The investor recognition of seasoned equity issuers

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Abstract

Seasoned equity issuers that negotiate higher gross underwriter spreads and deeper offer price discounts experience an increase in investor recognition. In particular, larger gross spreads and deeper discounts, ceteris paribus, are associated with larger increases in shareholder base and greater decreases in the 'shadow cost' of incomplete information. This effect is long-lasting, as predicted by Merton (1987). Furthermore, consistent with the idea that improved investor recognition is contemporaneously associated with decreases in liquidity risk, we find that higher gross spreads significantly lower the issuer's long-run liquidity betas. The findings provide insight as to why gross spreads vary widely across marketed seasoned equity offers, as opposed to initial public offerings. The results also provide a new rationale for why seasoned equity issuers may be willing to accept greater offer price discounting, namely, to attract new investors.

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1. Introduction

It has been long-held that marketing efforts are an important dimension of underwriter services in stock offerings, yet this view has not been fully explored empirically. Two recent studies provide direct evidence on one important aspect of marketing, specifically, that marketing in seasoned equity offers flattens the short-run demand curve for the issuing firm's stock (Gao and Ritter, 2010; Huang and Zhang, 2010). To date, however, there is sparse direct evidence on another potentially important benefit of marketing: increasing the investor recognition of the firm. Merton (1987) conjectures that when a "firm undertakes a negotiated underwriting through an investment bank with broad distribution capabilities, then the firm can use the underwriting to *both* raise new capital *and* increase its investor base. […] These new investors become part of the base to support secondary market trading in all the firm's securities as well as future primary offerings. [...] At least a part of the underwriting costs can be treated as expenditures for expanding the investor base of the firm." In this article we provide direct evidence on Merton's conjecture using a sample of fully marketed underwritten seasoned equity offers (SEOs).

More specifically, this article presents direct evidence that the long-term change in shareholder base after SEOs is directly related to underwriter gross spreads. In a typical year seasoned equity issuers spend over $1.2 billion in underwriter compensation.[1] Unlike underwriter gross spreads in initial public offerings, which cluster at seven percent, spreads in seasoned equity offers exhibit considerable cross-sectional variation. Further, a large component of the spread paid by seasoned issuers reflects variable costs (Altinkilic and Hansen, 2000).

We hypothesize that the gross spread paid by the issuer is a proxy for the underwriter's marketing and retail distribution efforts, and therefore is directly related to the change in investor

[1] This is based on seasoned equity offers covered by Securities Data Corporation during 1983 – 2009.

recognition of the firm. Larger gross spreads, ceteris paribus, are negotiated by issuers that wish to maximize exposure, breadth of ownership and the number of investors that know about the firm. Smaller gross spreads are negotiated by issuers that agree to less marketing effort and narrower share distribution.[2] Using a number of empirical proxies, including Merton's shadow cost of incomplete information, we test the association between gross spreads paid in fully marketed SEOs and the change in investor recognition from before to after the issue. Merton's prediction about the effect of marketing efforts implies that any increase in investor recognition is a permanent effect. Thus our examination covers several years after issuance to test for a long-lasting effect. Our findings indicate that issuers that pay higher gross spreads experience significantly greater increases in investor recognition compared to issuers that pay lower spreads, ceteris paribus. This effect occurs quickly around the offering and is long-lasting, consistent with Merton. The results are robust to controlling for the issuer's pre-issue *level* of investor recognition and several previously documented determinants of the gross spread, and remain strong in estimations using instrumental variables to control for the possibility that omitted variables influence our estimates.

A logical rationale of the evidence is that gross spreads are negotiated between an issuing firm and the underwriter. Alternatively, perhaps underwriter specialization, in which some banks charge high spreads and have wide distribution channels and others charge low spreads and have narrow channels, causes firms to choose a particular underwriter that specializes in the fee and distribution structure that the firm desires. We construct tests to separate these effects. In particular, our specifications that explain changes in investor recognition include a variable that captures the average gross spread charged by the lead underwriter over the past two years, and

[2] Sirri and Tufano (1998) provide evidence of a similar phenomenon in the context of open-end mutual funds. They find that funds putting forth greater marketing effort experience larger fund inflows, due to lower search costs of investors, and that these funds charge higher fees to cover their more intensive marketing campaign.

another variable defined as gross spread in the current seasoned offer minus the lead underwriter's average spread in all of its offers over the past two years. We find evidence of both negotiation and specialization. Greater increases in investor recognition are seen in offers in which the lead underwriter charged more previously, and charges more in the current offer than what it has typically charged in the recent past.

Another potential mechanism to increase a firm's investor base is in setting the offer price. For SEO pricing, there are two potential marketing-related effects. First, marketing could flatten the short-run demand curve and result in smaller offer price discounts. Evidence of such an effect is provided by Huang and Zhang (2010). Second, the offer price discount could be used explicitly as a marketing-related mechanism to expand the investor base of the firm. The idea is that setting the offer price at a greater discount from the prevailing secondary market price could attract the interest of additional investors, thereby expanding the investor base.[3] To date, no study explicitly tests whether offer price discounts are associated with the investor recognition of SEO issuers. We test this relation and provide evidence that larger offer price discounts are associated with significantly greater increases in investor recognition. In specifications that include both the gross spread and offer price discount, each measure significantly influences investor recognition.

It is known that SEOs are associated with increases in the number of shareholders that hold the firm's stock (Kothare, 1997; Chaplinsky and Ramchand, 2000). Chaplinsky and Ramchand find that the increased recognition associated with global share issues causes investors to react more favorably to global offers than to domestic only offers. In our study, expanding the investor base is a deliberate choice of the firm as opposed to a potentially unintended consequence of the event itself. By studying the link with underwriter spreads and

[3] In the context of IPOs, it has been argued that setting a low offer price creates a marketing buzz for the stock.

offer price discounts, we show that a broad gain in investor recognition does not merely "happen" in SEOs; a firm with a larger gain explicitly pays for that gain. In this sense, the insights from our analysis go significantly beyond providing support for Merton's investor recognition hypothesis.

Finally, there is reason to believe that greater increases in investor recognition are contemporaneously associated with greater decreases in liquidity risk, a connection made as far back as Demsetz (1968). More recently, Eckbo, Masulis, and Norli (2000) argue that SEOs are associated with reduced liquidity risk, on average. In support of our conjecture, we find that higher gross spreads are associated with greater declines in long-run liquidity betas, defined as in Acharya and Pedersen (2005).

