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Credit Ratings and the Cost of Issuing Seasoned Equity

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Abstract

I examine the effects of issuer credit ratings on the costs associated with seasoned equity offerings (SEOs). The evidence from a panel of SEOs from 1990-2014 shows that when firms issue seasoned equity, those with issuer credit ratings pay reduced investment banking fees. I confirm these results by conducting a propensity matched sample comparison analysis of firms who obtain new, long-term issuer credit ratings to an unrated control group. Controlling for known determinants of SEO fees, I find that firms who obtain a new credit rating prior to issuing seasoned equity pay significantly reduced investment banking fees. In economic terms, underwriting fees for newly rated firms are 7.18% lower than those for similar, yet unrated firms. Finally, I examine the indirect costs of issuance and find some evidence that credit rated firms face reduced market-based costs to issue. Rated firms incur lower dilutionary costs to issue and have more positive abnormal returns surrounding the issue.

JEL Classification: D82, G14, G24

Keywords: credit ratings, seasoned equity offerings, value certainty, information asymmetry

I. Introduction

Information asymmetries pertaining to the valuation of a firm's assets have direct effects on the risks inherent in investing in the firm's financial claims. In secondary equity markets, the adverse selection costs associated with an investment in a firm's equity are a positive function of information asymmetry (Benston and Hagerman, 1974; Kyle, 1985; Glosten and Harris, 1988; Stoll, 1989; Lin, Sanger, and Booth, 1995; Huang and Stoll, 1997; among others). Investors account for potential losses when trading with an information-motivated trader. In primary markets, the observed underpricing of initial public offerings (IPOs) has been attributed, in part, to information asymmetry. Rock (1986) argues that the observed underpricing results from a winner's curse problem where information heterogeneity induces informed investors to bid on only the best IPOs leaving less-informed investors with only the overpriced issues. Habib and Ljungqvist (2001) show that issuing firms take costly action to reduce information asymmetry prior to IPO issuance. The authors suggest that issuing firms may, for example, hire a more reputable, and thus more expensive underwriter, for their certification ability. Mechanisms which mitigate the adverse selection costs of equity issuance serve to improve the efficiency of primary equity markets. In this paper, I explore one such mechanism, specifically the presence of an issuer credit rating.

Credit rating agencies play critical roles in alleviating the information asymmetries that exist between borrowers and lenders and in apportioning risks in financial markets. In debt markets, firms who obtain credit ratings from *Standard and Poor's* and/or *Moody's* have increased leverage (Faulkender and Petersen, 2006), are able to raise more funds in syndicated debt financing (Sufi, 2009), and suffer less from underinvestment due to capital constraints (Harford and Uysal, 2014). What is it, then, that makes credit ratings a mechanism for a reduction in information asymmetry? Boot, Milbourn, and Schmeits (2006) argue that credit ratings serve as a coordinating mechanism. The threat of adverse rating changes motivates firms to take corrective actions. Thus, in the model of Boot et al. (2006), this threat leads to homogeneity in investor beliefs.

The literature on the role of credit ratings in debt markets is well developed. As for the role of credit ratings in equity issuances, An and Chan (2008) find that credit rated firms exhibit reduced underpricing at IPO relative to unrated issuers. When they examine credit rating levels, i.e., the rating obtained by the firm, they do not find an association between the level obtained and IPO underpricing. An and Chan (2008) conclude that the credit rating itself conveys useful information in reducing value uncertainty of the IPO issuing firm to financial markets. The authors' findings warrant at least two follow up questions. First, does the value certification of credit ratings extend to SEOs as well as IPOs? Or, stated differently, given that SEO issuing firms are "known" to financial markets, does the value certification benefit to being credit rating still exist? And, secondly, does the result of An and Chan (2008) extend to "sophisticated" market participants? Do the underwriters of SEOs, investment banks, recognize the value certification benefits of being credit rated and reward credit rated firms with lower investment banking fees?

In this study, I examine the SEO costs incurred by credit rated firms relative to their unrated contemporaries. Using a panel of U.S. common share SEOs from 1990-2014, I document that the fees paid by credit rated firms are significantly reduced relative to those paid by unrated firms. The presence of a credit rating at issue leads to a reduction of the fees charged by the underwriting investment bank consistent with the notion that the credit rating acts to enhance value certainty of the issuing firm. A concern of the analysis of the effects of credit ratings on SEO underwriting fees is the potential endogeneity problem noted in An and Chan (2008). The decision to become credit rated and the decision to issue seasoned equity may be endogenous to each other when firm characteristics affecting SEO behavior also affect the decision to be rated. To alleviate this concern, I employ three empirical approaches. First, I employ a Heckman two-stage model where the decision to become rated is modeled in the first step and an inverse Mills ratio is included in the second to control for in-sample bias. The reduction in fees is present after accounting for the potential bias resulting from the first-stage decision to become rated. Secondly, I examine how the association between credit ratings and fees changes across two levels of credit quality, i.e., investment-grade versus speculative-grade. I find that the benefits are most pronounced for investment-grade firms, but that both levels of credit quality exhibit a reduction in SEOs fees. This result is consistent with He, Wang, and Wei, (2010) who find that information asymmetry increases as credit ratings decline thus leading to a reduction in their value certainty. Finally, I employ a propensity-score, matched-sample approach wherein I identify previously unrated firms who obtain a credit rating and compare their SEO characteristics to an unrated, propensity-score matched control group. Controlling for the factors identified in prior literature as determinants of SEO issuance, I document an economically significant reduction of 7.18% in underwriting fees for newly rated firms, on average, and a 12.18% (5.89%) drop in underwriting fees for newly rated firms who receive an investment-grade (speculative-grade). In addition to documenting differences in underwriting costs for rated versus unrated firms, I explore the extent to which the indirect costs of SEO issuance, i.e., the market-based costs of SEO issuance, vary by the existence of an issuer credit rating. I find some evidence that the presence of a credit rating acts to reduce the market-based costs of issuance. Across a broad sample of SEOs, I find that dilutionary costs of SEO underpricing are reduced and abnormal returns surrounding the issue are more positive for issues by credit rated firms.

