can be made immediately (within 2 days) after a registration becomes effective (continuous offering) or can be offered anytime (within 3 days to 3 years) until the registration lapses (delayed offering). Continuous shelf offerings account for 8.2% of the shelf offerings in the sample. We analyze whether the type of offering impacts

Table 13
Post-IPO underwriter loyalty if first SEO is a traditional offering.
This table contains regressions that analyze the likelihood of keeping the same lead underwriter for the first SEO after an IPO if that first SEO is via a traditional offering. The sample contains all firms that have made at least two SEOs (so feature in the core underwriter switching sample). The dependent variable is an indicator that equals one if the firm uses the same lead underwriter for the first SEO after the IPO as it uses for the IPO. Columns 1–3 use logit models (and we report marginal effects); Columns 4–6 contain linear probability models (estimated using OLS). All models include year and industry fixed effects, and cluster standard errors by firm. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Dependent Variable	Keeps same underwriter					
Model	Logit, year dummies, issuer clustering (marginal effects reported)			OLS, year dummies, issuer clustering		
Column	[1]	[2]	[3]	[4]	[5]	[6]
UW quality (IPO)	0.015**			0.012**		
	[0.017]			[0.012]		
UW quality (SEO)		0.016**			0.013**	
		[0.016]			[0.011]	
Δ UW quality (IPO,SEO)			-0.001			-0.001
			[0.912]			[0.927]
Δ Direct issue costs (IPO,SEO)	0.133	0.124	0.154	0.097	0.094	0.112
	[0.148]	[0.181]	[0.135]	[0.249]	[0.278]	[0.232]
Post-IPO Performance (IPO)	0.110	0.096	0.107	0.086	0.072	0.095
	[0.495]	[0.528]	[0.432]	[0.458]	[0.527]	[0.399]
Δ Coverage (IPO)	-0.005	-0.011	-0.001	0.003	-0.004	0.003
	[0.898]	[0.779]	[0.983]	[0.909]	[0.879]	[0.924]
Δ Coverage (SEO1)	-0.062*	-0.061	-0.071**	-0.046*	-0.044	-0.057**
	[0.095]	[0.104]	[0.048]	[0.100]	[0.110]	[0.036]
ln(MV of assets (SEO1))	0.180**	0.185**	0.259***	0.146***	0.148***	0.210***
	[0.016]	[0.012]	[0.000]	[0.009]	[0.008]	[0.000]
Tobin's Q (SEO1)	0.019	0.017	0.016	0.003	0.003	0.001
	[0.281]	[0.309]	[0.359]	[0.691]	[0.691]	[0.936]
Debt/MV of Assets (SEO1)	-0.143	-0.162	-0.096	-0.244	-0.254	-0.244
	[0.757]	[0.730]	[0.818]	[0.464]	[0.455]	[0.464]
NYSE/Amex (SEO1)	-0.299**	-0.285**	-0.347***	-0.191**	-0.178*	-0.225**
	[0.020]	[0.029]	[0.006]	[0.049]	[0.064]	[0.023]
Pre-SEO Performance (SEO1)	0.041	0.041	0.054	0.036	0.036	0.040
	[0.724]	[0.728]	[0.643]	[0.694]	[0.690]	[0.669]
MSE (SEO1)	-5.403	-5.559	-5.003	-3.791	-4.072	-3.720
	[0.193]	[0.182]	[0.216]	[0.227]	[0.211]	[0.249]
Proceeds/MV of Assets (SEO1)	0.577***	0.582***	0.601***	0.433***	0.443***	0.452***
	[0.001]	[0.001]	[0.001]	[0.000]	[0.000]	[0.000]
Secondary shares (%) (SEO1)	0.410***	0.446***	0.413***	0.317***	0.351***	0.303***
	[0.009]	[0.004]	[0.009]	[0.003]	[0.001]	[0.007]
M&A dummy (SEO1)	0.044	0.056	0.076	-0.001	-0.005	0.011
	[0.834]	[0.786]	[0.685]	[0.992]	[0.969]	[0.936]
Loan -5y (SEO1)	-0.198	-0.171	-0.211	-0.043	-0.042	-0.088
	[0.377]	[0.456]	[0.308]	[0.759]	[0.769]	[0.527]
Bank UW (SEO1)				0.403	0.373	0.408
				[0.148]	[0.182]	[0.205]
Total institutional holdings (SEO1)	-0.338	-0.402*	-0.268	-0.254	-0.303	-0.204
	[0.118]	[0.071]	[0.195]	[0.169]	[0.106]	[0.267]
Dir Ownership (SEO1)	-0.631	-0.713	-0.683	-0.531	-0.594*	-0.576
	[0.251]	[0.193]	[0.147]	[0.138]	[0.086]	[0.115]
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	225	225	225	244	244	244
R-squared				0.297	0.297	0.272
Pseudo R-Squared	0.2362	0.2361	0.2141			