Our findings contribute to the literature in several ways. First, though it is known that SEOs can improve investor awareness, we document large cross-sectional variation in the extent to which SEOs expand investor recognition. Second, we provide direct evidence that gross spreads and offer price discounts are used as marketing-related mechanisms to increase the investor recognition of the issuing firm's stock. Third, motivated by the idea that increased investor recognition reduces liquidity risk, we document an association between gross spreads and long-run liquidity betas.

The paper is organized as follows. Section 2 provides the background of our study. Section 3 provides a detailed description of the sample and variables. Section 4 discusses the empirical findings and Section 5 concludes.

2. Motivation

2.1. Investor recognition

A large body of empirical literature is motivated by Merton (1987), who develops a model of capital market equilibrium under incomplete information in which investors of lesser known companies require a return premium for bearing idiosyncratic risk. Merton refers to this return premium as the 'shadow cost' of incomplete information (known as lambda), where the degree of investor recognition is reflected by the fraction of investors that know about the security. His model shows that security value is increasing (and expected return is decreasing) in investor recognition. Several empirical studies provide direct evidence to support this prediction, both in the cross-section of stock returns (e.g., Lehavy and Sloan, 2008; Bodnaruk and Ostberg, 2009) and around visibility-increasing events such as NYSE exchange listing (Kadlec and McConnell, 1994), cross-border stock listing (Foester and Karolyi, 1999), S&P 500 index additions (Chen, Noronha, and Singal, 2004), and global equity issues (Chaplinsky and Ramchand, 2000).

A key prediction of investor recognition is that the effect is permanent because investors are not likely to forget about a security after they become aware of it. In support of this prediction, Chen, Noronha, and Singal (2004) find an asymmetric price response to S&P 500 additions and removals. There is a permanent increase in the price of added firms but no permanent decline for deleted firms. To the extent that seasoned equity offers increase investor recognition, the effect is predicted to be permanent. In contrast, the impact of marketing on the short-run changes in a firm's demand curve is less likely to be permanent.

2.2. Underwriter gross spreads

Underwriter gross spreads in seasoned offers reflect compensation for certification, marketing and monitoring services. Unlike the gross spreads in initial public offers, which cluster at 7% of offer proceeds (e.g., Chen and Ritter, 2000; Hansen, 2001), spreads in seasoned offers exhibit substantial cross-sectional variation.[4] For example, Chen and Ritter (2000) observe that for seasoned offers of a given size, there is considerable dispersion in the gross spreads paid on various deals. Further, Altinkilic and Hansen (2000) estimate that up to 85% of the gross spread in seasoned offers is a variable cost.

Prior studies report that gross spreads in seasoned offers are positively associated with the issuer's idiosyncratic risk due to increased difficulty in certifying and / or marketing the issue (e.g., Hansen and Torregrosa, 1992), and negatively associated with firm size (e.g., Hansen and Torregrosa, 1992; Altinkilic and Hansen, 2000), the firm's stock liquidity (Butler, Grullon, and Weston, 2005); and offer size (e.g., Lee, Lochhead, Ritter, and Zhao, 1996).

2.3. Offer price discounting

SEOs are usually priced below the current secondary market trading price. Offer price discounting is defined as the return from the previous day's closing transaction price to the offer price (close-to-offer return), multiplied by negative one. This definition follows prior studies that use identical or almost identical measures of discounting (e.g., Loderer, Sheehan, and Kadlec, 1991; Safieddine and Wilhelm, 1996; Altinkilic and Hansen, 2003; Corwin, 2003). In SEOs there is considerable cross-sectional variation in discounting. For example, discounting is greater for firms with greater pricing uncertainty and information asymmetry (e.g. Rock, 1986; Altinkilic and Hansen, 2003; Corwin, 2003).

[4] In initial public offers, differences in underwriter compensation are due in part to differences in underpricing. For example, Hansen (2001) argues that underpricing substitutes for placement effort and reputation, and therefore underwriters can place the shares using greater underpricing in deals that would require more than seven percent compensation.

Marketing-related effects can also impact the degree of discounting. Huang and Zhang (2010) find that SEOs that have more managing underwriters (a proxy for marketing effort) are associated with less discounting. Their rationale is that the extra marketing flattens the short-run demand curve of the issuing firm's stock.

2.4. Hypotheses

Our underlying premise is that the extent to which SEO issuers expand their investor base is a deliberate choice as opposed to a potentially unintended consequence of the event itself. A broad gain in investor recognition does not merely happen in SEOs; a firm with a larger gain explicitly pays for that gain. Motivated by the conjecture put forth by Merton (1987) that "at least a part of the underwriting costs can be treated as expenditures for expanding the investor base of the firm," we hypothesize that the gross spread paid by the issuer is a proxy for the underwriter's marketing and retail distribution efforts, and therefore is directly related to the change in investor recognition of the firm.

Moreover, we hypothesize that SEO pricing, more specifically the offer price discount, could be used to expand the investor base of the firm. Setting the offer price at a greater discount from the prevailing secondary market price could attract the interest of additional investors, thereby expanding the investor base. Alternatively, deeper discounting may increase the underwriter's flexibility in placing shares to a wider set of investors. We believe this investor recognition effect is separate from the short-run marketing-related effect studied in Huang and Zhang (2010). Our line of thinking is similar to that of Cliff and Denis (2004), who provide evidence that IPO issuers pay for increased marketing through greater underpricing. The fact that SEO discounting is much smaller in magnitude than IPO underpricing potentially suggests that this marketing-related cost is smaller in SEOs than in IPOS. This could be a partial explanation for why gross spreads are also an important mechanism in SEOs to pay for marketing, as we hypothesize above.

Finally, premised on the notion that an increased investor base is associated with reduced liquidity risk, we hypothesize that firms that explicitly pay for increased investor recognition are also paying for a reduction in long-run liquidity risk, approximated using the long-run liquidity betas of Acharya and Pedersen (2005). Acharya and Pedersen provide an asset pricing model that includes liquidity factors. In their model, the required return on a security is predicted by its expected liquidity and the covariances of the security's return and liquidity with the market return and liquidity.