The findings of this study suggest that firms can reduce their costs of issuing seasoned equity by improving the information environment in which their equity trades. Specifically, obtaining a credit rating prior to the issuance of seasoned equity improves value certainty thus leading to a reduction in underwriting fees incurred by the firm. The findings provide support to prior literature documenting the economic importance of credit ratings. The identification, certification, and validation that occur with an existing, or new, credit rating seems to affect the information environment in which the rated firm's equity trades mitigating problems of uncertainty thus leading to less-costly placements of seasoned equity issues.

II. Related Literature and Concept Development

The purpose of this study is to examine the impact of credit ratings on the costs associated with issuing seasoned equity. More precisely, I test the relation between credit ratings and the underwriting fees charged by the underwriting investment bank(s). As such, this paper relates two strands of literature. The first examines the effects of credit ratings on information asymmetry and value certainty. And the second, the primary market costs associated with the issuance of equity.

A. Credit Ratings, Information Asymmetry, and Value Certainty

Prior literature suggests that credit ratings convey information beyond that which is incorporated in the observed prices of financial claims. Credit ratings and credit rating changes inform markets as to the economic prospects of the rated firm (Holthausen and Leftwich, 1986; Ederington, Yawitz, and Roberts, 1987; Hand, Holthausen, and Leftwich, 1992; Ederington and Goh, 1998; Dichev and Piotroski, 2001; Purda, 2007). Norden and Weber (2004) show that credit default swap (CDS) and equity markets respond to the news of rating downgrades or reviews for downgrade as the news reveals private information to markets. Akhigbe, Madura, and Whyte (2014) show that the revelation of private information offered to markets through credit rating changes extends not just to the rated firm, but to other firms operating in the same industry. The private information revealed as a result of credit rating change announcements affects the information environment of like firms.

Information asymmetry is reduced when the assessment and monitoring expertise of credit rating is engaged (Boot et al., 2006; Odders-White and Ready, 2006; He et al., 2010; Livingston and Zhou, 2016). Odders-White and Ready (2006) document improved secondary market liquidity for higher credit quality firms. The authors argue that improvements in secondary market liquidity result from reductions in asymmetric information. Boot et al. (2006) provide a concise justification for credit ratings as a mechanism to reduce information asymmetry. The authors suggest that the threat of adverse rating changes motivates firms to take corrective actions thus leading to homogeneity in investor beliefs.

He et al. (2010) find that the reduction of information asymmetries is not simply due to the presence of a credit rating. Looking at a sample of credit rating changes (upgrades and downgrades), the authors show that measures of information asymmetry in secondary equity markets improve (erode) as a firm experiences a credit rating upgrade (downgrade). Further, the effect is a function of the magnitude of the change. He et al. (2010) conclude that the composition of informed and uninformed traders changes with a credit rating change. The findings of He et al. (2010) suggest that value certainty offered by credit ratings is reduced as ratings decline. Overall, extant literature suggests that credit rating agencies disseminate private information to public markets reducing asymmetric information leading to greater value certainty.

B. Information Asymmetry and the Costs of Issuing Equity

The adverse selection costs of asymmetric information in equity issues has been well developed. Parsons and Raviv (1985) construct a model of seasoned issues which seeks to explain the role of asymmetric information in the determination of issue price. The authors argue that a portion of the underpricing can be explained by underwriters attempting to attract investors with different information sets by setting a lower offering price. In an IPO setting, Rock (1986) argues IPOs are underpriced, to some extent, to attract uninformed investors thus avoiding the problems of a winner's curse. Firms and underwriters leave some money "on-the-table" to ensure the continued participation of uninformed investors. Beatty and Ritter (1986) suggest that the underpricing is an artifact of the ex-ante uncertainty regarding the issuing firm, avoiding any inferred intentions of the firm/underwriter. Treating an investment in the firm's equity at IPO as a call option with a strike price of the issue price, Beatty and Ritter (1986) argue that the value of the investment increases with the level of uncertainty regarding the value of the firm's assets. The greater the uncertainty, the lower the price investors are willing to bear thus leading to IPO underpricing. Corwin (2003) finds that SEO underpricing is positively related to price uncertainty. Lee and Masulis (2009) confirm this result showing that poor accounting information quality increases investor uncertainty about a firm, lowering the demand for its equity, thereby increasing underwriting costs. Armitage, Dionysiou, and Gonzalez (2014) study the role that inelastic demand, or illiquidity, plays in SEO underpricing. The authors provide evidence that inelastic demand, or illiquidity, is a primary determinant of SEO underpricing. However, Armitage et al. (2014) acknowledge the link between illiquidity and information asymmetry and conclude that asymmetry could be a contributing factor to inelastic demand.