underwriter switching for the base models in Table 7 and use the subsample of delayed shelf offerings as there are insufficient observations of continuous offerings to run the models. The results are consistent with the full sample of shelf offerings.

4.3.4.8. Modeling technique. The results are robust to modeling technique. The reported switching models (i.e., Table 7) use logit models with year dummies and standard errors clustered by firm. The results are robust to also including industry fixed effects, omitting all fixed effects, and/or omitting clustering of standard errors. The results are also robust to clustering standard errors by two, three, or four digit SIC industry or year.

4.3.4.9. Self-selection bias. Firms may ex-ante self-select into an offering type inducing self-selection bias in the underwriter switching models. We use a two stage Heckman model where the first stage models the choice between shelf and traditional offerings and the second stage is the underwriter switching models in Table 7. The results are consistent with Table 7 and the inverse Mills ratio is insignificant suggesting that self-selection bias is not present in our results.

Table 14
Underwriter switching regressions with principal component controls.
This table contains models that examine explanations for underwriter switching in shelf offerings and traditional offerings. We split the sample by whether SEO *n* is a shelf offering or a traditional offering. The table controls for corporate characteristics and offering characteristics. The models include year dummies and standard errors clustered by issuer. The models are logit models and the table reports marginal effects. Brackets contain p-values and superscripts ***, **, and * denote significance at 1%, %%, and 10%, respectively.

Dependent variable	Switches underwriter between issue n and n-1					
Model	Logit, year dummies, issuer clustering (marginal effects reported)					
Sample	First offering is a shelf			First offering is traditional		
Δ UW quality (n-1,n)	0.004*			0.018***		
	[0.094]			[0.000]		
Decile of UW from *n-1* at time of issue *n*		-0.033***			-0.045***	
		[0.000]			[0.000]	
Difference between (a) decile of UW from *n-1* at time of issue *n* and (b) decile of the proceeds raised in issue *n*			0.019**			0.026***
			[0.015]			[0.004]
Different bank for transaction between issue *n*-1 and n	0.193***	0.166**	0.190***	0.311***	0.315***	0.314***
	[0.003]	[0.012]	[0.004]	[0.000]	[0.000]	[0.000]
Transaction between issue n-1 and n	-0.055	-0.053	-0.062	-0.176***	-0.164**	-0.176***
	[0.377]	[0.389]	[0.316]	[0.006]	[0.011]	[0.006]
Post-SEO Performance (n-1)	-0.074	-0.068	-0.059	-0.173**	-0.162**	-0.142*
	[0.229]	[0.263]	[0.342]	[0.025]	[0.026]	[0.054]
Post-SEO Performance (n)	0.020	0.041	0.028	0.122*	0.138**	0.134*
	[0.750]	[0.514]	[0.655]	[0.099]	[0.049]	[0.058]
Δ Direct issue costs (n-1,n)	-3.708***	-3.392**	-3.460**	-1.125	-1.059	-3.294
	[0.007]	[0.013]	[0.011]	[0.712]	[0.708]	[0.245]
Δ Indirec tissue costs (n-1,n)	-0.276**	-0.270**	-0.285**	-0.274*	-0.262*	-0.297**
	[0.018]	[0.022]	[0.015]	[0.069]	[0.077]	[0.048]
Δ Coverage (n-1)	-0.002	-0.002	-0.002	0.007	0.008	0.006
	[0.746]	[0.697]	[0.697]	[0.517]	[0.496]	[0.550]
Δ Coverage (n)	-0.002	-0.002	-0.001	-0.016*	-0.016*	-0.014
	[0.718]	[0.758]	[0.835]	[0.084]	[0.077]	[0.108]
PCA1	-0.107***	-0.071***	-0.107***	-0.127***	-0.085***	-0.133***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
PCA2	0.007	0.005	0.006	0.022	0.031	0.024
	[0.694]	[0.765]	[0.756]	[0.314]	[0.118]	[0.243]
PCA3	0.080**	0.067**	0.073**	-0.024	-0.016	-0.022
	[0.017]	[0.041]	[0.030]	[0.384]	[0.549]	[0.412]
PCA4	-0.040***	-0.037**	-0.037**	0.010	0.015	0.011
	[0.009]	[0.021]	[0.017]	[0.670]	[0.497]	[0.636]
PCA5	-0.129***	-0.140***	-0.127***	-0.155***	-0.134***	-0.156***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	881	881	881	793	793	793
Pseudo R-Squared	0.1692	0.1844	0.1719	0.2071	0.2000	0.1839