3. Data, variables, and methodology

3.1. Sample

The sample is collected from Securities Data Company's (SDC) Global New Issues database and consists of seasoned equity offers of common shares during the period 1983-2005. The sample excludes initial public offerings, shelf-registered offers, rights offers, unit offers, ADRs, offers by utilities and financials, offers by non-U.S. firms, and offers with no primary component. We further require that offers have a minimum $20 million proceeds and non-missing underwriter gross spread. In addition, each sample firm is required to have CRSP data available for at least 30 trading days in the window [-70, -10] prior to the SEO announcement. The non-discrete variables are winsorized on both sides at the 1% level to mitigate the effect of outliers.

3.2. Measuring investor recognition

In Merton (1987), the investor recognition of a security is reflected by the fraction of the total number of investors that know about the security. Two problems arise from the standpoint of finding an appropriate empirical measure to proxy for this fraction. First, it is not possible to directly observe the number of investors that are aware of a particular security. Second, it is also not possible to observe the total number of investors in the market. However, we can observe the number of institutional investors that own a particular security, and we can also indentify the total number of institutional investors in the market (which is not possible for total shareholders). We obtain the latter by counting the number of unique institutions that report a 13f filing in a particular quarter. By calculating the fraction of total institutional investors that hold the particular security, we can reasonably approximate the fraction of the number of investors that know about the security.

Another advantage to using institutional ownership rather than total ownership is that Merton's model assumes that all investors have identical initial wealth, which of course is violated in practice. One way to come closer to satisfying this assumption is to limit the analysis to the number of institutional investors that own the particular stock.

In addition, prior studies also use the number of institutional investors as a proxy for investor recognition (e.g. King and Segal, 2009; Lehavy and Sloan, 2008). Thus, we develop two measures to capture the change in investor recognition around SEOs. The first is the change in the number of institutional investors that own the particular stock (NINST):

$$\Delta NINST = \frac{NINST_{post} - NINST_{pre}}{NINST_{pre}} \qquad (1)$$

$NINST_{pre}$ equals the total number of institutional investors holding the stock recorded from Thomson Reuters at the end of the most recent quarter prior to the SEO announcement date. $NINST_{post}$ equals the total number of institutional investors holding the stock at the end of the first, fifth, or ninth quarter after the SEO issue date.

The second measure is the change in the shadow cost of incomplete information (LAMBDA), calculated using institutional shareholders:

$$\Delta LAMBDA = \left(\frac{RVAR_{post} * RELMKTCAP_{post}}{PINST_{post}} - \frac{RVAR_{pre} * RELMKTCAP_{pre}}{PINST_{pre}} \right) * 1{,}000{,}000 \qquad (2)$$

$PINST_{pre}$ equals the fraction of total institutions that own the stock, more specifically the number of institutions that own the stock in the quarter prior to the SEO announcement date divided by the total number of institutions that report a 13f filing in that same quarter. $PINST_{post}$ equals the number of institutions that own the stock at the end of the first, fifth, and ninth quarter after the SEO issue date, divided by the total number of institutions that report a 13f filing in the particular quarter. $RELMKTCAP_{pre}$ and $RELMKTCAP_{post}$ represent the firm's market capitalization divided by the sum of the market capitalization of all stocks available on CRSP, calculated on the trading day prior to the security issue and at the end of the first, fifth, and ninth quarter end following the offer, respectively. RVAR_{pre} and RVAR_{post} is the stock residual variance calculated from daily data using the market model in the interval [-70,-10] prior to the filing of the offer and in the interval [1,60] following the end of the post-issue quarter to which the variable NINST_{post} refers.

For robustness, we also calculate the shadow cost of incomplete information using all shareholders. The drawback is that the fraction of total investors that are aware of a particular security is not directly observable because we do not know the total number of shareholders in the market. However, since we are concerned with changes in investor recognition around SEOs, we can approximate the change in the fraction of total investors that know about the security by simply observing the change in the number of shareholders that own the stock. Previous researchers use this approximation when calculating the change in the shadow cost of incomplete information using the total numbers of shareholders (e.g., Kadlec and McConnell, 1994). Throughout our paper, the results using this additional measure (unreported for brevity) are similar to the reported findings, which focus on the two measures of investor recognition described above.

While no measure is a perfect proxy for investor recognition, it is reasonable to assume the measures we construct are highly correlated with investors' awareness of a particular stock.

3.3. Measuring underwriter gross spreads and offer price discounts

The underwriter gross spread (GSPREAD) consists of the management fee, underwriter fee, and selling concession and is expressed as a percentage of total offer proceeds. We also collect a variable that reflects the average gross spread that the lead underwriter charged in other seasoned equity offers during the past two years (AVGSPREAD). We define EXGSPREAD as the gross spread (GSPREAD) in the current offer in excess of the average gross spread charged by the lead underwriter in all its seasoned offers over the past two years (AVGSPREAD). We use AVGSPREAD and EXGSPREAD to test separately whether (i) issuers negotiate higher gross spreads to achieve greater liquidity gains and / or (ii) issuers select underwriters based on the underwriter's specialization in the breadth of marketing and share distribution efforts.

Offer price discounting (DISCOUNT) is defined as the return from the previous day's closing transaction price to the offer price (close-to-offer return), multiplied by negative one.

3.4. Other variables

Our analysis includes several additional variables. Sales equals to the total revenue of the corporation at the end of the last fiscal year prior to the SEO announcement date. Market value is the market value of equity on the last trading day prior to the issue date. Reloffersize is the number of shares offered scaled by the number of shares outstanding in the firm prior to the offer. Nasdaq is a binary variable indicating that the main listing exchange for the stock is Nasdaq. Secondary is the percentage of secondary shares in the offering. Rvol is the standard deviation of residuals from a market model estimated using daily data in the window [-70,-10] relative to the announcement date. Bookrunners equals the number of book managers employed in the issue. Blocktrade is a binary variable indicating a block transaction. Offerprice is the price at which the shares were offered to investors. Proceeds equals the total amount of money raised in the offering, calculated as the number of shares sold times the offer price. Runup is the market adjusted buy-and-hold return in the window [-70,-10] relative to the announcement date, where the market proxy is the CRSP value-weighted return. International is a binary variable that equals one if the offer has an international component and zero otherwise. Market-to-book is defined as the ratio of market value of equity plus book value of debt to total book value at the end of the most recent fiscal year prior to the filing. Growth dummy is a binary variable indicating that the firm's market-to-book ratio is greater than 10. Switch is a binary variable indicating whether the firm changed lead underwriters since its last seasoned equity offer (or its

IPO, if there is no prior seasoned offer). Syndicate is a binary variable indicating a syndicated offer.