4.3.4.10. Variables. The results are robust to the choice of variables. In particular, the results are robust to replacing the main hypothesized variables with indicators for whether there is a reduction in direct costs or indirect costs, an increase in analyst coverage around issue $n - 1$ or issue n, for whether the performance of SEO n was positive, or whether there was an increase in underwriter quality. Further, the results are robust to using a "change in top underwriter" variable that equals zero if the firm uses a top underwriter or a non-top underwriter for both issues, equals one if the firm uses a top underwriter in issue n but not in issue $n - 1$, and equals minus one if the firm uses a top underwriter for issue $n - 1$ but not for issue n.

The results are also robust to how we define the control variables. In the current regressions, the controls are as at the time of offering *n*. However, we obtain similar results vis-à-vis the hypothesized variables if we control for characteristics as at the time of offering n - 1, or for the difference in the variable between offering *n* and offering *n*-1.

4.3.4.11. Requiring SEO n and n-1 to be the same "type" and shelf-eligible "traditional" offerings. The reported results do not require that SEO *n* and SEO *n*-1 be of the same type (i.e. be both shelf offerings or traditional offerings). Instead, they look at the motivation for switching based on the type of offering that is SEO *n*. The results are qualitatively the same if we require both SEO *n* and SEO *n*-1 to be of the same type. Further, we do not require that all the traditional offerings be shelf-eligible (i.e. be by a firm that can do a shelf-offering or of a type that would be allowed as a shelf-offering). Requiring that the traditional offering be shelf-eligible causes us to lose 299 offering-pairs; however, the results remain qualitatively similar if we do so. This is unsurprising given the above-mentioned robustness of the results to propensity score matching techniques.

5. Conclusion

This paper analyzes the drivers of underwriter switching, with a focus on the difference between shelf offerings and traditional offerings. Shelf issuers are able to use the registration procedure as an invitation for competitive bids and a shelf registration potentially leverages the number of market participants so as to increase industry competition. In addition, shelf issuers have a

Table 15
Correlation between change in underwriter quality and change in direct and indirect issue costs.
This table contains pairwise correlations between the change in underwriter quality and the change in direct and indirect issue costs. We report the correlations for various sub-samples.

	Correlation of Δ UW quality (n-1,n) with Δ Direct issue costs (n-1,n)	Correlation of Δ UW quality (n-1,n) with Δ Indirect issue costs (n-1,n)
Full sample	−0.037	0.013
	[0.117]	[0.589]
2nd SEO is shelf	0.020	0.021
	[0.539]	[0.541]
2nd SEO is traditional	−0.129***	0.005
	[0.000]	[0.879]
2nd SEO is shelf & switches UW	−0.008	−0.006
	[0.869]	[0.916]
2nd SEO is traditional & switches UW	−0.192***	0.039
	[0.000]	[0.452]
Both SEOs are shelf	0.060	−0.018
	[0.129]	[0.654]
Both SEOs are traditional	−0.170***	0.012
	[0.000]	[0.756]
Both SEOs are shelf & switches UW	0.048	−0.075
	[0.453]	[0.249]
Both SEOs are traditional & switches UW	−0.220***	0.049
	[0.000]	[0.351]

richer information set available at the time of underwriter selection compared to traditional issuers. Thus, it is not obvious that the motivations for switching underwriters for traditional offerings would also apply in shelf offerings.

We examine SEOs conducted between January 1990 and December 2015. This period features increased use of shelf offerings to raise capital to the point where shelf offerings were the dominant method of issuing seasoned equity. We document that over the last decade, firms switch underwriter more frequently than previously reported. We find that in around 45% of offerings, repeat seasoned equity issuers changed investment banks between 1990 and 2015. In comparison, Burch et al. (2005) report that 39% of seasoned equity issuers switched lead underwriter between 1975 and 2001.

We find that there are differences in the motivation for underwriter switching between shelf offerings and traditional offerings. In shelf offerings (but not in traditional offerings) reducing fees motivates switching underwriters. We find that underwriting fees are lower for the switching firms that conduct shelf offerings. This result also implies that investment banks may obtain new clients by offering lower fees. We also find that cost considerations impact switching offer type from traditional offerings to shelf offerings.

There is some evidence of matching between underwriter-quality and issue-size. Consistent with Fernando et al. (2005, 2013), issuers move to a higher-ranked underwriter if they increase issue size. This effect is stronger for traditional offerings than for shelf offerings. Indeed, we support that when looking at the choice between shelf registrations and traditional offerings for the first SEO after an IPO. For this first SEO, reputational considerations are particularly important for traditional offerings, but not for shelf offerings. Prior underwriter relationships from other types of transactions also impact underwriter switching for both types of SEOs.

The results suggest that one of the goals of Rule 415 which introduced shelf offerings has been met. That is, cost based underwriting switching increases competition among underwriters and decreases SEO issue costs for issuing firms. The results have clear implications for underwriters, suggesting that underwriters should compete more on costs for shelf offerings than for traditional offerings, where underwriter reputation and quality matter more.

6. Control variables

The following control variables are used in the model specification:

- **Firm size**: Firms with lower information asymmetry face lower barriers to building relationship capital with underwriters. Larger firms generally have less information asymmetry. Further, larger firms are more able to meet the fixed costs of establishing a relationship with a new underwriter. Thus, we control for the natural log of the firm's assets at the time of issue *n*.
- **Tobin's Q**: A high Tobin's Q can imply that a company has strong growth prospects and is valuable (following Bebchuk et al., 2009), but can also imply overvaluation (following Lee et al., 1999; Curtis, 2012). A high Tobin's Q might also reflect efforts on the part of the company to elicit attention from analysts, and investors (Gurun and Butler, 2012), which reduces information asymmetry.
- **Financial leverage**: The firm's financial leverage could suggest that it has borrowed from commercial banks or financial markets; and thus, has more relationships with investment banks. This suggests that the firm might be more able to switch underwriters. Further, prior evidence suggests that the capitalization of a company can influence its SEO process (Krishnan et al., 2010).
- **NYSE/Amex listing**: Firms that are listed on major stock exchanges are more likely to have less information asymmetry due to larger firm size, greater analyst coverage and other factors. To control for stock exchange listing, we use a NYSE/Amex dummy variable that equals one if a firm's stock is traded on NYSE or Amex.
- **Secondary shares** (%): Lee and Masulis (2009) argue that firms that include secondary shares in a SEO are more likely to have low information asymmetry. To control for the impact of mixed issues, we include the secondary shares offered-to-total shares offered ratio.