4. Results

4.1. Univariate evidence

In Table 1 we split the sample of SEOs into quintiles based on the gross underwriter spread (GSPREAD) in Panel A and based on the offer price discount (DISCOUNT) in Panel B. In Panel A, the first row reports significant cross-section variation in GSPREAD, which ranges from 3.72% in the lowest quintile to 6.22% in the highest quintile. The next two rows report changes in the two measures of investor recognition around the offer (ΔNINST, ΔLAMBDA). The change is from the end of the quarter prior to the SEO announcement to the end of the quarter after the issue. We document two important findings. First, SEOs are associated with an increase in the breadth of institutional ownership, and a decrease in the shadow cost of incomplete information. Second, the extent to which investor recognition increases around the SEO is increasing in the gross spread. For example, ΔNINST equals 0.29 for the lowest quintile of GSPREAD and 1.16 for the highest quintile, indicating that the number of institutional investors that own the stock increases by 29% for offers with low GSPREAD and increases by 116% for offers with high GSPREAD. Also, ΔLAMBDA decreases substantially as GSPREAD increases, indicating that higher gross spreads are associated with larger reductions in the shadow cost of incomplete information. As expected, the Pearson correlation between ΔNINST and ΔLAMBDA is -0.38, indicating a negative correlation between the change in shareholder base and the change in the shadow cost.

In Panel B, the first row reports large cross-section variation in DISCOUNT, which ranges from close to zero in the lowest quintile to 0.07 (i.e. the offer price is set 7% below the secondary market price) in the highest quintile. In the next two rows, we observe that ΔNINST and ΔLAMBDA are strongly associated with the level of DISCOUNT. Higher offer price discounts are associated with greater increases in the breadth of institutional ownership, and greater decreases in the shadow cost of incomplete information.

Table 2 presents descriptive statistics for sample issuers. The average issuer has a market value of $740 million, collects about $91 million in offer proceeds, and is associated with a market-adjusted stock price runup of 34% in the trading day window [–70,–10] prior to the announcement.

4.2. OLS and 2SLS Estimations

In Table 3, we present OLS regressions (Models 1 and 2) and two-stage least square (2SLS) estimations (Models 3 and 4) that explain the change in investor recognition around SEOs. The table reports coefficient estimates and standard errors (in parentheses) that are clustered by year. In the OLS estimations in Models 1 and 2, the dependent variables are ΔNINST and ΔLAMBDA, respectively. The main explanatory variable is the gross spread paid by the issuer (GSPREAD). In Model 1 we control for the pre-issue number of institutions ($NINST_{pre}$). In each model we also control for the relative offer size, the offer price, the natural log of the offer proceeds, the pre-announcement stock price runup, and an indicator that equals one for offers with an international component. In Model 1, the estimates reveal that issuers with fewer institutional shareholders prior to issuance experience a significantly larger increase in the number of institutional shareholders after issuance. After controlling for this effect, higher gross spreads are associated with significantly (1% level) larger increases in the firm's shareholder base. In economic terms, in Model 1 a one standard deviation increase in GSPREAD results in a 15.73% increase in ΔNINST. Given a sample mean value for ΔNINST of 66%, this is a nontrivial variation. The results are consistent with the hypothesis that issuers negotiate higher gross spreads in exchange for greater marketing and distribution effort on the part of the underwriter. In Model 2, we present additional evidence in support of the hypothesis. The shadow cost of incomplete information (ΔLAMBDA) is decreasing in GSPREAD. The evidence provides direct support for the conjecture of Merton (1987) that at least part of the underwriter gross spread is attributable to expenditures for expanding the investor base of the firm. The estimates of other variables suggest that firms that have greater pre-issue stock price appreciation and that raise larger dollar amounts of capital experience greater increases in their investor base and greater decreases in the shadow cost. Furthermore, offers with an international component are associated with greater increases in the total number of shareholders and greater decreases in the shadow cost, consistent with Chaplinsky and Ramchand (2000).

4.2.1. Instrumental variables estimation

In Table 3, Models 3 and 4 present the second stage estimates of 2SLS estimations. We motivate the 2SLS estimations as follows. A potential problem with the OLS specification is that underwriter spreads could be endogenous, since the change in investor recognition and the gross spread could be determined by the same factors. Omitting such variables could bias the coefficient estimate of the gross spread. To mitigate this potential bias, we re-estimate Models 1 and 2 in Table 3 using an instrumental variables approach with 2SLS estimation. The instruments chosen are: residual standard deviation to reflect that greater uncertainty increases the difficulty in placing the shares and thus could raise the spread charged by underwriters, the number of bookrunners, a binary variable indicating a block trade, a binary variable indicating whether the firm switched underwriter since its last seasoned issue (or if there isn't one, since its IPO), and the average percentage gross spread the firm's underwriters charged in issues conducted over the prior two years. In the first stage we regress the gross spreads on these instruments and our control variables, and in the second stage we use the fitted value for the gross spread (FIT_GSPREAD). The first stage is estimated with two different specifications according to the control variables employed in Models 1 and 2 of Table 3. Specifically, the specification modeling ΔNINST also includes the pre-announcement $NINST_{pre}$. The estimates indicate that less-recognized and Nasdaq firms pay higher gross spreads, as do firms that make relatively large, syndicated, and non-blocktrade offers. Also, firms that have higher residual standard deviation and that employ managers who charged higher spreads in previous offerings also incur higher gross spreads. Firms that switched lead managers tend to pay lower gross spreads, but we find no evidence that the pre-offer price runup or having an international component in the issue have an effect on the gross spread.

The second stage regressions in Models 3 and 4 of Table 3 confirm our hypothesis. Higher levels of FIT_GSPREAD are associated with greater values of ΔNINST and ΔLAMBDA. This implies that higher gross spreads are associated with greater increases in investor base and larger decreases in the shadow cost.