Table 16
Fees as a function of changes in underwriter quality.
This table contains regressions that look at the change in direct issue costs as a function of changes in underwriter quality between the first and second SEO in a pair. The dependent variable is the percentage change in direct costs. Columns 1–4 allow the firm to switch offering type (i.e., shelf to traditional, or vice versa) between SEO n-1 and SEO n. Columns 5–8 require that both SEOs in the pair be of the same type (i.e., both shelf or both traditional). Columns 1, 3, 5, and 7 do not require the firm to switch underwriter between SEOs; Columns 2, 4, 6, and 8 do require an underwriter switch. Brackets contain p-values. Superscripts ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Dependent variable	Change in direct costs x 100							
	Can switch to a different offer type between SEO n-1 and n				Must have same offer type for SEO n-1 and n			
	Shelf All	Shelf Switches UW	Trad All	Trad Switches UW	Shelf All	Shelf Switches UW	Trad All	Trad Switches UW
Column	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Δ UW quality (n-1,n)	0.012	0.011	-0.014***	-0.017***	0.021	0.021	-0.017***	-0.018***
	[0.110]	[0.271]	[0.003]	[0.004]	[0.030]	[0.140]	[0.000]	[0.002]
Post-SEO Performance (n-1)	-0.572***	-0.463**	-0.313***	-0.474***	-0.629***	-0.604*	-0.307***	-0.418***
	[0.000]	[0.039]	[0.002]	[0.005]	[0.000]	[0.088]	[0.002]	[0.010]
Post-SEO Performance (n)	0.202	0.312	0.117	0.037	0.168	0.264	0.104	0.035
	[0.158]	[0.274]	[0.205]	[0.807]	[0.371]	[0.541]	[0.272]	[0.819]
Δ Coverage (n-1)	0.009	-0.001	-0.032**	-0.060*	0.006	0.003	-0.036***	-0.081***
	[0.438]	[0.950]	[0.026]	[0.063]	[0.663]	[0.911]	[0.004]	[0.003]
Δ Coverage (n)	-0.007	-0.014	-0.012	-0.019	-0.006	-0.011	-0.014	-0.022
	[0.535]	[0.479]	[0.286]	[0.236]	[0.549]	[0.713]	[0.188]	[0.190]
ln(MV of assets (n))	-0.012	-0.134	-0.002	-0.033	0.021	-0.081	-0.015	-0.035
	[0.776]	[0.116]	[0.957]	[0.566]	[0.705]	[0.495]	[0.660]	[0.561]
Tobin's Q (n)	-0.021	-0.025	-0.031**	-0.040*	-0.036	-0.023	-0.031*	-0.043*
	[0.368]	[0.613]	[0.045]	[0.063]	[0.205]	[0.702]	[0.054]	[0.057]
Debt/MV of Assets (n)	0.165	0.146	-0.085	0.299	0.084	-0.020	-0.114	0.277
	[0.608]	[0.828]	[0.760]	[0.463]	[0.850]	[0.984]	[0.679]	[0.507]
NYSE/Amex (n)	-0.113	-0.249	0.012	0.056	-0.172	-0.180	0.079	0.114
	[0.272]	[0.287]	[0.867]	[0.609]	[0.231]	[0.616]	[0.234]	[0.294]
Pre-SEO Performance (n)	0.067	0.030	-0.265***	-0.225*	0.155	0.079	-0.261**	-0.238*
	[0.460]	[0.849]	[0.010]	[0.077]	[0.156]	[0.701]	[0.014]	[0.092]
MSE (n)	-4.601	-11.610**	2.036	3.564	-1.629	-4.236	4.995	5.370
	[0.160]	[0.041]	[0.493]	[0.327]	[0.667]	[0.590]	[0.104]	[0.220]
Proceeds/MV of Assets (n)	-0.117	0.027	0.037	0.052	0.444	1.482	-0.104	-0.018
	[0.795]	[0.973]	[0.823]	[0.817]	[0.410]	[0.191]	[0.561]	[0.945]
Secondary shares (%) (n)	-1.528***	-2.259***	-0.132	-0.246	-1.710***	-2.228***	-0.168	-0.365*
	[0.000]	[0.000]	[0.248]	[0.268]	[0.000]	[0.001]	[0.139]	[0.098]
Number of offers after IPO (n)	0.030	0.039	0.094***	0.079	0.030	0.035	0.094***	0.079
	[0.105]	[0.375]	[0.002]	[0.129]	[0.183]	[0.554]	[0.003]	[0.167]
M&A dummy (n)	0.116	-0.476	0.095	0.388*	0.123	-0.614	0.079	0.454**
	[0.375]	[0.198]	[0.447]	[0.073]	[0.458]	[0.352]	[0.530]	[0.036]
Time Between SEOs	-0.029	0.057	-0.017	-0.052	0.012	0.165	-0.041	-0.081
	[0.560]	[0.578]	[0.688]	[0.439]	[0.845]	[0.248]	[0.312]	[0.232]
Loan -5y (n-1)	-0.075	-0.212	-0.258	-0.176	-0.029	0.017	-0.299	-0.257
	[0.519]	[0.376]	[0.362]	[0.743]	[0.852]	[0.961]	[0.337]	[0.668]
Bank UW (n-1)	0.193	0.497	-0.268	-1.562	0.236	0.463	0.361	0.530
	[0.329]	[0.397]	[0.722]	[0.287]	[0.297]	[0.504]	[0.300]	[0.398]
Total institutional holdings (n)	-0.441**	-0.547*	-0.055	-0.050	-0.280	-0.175	-0.015	-0.134
	[0.011]	[0.064]	[0.717]	[0.844]	[0.190]	[0.667]	[0.928]	[0.621]
Dir Ownership (n)	-1.187	-1.284	-0.217	0.363	-1.377	-4.025	-0.101	0.467
	[0.116]	[0.282]	[0.349]	[0.477]	[0.420]	[0.175]	[0.676]	[0.345]
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	944	398	870	416	653	249	809	391
R-squared	0.078	0.135	0.170	0.259	0.090	0.165	0.146	0.210
Adj. R-Squared	0.0342	0.0325	0.1244	0.1710	0.0325	0.0139	0.0992	0.1244

- **Number of offers after IPO**: Frequent seasoned equity issuers experience a less negative abnormal stock price reaction at the announcement of the SEO (D'Mello et al., 2003). Thus, it is likely that these firms have been certified in prior seasoned offerings and thus have less information asymmetry and require less due diligence (Autore et al., 2008).
- **Prior lending relationship**: Duarte-Silva (2010) argues that an underwriter is better able to certify an equity issue if it has a lending relationship with the firm. In a similar context, Drucker and Puri (2005) indicate that there can be efficiency benefits to having a concurrent lending and loan-underwriting relationship. This reduces information asymmetry and potentially impacts issue method. We obtain data on syndicated loans from SDC to establish if the underwriter/manager of a syndicated loan within a 5 year period before the SEO also underwrites the SEO. Loan-5y (n-1) equals one if an issuer had a syndicated loan in the 5 years prior to the SEO $n-1$.
- **Bank underwriter**: A firm that has previously used a bank as its underwriter is more likely to have established an information-surplus and/or services with that underwriter (Chen et al., 2013), reducing the likelihood of switching. Thus, Bank-UW (SEO n – 1) equals one if the same bank was a manager for the syndicated loan and the underwriter for the SEO n – 1.[11]

[11] For models with Bank-UW (SEO n – 1), we also include a dummy variable that is one if a firm had a syndicated loan within five years before the SEO, and zero otherwise, as Bank-UW (SEO n – 1) reflects both the impact of the choice of underwriter and having a syndicated loan.

Table 17
switching regressions with orthoganalized reputation and costs.
This table contains regressions that analyze underwriter switching as a function of 'orthogonalized' underwriter quality and cost variables. We do this orthogonalization for each pair of the underwriter variables with the direct cost variable. Panel A uses variables where reputation is orthoganalized first; Panel B uses variables where costs are orthoganalized first. The dependent variable is the underwriter switching variable. Brackets contain p-values. The regressions include year fixed effects and cluster standard errors by firm.

	Switches underwriter between issue n and n-1					
	Logit, year dummies, issuer clustering (marginal effects reported)					
	Shelf offerings			Traditional offerings		
Panel A: Reputation orthoganalized first						
Orthoganalized Δ UW quality (n-1,n)	0.034*			0.135***		
	[0.086]			[0.000]		
Orthoganzalized Δ Direct issue costs (n-1,n)	-0.047***			-0.024		
	[0.002]			[0.488]		
Orthoganalized Decile of UW from *n-1* at time of issue *n*		-0.078***			-0.146***	
		[0.001]			[0.000]	
Orthoganalized Δ Direct issue costs (n-1,n)		-0.044***			-0.020	
		[0.005]			[0.546]	
Orthoganalized Difference between						
(a) decile of UW from n-1 at time of issue n and						
(b) decile of the proceeds raised in issue n			0.054**			0.085***
			[0.012]			[0.000]
Orthoganzalized Δ Direct issue costs (n-1,n)			-0.045***			-0.049
			[0.004]			[0.129]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	943	943	943	869	869	869
Pseudo R-Squared	0.2049	0.2112	0.2081	0.2463	0.2382	0.2247
Panel B: Cost orthoganalized first						
Orthoganzalized Δ Direct issue costs (n-1,n)	-0.048***			-0.031		
	[0.002]			[0.383]		
Orthoganalized Δ UW quality (n-1,n)	0.032			0.134***		
	[0.106]			[0.000]		
Orthoganalized Δ Direct issue costs (n-1,n)		-0.048***			-0.029	
		[0.002]			[0.378]	
Orthoganalized Decile of UW from *n-1* at time of issue *n*		-0.075***			-0.145***	
		[0.001]			[0.000]	
Orthoganalized Δ Direct issue costs (n-1,n)			-0.043***			-0.046
			[0.006]			[0.157]
Orthoganalized Difference between						
(a) decile of UW from n-1 at time of issue n and						
(b) decile of the proceeds raised in issue n			0.055***			0.087***
			[0.009]			[0.000]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	943	943	943	869	869	869
Pseudo R-Squared	0.2049	0.2112	0.2081	0.2463	0.2382	0.2247