4.3. Negotiation versus specialization

While we interpret the estimates in Table 3 to imply that firm's negotiate higher gross spreads in return for greater distribution efforts, there is another possibility. If underwriters specialize, whereby some banks charge high spreads and have wide distribution channels and others charge low spreads and have narrow distribution channels, then an issuing firm might choose an underwriter that specializes in the fee and distribution structure that the firm desires. While this alternative interpretation is entirely consistent with our hypothesis, constructing tests to separate the two effects could yield additional insights. We introduce an additional variable that reflects the average gross spread that the lead underwriter charged in other SEOs during the past two years (AVGSPREAD). We then define EXGSPREAD as GSPREAD in the current offer minus AVGSPREAD. EXGSPREAD provides an explicit measure of the extent to which the gross spread in the current offer is high or low compared to the spread typically charged by the underwriter.

Table 4 provides regressions that explain the change in investor recognition using AVGSPREAD and EXGSPREAD. The evidence supports both negotiation and specialization. First, greater values of AVGSPREAD are associated with increased shareholder base and a reduced shadow cost (in 3 out of 4 models), indicating that offers underwritten by banks that usually charge greater spreads are associated with greater increases in investor recognition. Second, greater values of EXGSPREAD are associated with increased shareholder base and a reduced shadow cost (in all 4 models), indicating that the gain in investor recognition is greater when the spread in the current offer is higher in relation to the spread that the current underwriter has typically charged in the recent two-year period. The impact of other variables is similar to the impact reported in Table 3. In summary, the results so far indicate that higher gross spreads are associated with greater increases in investor recognition around SEOs. There is some evidence that underwriters specialize in the extent of their distribution channels and associated spreads, but there is also evidence that firms negotiate higher spreads in return for increased visibility of their stock.

4.4. Offer price discounting

We hypothesize that, in addition to paying higher underwriter spreads to achieve wider distribution, a firm may be willing to offer shares at deeper discounts from the prevailing secondary market price to attract more new investors. Alternatively, by providing a larger discount the underwriter may be able to have more discretion in allocating the shares and this larger allocation flexibility might be used to distribute the shares more widely. In this sense, the firm might pay for more investor recognition by a more discounted offer price. An opposite relation is also possible. For example, Huang and Zhang (2010) find that marketing efforts, proxied by the number of lead managers in an offering, flatten the short-term demand curve and thereby result in a smaller offer price discount. We believe both of these effects are possible. In particular, the role of marketing to gain investor recognition, which is hypothesized to be permanent, is likely a separate effect from the role of marketing to flatten the short run demand curve. Ultimately, the relation between the amount of discounting and changes in investor recognition is an empirical issue.

Table 5 includes the offer price discount (DISCOUNT) as an additional explanatory variable in the main specification. The results indicate that offers with more discounting experience a larger increase in the number of institutions holding the firm's shares, and a larger decrease in the firm's shadow cost of incomplete information. More importantly, there is no evidence for a substitution effect between gross spreads and discounting, as the effect of gross spread on changes in investor recognition does not change. The results are supportive of the hypothesis that firms are able to achieve wider investor recognition by paying more for marketing at the time of the offering; both by paying higher underwriter spreads and by discounting the shares more.

4.5. Liquidity betas

If a larger percentage of investors become cognizant of the firm, than one might also expect that the firm's potential long-term liquidity increases, decreasing the liquidity premium that investors require for holding the shares. If more intensive underwriter marketing (proxied by higher gross underwriter spreads) leads to a larger gain in investor recognition, then we expect a larger decrease of liquidity betas in firms that pay higher underwriter spreads. In Table 6 we test this hypothesis. For generating the dependent variable we use the model of Acharya and Pedersen (2005), and estimate liquidity component betas as well as a composite liquidity beta both in the pre-filing three years and in the post-issue three years. Acharya and Pedersen model the return-liquidity relation between the market and a security jointly and define a firm's liquidity beta as the sensitivity of a firm's liquidity to market liquidity, minus the sum of the firm's return sensitivity to market liquidity and the firm's liquidity sensitivity to market returns.

The estimation process starts by using daily data to estimate monthly illiquidity as the scaled average daily price impact measure of absolute returns divided by the dollar volume (Amihud, 2002). The illiquidity measure is normalized by multiplying it with 0.3 and with the ratio of the capitalization of the market portfolio at the beginning of the month to the capitalization of the market portfolio at the end of July 1962, by adding 0.25 to this value, and by capping the result at 30. The process closely follows the estimation in Acharya and Pedersen (2005) with one departure: since we do not want to restrict our sample to NYSE-only firms, we divide the volume of Nasdaq listed firms by two to adjust for double-counting of the interdealer trades. Each firm in the sample has to have 15 trading days of observations in any given month. Market illiquidity is measured as the average illiquidity of firms in the market in any given month. Innovations in firm and market illiquidity are measured as the residual from an AR(2) regression of normalized illiquidity over the three years pre-filing and over the three years post-offer. Innovations in market returns are estimates as the residuals from an AR(2) regression including also the market return, average return volatility, average illiquidity, the log of the average dollar volume, and the log of the average turnover, all measured over the prior 6 month, as well as the market's capitalization at the beginning of the month.

The three component liquidity beta estimations follow equations (14)-(16) in Acharya and Pedersen (2005) and measure the covariance of innovations in firm illiquidity and market illiquidity (LiqBeta2); the sensitivity of stock returns to innovations in market illiquidity (LiqBeta3); and the sensitivity of firm illiquidity innovations to innovations in market returns (LiqBeta4). Each covariance is scaled by the variance of market return innovations net of market illiquidity innovations. The composite measure of liquidity beta is Liqbeta1=Liqbeta2-LiqBeta3-Liqbeta4. The change in beta is obtained by taking each post-issue liquidity beta measure and deducting from it the corresponding pre-filing liquidity beta measure.