- **Firm risk**: Riskier firms are associated with higher switching costs. These firms might require more due diligence in the case of underwriter switching, and thus, we expect that risky firms are more likely to be loyal. We measure the level of risk using unsystematic risk (residual standard deviation) that is calculated from the market model over the period (−230, −30) where day 0 is the issue date.
- **Relative issue size**: a firm with a large relative issue size may require more due diligence and underwriter effort. Thus, firms conducting relatively large security issues are expected to be loyal to their previous underwriters.
- **Days between the SEOs**: James (1992) implies that the larger the gap between security issues, the less costly it is for a firm to switch underwriter. Thus, we expect that firms with a greater time period between SEOs are more likely to switch underwriters. The relationship with the investment bank is proxied by the natural logarithm of calendar days between SEOs (Time Between SEOs).
- **M&A activity**: A firm that conducts a takeover will have additional contacts with investment banks whom it could use for its subsequent SEO. We create a M&A dummy that equals one if the SEO is made in the same calendar month that a takeover is announced or becomes effective. These offerings are not excluded from the sample as their proceeds were not used to finance M&As (according to the prospectus).
- **Stock returns**: Firms with a high stock return prior to the security issue might attract more analyst following and more attention from the media, and thus have less asymmetric information. Stock performance is measured using the market adjusted returns over (−150, −10), where day 0 is the issue date.
- **Dir Ownership**: We control for director ownership as this could influence the directors' incentives vis-à-vis the SEO; and thus, their willingness to switch underwriters.

- **Total institutional holdings**: We control for the total institutional ownership in the firm, as reported in the Thomson 13f filings. A higher degree of ownership could increase the willingness to switch underwriters, especially after a poorly performing SEO.

Table A1
Variable definitions.