Table 6 provides evidence from regressing changes in liquidity betas on the gross spread, relative offer size, Nasdaq indicator, the percentage of secondary shares issued, and on the indicator variable for an international offering. The estimation incorporates year fixed effects and provides standard errors clustered along the time dimension. If the gross spread is positively related to the increase in investor base, then we expect to see that the firm's liquidity becomes less sensitive to market liquidity with higher gross spreads paid. This yields a negative prediction for the coefficient on the gross spread in model 2. Further, following the decomposition of Acharya and Pedersen (2005), we expect a positive coefficient on the return-liquidity cross-sensitivities in models 3 and 4, and a negative coefficient on the composite measure in model 1. Since a larger relative offer size can lead to higher investor recognition and more liquidity ceteris paribus, we expect that firms with larger offers will have a decrease in their liquidity betas. The Nasdaq dummy is included in the specification to make sure that we capture any effects introduced because Nasdaq volume is measured differently from the NYSE volume. We include the percent of secondary shares and the binary variable indicating an international offering because these variables might change a firm's investor recognition environment.

The results indicate that firms paying higher gross spreads decrease their liquidity betas more than firms paying lower gross spreads, as the coefficient on GSPREAD is significant in the predicted direction for three out of the four specifications. The finding supports the conjecture that marketing in seasoned equity offerings can have long-term effects on firm valuation and expected returns. Relative offer size is significant only once out of the three estimations. Nasdaq firms experience more negative changes in the estimations that use betas constructed with the firm's illiquidity, a likely reason for this is the difference between the measurement of reported volume for Nasdaq firms that the adjustment of dividing the volume measure by two does not fully correct. There is no evidence that offering shares with an international component or including secondary shares in the offering has any effect on the firm's liquidity beta.

4.6. Long-term changes in investor recognition

Table 7 examines the cross-sectional relation between gross spread and long-term changes in investor recognition. In Models 1 and 2 the post-offer number of institutions holding the stock used to measure changes in investor recognition is measured at the fifth reported quarter-end after the issue date. In Models 3 and 4 the post-offer number of institutions holding the stock used to measure changes in investor recognition is measured at the ninth reported quarter-end after the issue date. The results suggest that one year after the offer, the cross-sectional relation of higher gross spread and more increase in investor recognition still holds for both dependent variables. Two years after the offer there is some evidence that the effect of marketing holds in the cross-section: the lambda variable is still significantly negatively related to the gross spread. The results support the hypothesis that an important aspect of marketing around SEOs is to increase the firm's investor base and that this effect is long-lasting.

5. Conclusions

We present direct evidence that the long-term change in shareholder recognition after SEOs is directly related to underwriter gross spreads and offer price discounts. The results are consistent with the view that the gross spread paid by the issuer is a proxy for the underwriter's marketing and retail distribution efforts, and therefore is directly related to the change in investor recognition of the firm. Larger gross spreads, ceteris paribus, are negotiated by issuers that wish to maximize exposure, breadth of ownership and the number of investors that know about the firm. Smaller gross spreads are negotiated by issuers that agree to less marketing effort and narrower share distribution. Moreover, the findings suggest that by agreeing to lower offer prices (i.e. greater offer price discounts), the firm is able to attract more new investors than it otherwise could, ceteris paribus.

Supporting the view that greater increases in investor recognition are contemporaneously associated with greater decreases in liquidity risk, we find that higher gross spreads are associated with greater declines in the long-run liquidity betas.

Although numerous studies test Merton's (1987) investor recognition hypothesis in a variety of contexts, we provide evidence that expanding the investor base is a deliberate choice of the firm as opposed to a potentially unintended consequence of the event itself. By studying the link with underwriter spreads and offer price discounts, we show that a broad gain in investor recognition does not merely "happen" in SEOs; a firm with a larger gain explicitly pays for that gain. In this sense, the insights from our analysis go significantly beyond providing support for Merton's investor recognition hypothesis.

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Table 1: The change in investor recognition around seasoned equity offers

The sample period is 1983-2005. Panel A reports changes in investor recognition around seasoned equity offers within quintiles of the underwriter gross spread (GSPREAD). The first row reports GSPREAD and the second and third rows report ΔNINST and ΔLAMBDA, respectively. Panel B reports changes in investor recognition around seasoned equity offers within quintiles of the offer price discount (DISCOUNT). The first row reports DISCOUNT and the second and third rows report ΔNINST and ΔLAMBDA, respectively. The sample consists of seasoned equity offers of common shares during the period 1983-2005. GSPREAD is the percentage of offer proceeds paid to the underwriter. DISCOUNT equals the offer price discount, defined as the offer price minus the closing price on the day prior to the offer, scaled by the closing price on the day prior to the offer and multiplied by negative one. NINST is the number of institutions that hold shares of the stock. ΔNINST is defined as the number of institutions that hold shares of the stock at the first available reported quarter after the equity issue ($NINST_{post}$) minus the number of institutions that hold shares of the stock in the quarter prior to the announcement of the issue ($NINST_{pre}$), scaled by the number in the quarter prior to the announcement. LAMBDA is Merton's shadow cost of incomplete information. ΔLAMBDA is defined as:

$$\Delta LAMBDA = \left(\frac{RVAR_{post} * RELMKTCAP_{post}}{PINST_{post}} - \frac{RVAR_{pre} * RELMKTCAP_{pre}}{PINST_{pre}} \right) * 1{,}000{,}000$$

$RVAR_{pre}$ is the stock's residual variance calculated from daily data in the interval [-70,-10] prior to the offer announcement and $RELMKTCAP_{pre}$ is the firm's market capitalization divided by the sum of the market capitalization of all stocks available on CRSP and it is calculated on the trading day prior to the security issue. $RVAR_{post}$ is the stock's residual variance calculated from daily data in the interval [1,60] following the date $NINST_{post}$ is measured and $RELMKTCAP_{post}$ is the firm's market capitalization divided by the sum of the market capitalization of all stocks available on CRSP on the last trading day of the month that $NINST_{post}$ is measured. PINST is the percentage of institutions holding the stock calculated as NINST divided by the total number of institutions reporting on 13f forms on that same day.

Panel A: Quintiles sorted by the gross spread (%)

	Q1	Q2	Q3	Q4	Q5
GSPREAD	3.7151	4.759	5.1089	5.5727	6.2245
ΔNINST	0.2887	0.4485	0.5964	0.7994	1.1642
ΔLAMBDA	-0.8456	-0.9816	-1.5525	-1.5352	-2.5696

Panel B: Quintiles sorted by the offer price discount

	Q1	Q2	Q3	Q4	Q5
DISCOUNT	-0.0009	0.0054	0.0151	0.0301	0.0706
ΔNINST	0.5304	0.4613	0.6060	0.7093	0.9922
ΔLAMBDA	-0.6655	-1.1164	-0.7794	-1.6683	-3.5110

Table 2
Firm and offer characteristics
This table provides descriptive statistics for sample offers. The sample consists of seasoned equity offers of common shares during the period 1983-2005. Sales equals the total revenue of the corporation at the end of the last fiscal year prior to the SEO announcement date. Market value is the market value of equity on the last trading day prior to the issue date. Reloffersize is the number of shares offered scaled by the number of shares outstanding in the firm prior to the offer. Nasdaq is a binary variable indicating that the main listing exchange for the stock is Nasdaq. Secondary is the percentage of secondary shares in the offering. Rvol is the standard deviation of residuals from a market model estimated using daily data in the window [-70,-10] relative to the announcement date. Bookrunners is the number of book managers employed in the issue. Blocktrade is a binary variable indicating a block transaction. Offerprice is the price at which the shares were offered to investors. Proceeds is the total amount of money raised in the offering, calculated as the number of shares sold times the offer price. Runup is the market adjusted buy-and-hold return in the window [-70,-10] relative to the announcement date, where the market proxy is the CRSP value-weighted return. International is a binary variable that equals one if the offer has an international component and zero otherwise. Market-to-book is defined as the ratio of market value of equity plus book value of debt to total book value at the end of the most recent fiscal year prior to the filing. Growth dummy is a binary variable indicating that the firm's market-to-book ratio is greater than 10. Switch is a binary variable indicating whether the firm changed lead underwriters since its last seasoned equity offer (or its IPO, if there is no prior seasoned offer). Syndicate is a binary variable indicating a syndicated offer.

Variable	Number	Mean	Median	Standard deviation
Sales	3010	488	106	1244
Market value	3046	740	311	1824
Reloffersize	3046	0.2319	0.1990	0.1597
Nasdaq	3046	0.6694	1.0000	0.4705
Secondary	3046	19.5004	5.5600	25.7724
Rvol	3017	0.0356	0.0317	0.0171
Bookrunners	3037	1.0389	1.0000	0.1967
Blocktrade	3037	0.0099	0.0000	0.0989
Offerprice	3046	27.1095	22.8750	19.0763
Proceeds	3046	91	59	102
Runup	3031	0.3475	0.2152	0.5253
International	3046	0.1924	0.0000	0.3942
Market-to-book	2768	3.4661	2.0606	5.1534
Growth dummy	3046	0.0394	0.0000	0.1946
Switched	2387	0.9103	1.0000	0.2857
Syndicate	3046	0.6786	1.0000	0.4671

Table 3
Estimations of changes in investor recognition

This table displays OLS and 2SLS regressions in which the dependent variable is a proxy for the change in investor recognition around seasoned equity offers. ΔNINST and ΔLAMBDA are defined in Table 1. The sample period is 1983-2005. Models 1 and 2 provide the OLS estimations. Models 3 and 4 display second stage estimates from two-stage least squares estimations. In the first stage (discussed in the body of the paper), GSPREAD is modeled as a function of firm and offer characteristics. FIT_GSPREAD is the predicted value of GSPREAD from the first stage estimation. GSPREAD is the gross underwriter spread (%) paid by the issuer. We use year fixed-effects and report standard errors adjusted for clustering along the time dimension (in parentheses). $NINST_{pre}$ is the number of institutional shareholders in the quarter prior to the announcement of the offer. The other control variables are defined in Table 2. ***, **, * indicate significance at the 1%, 5%, and 10% levels.

	Model 1	Model 2	Model 3	Model 4
	ΔNINST	ΔLAMBDA	ΔNINST	ΔLAMBDA
GSPREAD	0.1721*** (0.0391)	-1.0108*** (0.3158)	-	-
FIT_GSPREAD	-	-	0.2794* (0.1568)	-5.5436** (2.3118)
$NINST_{pre}$	-0.0047*** (0.0007)	-	-0.0041*** (0.0009)	-
Reloffersize	1.2846*** (0.1856)	0.0676 (0.9529)	1.2173*** (0.2900)	6.5681** (3.2388)
Nasdaq	-0.0163 (0.0225)	-0.2264 (0.2656)	-0.0162 (0.0385)	0.6797 (0.5000)
Offerprice	-0.0004 (0.0010)	-0.0156 (0.0217)	0.0002 (0.0008)	-0.0306 (0.0266)
Log (Proceeds)	0.1248*** (0.0438)	-0.5761** (0.2581)	0.1536** (0.0782)	-3.7075** (1.5367)
Runup	0.1682*** (0.0481)	-4.3518*** (0.7422)	0.1528*** (0.0443)	-4.075*** (0.7676)
International	0.0321 (0.0376)	-1.112*** (0.4038)	0.0148 (0.0447)	-1.5018*** (0.5293)
Year fixed effects	Yes	Yes	Yes	Yes
R-squared	0.29	0.22	0.29	0.27
N	2970	2945	2266	2254

Table 4
Negotiation versus specialization for gross spreads and the impact on investor recognition
This table displays OLS regressions in which the dependent variable is a proxy for the change in investor recognition around seasoned equity offers. ΔNINST and ΔLAMBDA are defined in Table 1. The sample period is 1983-2005. OLS estimates are provided using year fixed-effects and clustered standard errors along the time dimension (in parentheses). AVGSPREAD equals the average gross spread charged by the lead underwriter in SEOs over the past two years. EXGSPREAD is defined as the gross spread in the current offer minus AVGSPREAD. $NINST_{pre}$ is the number of institutional shareholders in the quarter prior to the announcement of the offer. The other control variables are defined in Table 2. ***, **, * indicate significance at the 1%, 5%, and 10% levels.