Variable	Definition
Δ UW quality (n-1,n)	The change in underwriter quality between SEO $n-1$ and SEO n. The underwriter quality is the rank of the underwriter in the year of the SEO in terms of its market share. The ranking goes from zero to 20.
Decile of UW from *n-1* at time of issue *n*	The decile (in terms of market share) of the underwriter used for SEO $n-1$ at the time of SEO n
Difference between (a) decile of UW from *n-1* at time of issue *n* and (b) decile of the proceeds raised in issue n	The difference between (a) The decile (in terms of market share) of the underwriter used for SEO $n-1$ at the time of SEO n, and (b) the decile of the proceeds raised in SEO n
UW Mkt Share	The average annual market share of the SEO market.
Different bank for transaction between issue *n*-1 and n	The use of a bank other than the one used for SEO $n-1$ for a transaction after SEO $n-1$ but before SEO n
Transaction between issue *n*-1 and n	An indicator that equals one if there is a non- equity issue transaction between SEO $n-1$ and SEO n
Different bank for syndicated loan between issue n-1 and n	The use of a bank other than the one used for SEO $n-1$ for a syndicate loan after SEO $n-1$ but before SEO n.
Syndicated loan between issue n-1 and n	An indicator that equals one if a firm takes out a syndicated loan between SEO $n-1$ and SEO n.
Different bank for acquisition between issue n-1 and n	The use of a bank other than the one used for SEO $n-1$ for an acquisition after SEO $n-1$ but before SEO n.
Acquisition between issue n-1 and n	An indicator that equals one if a firm makes an acquisition between SEO $n-1$ and SEO n.
Different bank for convertible issue between issue n-1 and n	The use of a bank other than the one used for SEO $n-1$ for a convertible securities issue after SEO $n-1$ but before SEO n.
Convertible issue between issue n-1 and n	An indicator that equals one if a firm makes a convertible securities issue between SEO $n-1$ and SEO n.
Different bank for debt issue between issue n-1 and n	The use of a bank other than the one used for SEO $n-1$ for a debt issue after SEO $n-1$ but before SEO n.
Debt issue between issue n-1 and n	An indicator that equals one if a firm makes a debt issue between SEO $n-1$ and SEO n.
Post-SEO Performance (n-1)	The market adjusted return around issue $n-1$ for 10 days to 90 days after the SEO. The market adjusted return is based on the value-weighted CRSP index.
Post-SEO Performance (n)	The market adjusted return around issue n for 10 days to 90 days after the SEO. The market adjusted return is based on the value-weighted CRSP index.
Δ Direct issue costs (n-1,n)	The change in direct issue costs between SEO $n-1$ and SEO n
Δ Indirect issue costs (n-1,n)	The change in indirect issue costs between SEO $n-1$ and SEO n
Δ Coverage (n-1)	The change in the number of analyst covering the company from one month before SEO $n-1$ to the next reporting period after SEO $n-1$
Δ Coverage (n)	The change in the number of analyst covering the company from one month before SEO n to the next reporting period after SEO n
Direct issue costs	The sum of gross spread and other direct expenses as a percentage of total proceeds.
Indirect issue costs	The product of −1 and the sum of the abnormal return over the 3-day event window centered around the filing day and the abnormal return over the 3-day event window centered around the issue day. For shelf offerings, if a firm conducts more than one offering under the same registration, we allocate an equal portion of the abnormal return around the registration day to each observation.
Switches Underwriter	An indicator that equals one if the company switches underwriters between issue n and issue n-1.
ln(MV of assets (n))	The natural log of the market value of assets at the time of SEO n
Tobin's Q (n)	The firm's Tobin's Q at the time of SEO n
Debt/MV of Assets (n)	The firm's financial leverage, being its debt scaled by its market value of assets at the time of SEO n
NYSE/Amex (n)	An indicator that equals one if the firm is listed on either NYSE or AMEX at the time of SEO n
Pre-SEO Performance (n)	The market adjusted return earned from 10 days to 150 days before SEO n. The market adjusted return is based on the value-weighted CRSP index.
MSE (n)	The mean squared error calculated from the market model over the period (–230, –30) where 0 is the issue date. The market model is based on a CRSP value-weighted index.
Proceeds *n*	The proceeds for SEO n
Proceeds/MV of Assets (n)	The proceeds for SEO n scaled by the market value of assets at the time of SEO n
Secondary shares (%) (n)	The secondary shares offered-to-total shares offered ratio
Number of offers after IPO (n)	The number of stock offers the company has done since the IPO by the time of SEO n
M&A dummy (n)	An M&A dummy that equals one if the SEO is made in the same calendar month that a takeover is announced or becomes effective
Time Between SEOs	The natural logarithm of calendar days between SEOs
Loan -5y (n-1)	A dummy variable that is one if a firm had a syndicated loan within five years before the SEO, and zero otherwise.
Bank UW (n-1)	An indicator that equals one if the same bank was a manager for the syndicated loan and n – 1 SEO underwriter
Total institutional holdings (n)	The total institutional ownership at the time of SEO n (from the Thomson 13f filings)
Dir Ownership (n)	The total director ownership at the time of SEO n
ΔROE	The change in return on market value of equity between SEO $n-1$ and SEO n.
Δ ln(MV of assets (n-1,n))	The change in the natural log of the market value of assets between SEO $n-1$ and SEO n.
Δ Proceeds/Assets (n-1,n)	The change in the SEO proceeds scaled by the market value of assets between SEO $n-1$ and SEO n.
Δ Tobin's Q (n-1,n)	The change in the firm's Tobin's Q between SEO $n-1$ and SEO n.

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