	Model 1	Model 2
	ΔNINST	ΔLAMBDA
AVGSPREAD	0.2352***	-0.7092
	(0.0598)	(0.4537)
EXGSPREAD	0.1237***	-0.6812**
	(0.0404)	(0.3165)
$NINST_{pre}$	-0.005***	
	(0.0008)	-
Reloffersize	1.2644***	0.5308
	(0.2291)	(1.0914)
Nasdaq	-0.0054	-0.4813*
	(0.0235)	(0.2752)
Offerprice	-0.0004	-0.0177
	(0.0009)	(0.0241)
Log (Proceeds)	0.0919**	-0.3003
	(0.0391)	(0.2681)
Runup	0.1435***	-4.5283***
	(0.0482)	(0.7868)
International	0.0373	-1.3287***
	(0.0410)	(0.4361)
Year fixed effects	Yes	Yes
R-squared	0.30	0.24
N	2275	2254

Table 5
The impact of discounting on changes in investor recognition

This table displays OLS regressions in which the dependent variable is a proxy for the change in investor recognition around seasoned equity offers. ΔNINST and ΔLAMBDA are defined in Table 1. The sample period is 1983-2005. OLS estimates are provided using year fixed-effects and clustered standard errors along the time dimension (in parentheses). GSPREAD is the gross underwriter spread (%) paid by the issuer. DISCOUNT equals the offer price discount, defined as the return from the previous day's closing transaction price to the offer price (close-to-offer return), multiplied by negative one. In $NINST_{pre}$ is the number of institutional shareholders in the quarter prior to the announcement of the offer. The other control variables are defined in Table 2. ***, **, * indicate significance at the 1%, 5%, and 10% levels.

	Model 1	Model 2
	ΔNINST	ΔLAMBDA
DISCOUNT	3.3992*** (0.6053)	-32.9299*** (7.7669)
GSPREAD	0.16*** (0.0359)	-0.9089*** (0.2854)
$NINST_{pre}$	-0.0047*** (0.0006)	-
Reloffersize	1.2066*** (0.1914)	0.7792 (0.8836)
Nasdaq	-0.0296 (0.0235)	-0.0986 (0.2648)
Offerprice	0.0002 (0.0010)	-0.0209 (0.0219)
Log (Proceeds)	0.1388*** (0.0434)	-0.7029*** (0.2708)
Runup	0.154*** (0.0467)	-4.2191*** (0.7367)
International	0.0363 (0.0391)	-1.1479*** (0.3916)
Year fixed effects	Yes	Yes
R-squared	0.31	0.24
N	2970	2945

Table 6: Gross spread and changes in liquidity betas

This table displays OLS regressions in which the dependent variable is a proxy for the change in the liquidity beta around seasoned equity offers. The sample period is 1983-2005. OLS estimates are provided using year fixed-effects and clustered standard errors along the time dimension (in parentheses). LiqBeta1 = LiqBeta2 minus LiqBeta3 minus LiqBeta4. LiqBeta2 captures the covariance of stock liquidity and market liquidity, scaled by the variance of the market return. LiqBeta3 captures the covariance of the stock return with market liquidity, scaled by the variance of the market return. LiqBeta4 captures the covariance of stock liquidity with the market return, scaled by the variance of the market return. These variables are defined following equations 13-16 on page 385 in Acharya and Pederson (2005). GSPREAD is the gross underwriter spread (%) paid by the issuer. The control variables are defined in Table 2. The predicted sign on GSPREAD (if greater spreads increase liquidity) are: Models 1 and 2 (-); Models 3 and 4 (+). ***, **, * indicate significance at the 1%, 5%, and 10% levels.

	Model 1	Model 2	Model 3	Model 4
	ΔLiqBeta1	ΔLiqBeta2	ΔLiqBeta3	ΔLiqBeta4
GSPREAD	-0.2079** (0.0965)	-0.1871** (0.0911)	0.0014 (0.0038)	0.0194** (0.0066)
Reloffersize	-1.3197 (1.5815)	-1.3333 (1.4982)	-0.0432** (0.0203)	0.0295 (0.0863)
Nasdaq	-0.354*** (0.1204)	0.3684*** (0.1149)	0.0038 (0.0063)	-0.0182** (0.0089)
Secondary	0.0004 (0.0031)	0.0004 (0.0030)	-0.0001 (0.0001)	0.0001 (0.0002)
International	0.1597 (0.1277)	0.166 (0.1217)	0.0043 (0.0080)	0.002 (0.0105)
Year fixed effects	Yes	Yes	Yes	Yes
R-squared	0.036	0.0374	0.0511	0.0159
N	2034	2034	2034	2034

Table 7: Estimations with long-term changes in investor recognition

This table displays OLS regressions in which the dependent variable is a proxy for the change in investor recognition around seasoned equity offers. The sample period is 1983-2005. OLS estimates are provided using year fixed-effects and clustered standard errors along the time dimension (in parentheses). ΔNINST and ΔLAMBDA are defined as in Table 1, expect that ΔNINST and ΔLAMBDA are measured over a longer period. In particular, in Models 1 and 2, $NINST_{post}$ equals number of institutional shareholders at the end of the fifth calendar quarter following the issue. In Models 3 and 4, $NINST_{post}$ equals number of institutional shareholders at the end of the ninth calendar quarter following the issue. GSPREAD is the gross underwriter spread (%) paid by the issuer. The other control variables are defined in Table 2. ***, **, * indicate significance at the 1%, 5%, and 10% levels.

	Model 1 ΔNINST One year out	Model 2 ΔLAMBDA One year out	Model 3 ΔNINST Two years out	Model 4 ΔLAMBDA Two years out
GSPREAD	0.1921*** (0.0638)	-1.7503*** (0.2620)	0.1269 (0.0829)	-1.7255*** (0.2747)
$NINST_{pre}$	-0.0077*** (0.0012)	-	-0.0089*** (0.0016)	-
Reloffersize	1.3867*** (0.3672)	1.7194 (1.2614)	1.5159*** (0.4404)	1.6641 (1.0502)
Nasdaq	-0.0867* (0.0462)	-0.4784 (0.3398)	-0.1413* (0.0820)	-0.6679** (0.3390)
Offerprice	0.0021 (0.0024)	-0.0534*** (0.0175)	0.0026 (0.0022)	-0.0736*** (0.0258)
Log (Proceeds)	0.1727** (0.0827)	-1.3465*** (0.2923)	0.1601 (0.1024)	-1.3758*** (0.2410)
Runup	0.2304*** (0.0750)	-4.7628*** (0.7437)	0.1835*** (0.0542)	-5.1661*** (0.6027)
International	0.0167 (0.0819)	-1.703** (0.6903)	-0.0101 (0.0925)	-1.5565*** (0.5536)
Year fixed effects	Yes	Yes	Yes	Yes
R-squared	0.18	0.33	0.13	0.38
N	2904	2790	2738	2530