Underpricing that occurs as a result of uncertainty imposes costs on the firm as it requires firms to issue additional shares for a given level of capital thus diluting the positions of current shareholders. Habib and Ljungqvist (2001) model the behavior of issuers and conclude that firms will take costly action to avoid uncertainty surrounding equity issues, specifically IPOs. One such method suggested by the authors is the hiring of a more reputable, costly underwriter as a means of leveraging the underwriter's reputation. An and Chan (2008) connect the credit rating and IPO literatures. The authors examine a sample of U.S. common stock IPOs over the period 1986-2004 and find that IPO underpricing, the change in share price from the issue price to the closing price on the first day of trading, is reduced for issuing firms who obtain a credit rating prior to their IPO. Interestingly, the authors find that the level of the rating does not affect the uncertainty surrounding the IPO; the effect is driven by the simple presence of a rating. An and Chan (2008) conclude that the credit rating provides "value certainty" in the IPO process.

The underpricing which arises as a result of adverse selection are not the only costs to the issuing firm. More directly, the firm faces underwriting costs imposed by the underwriting investment bank. Corwin (2003) suggests that the direct costs (i.e., underwriting costs) account for roughly 78% of the total cost of issuance. Butler, Grullon, and Weston (2005) examine these costs directly in the context of SEOs. The authors document an inverse association between underwriter fees and the secondary market equity liquidity of the issuing firm. The findings of Butler et al. (2005) are very intuitive, i.e., issuing firms with less-liquid equity prior to the SEO pay increased investment bank fees due to the additional difficulty faced by the bank in placing the issue. The relation between information asymmetry and liquidity documented in Odders-White and Ready (2006) manifests in the liquidity premium found in Butler et al. (2005). Ginglinger, Matsoukis, and Riva (2013) advance the work of Butler et al. (2005) by showing that liquidity is an important determinant of SEO flotation choice. Secondary market liquidity concerns contribute both to the flotation choice and to the market cost of issuance. But, does the value certification of credit ratings extend to SEOs as well as IPOs? And, does the value certification apply when dealing with sophisticated investors? Or, is it simply a manifestation of the changing dynamics of the proportions of informed versus uninformed investors in financial markets?

In this study, I extend the work of Butler et al. (2005), An and Chan (2008), and Armitage et al. (2014) by examining the extent to which the issuing firm can take active steps to reduce the adverse effects of asymmetric information prior to the issuance of seasoned equity. Specifically, I explore the economic impacts that being credit rated imparts on the costs associated with issuing seasoned equity.

III. Credit Ratings and SEO Characteristics: Panel Analysis

A. Panel Analysis Sample Construction and Descriptive Statistics

This study uses SEO data from the Securities Data Company's (SDC) Global New Issues database. First, I collect the full sample of U.S. common stock offerings from January 1, 1990 through December 30th, 2014, excluding initial public offerings, unit offerings, rights offerings, mutual conversions, and issues by closed-end funds.[1] This results in a sample of 9,194 offers. Following prior literature, to be included in the final sample, an issue must: 1) include at least some primary shares; 2) be issued by a firm listed on NYSE, NASDAQ, or AMEX; 3) have an offer price of at least $3.00 and less than $400.00; 4) be issued by a firm whose has at least 6 months of prior trading data available on *CRSP* and who is tracked by *Compustat*; and, 5) not be originated by a firm in the finance or utility industries. The results of the sample identification and restrictions yields a final, unbalanced panel sample of 4,637 seasoned equity issues by 2,724 firms. Descriptive statistics on the SEOs and firms in the sample are provided in Table 1.

[Insert Table 1 here]

The left-third of Table 1 lists descriptive statistics of the SEOs in the sample by year, the middle-third displays results by Fama and French (1997) 17-industry classifications, and the right-third by issuer credit ratings at the time of SEO issue. SEOs tend to be somewhat pro-cyclical. The results by year suggest that SEOs tend to cluster in years of economic expansion. The gross fees charged by investment banks have declined nearly monotonically throughout the sample period likely as a result of technological advances and increased competition in the underwriting space. SEOs tend to cluster by industry as well. Firms in the Machinery, Oil, Retail, Transportation, and Consumer Goods industries account for roughly 43% of all SEO issues over the period. Gross investment banking fees as a proportion of the proceeds raised in the issue range from an average of 3.76% in the Transportation industry to 5.42% in Consumer Goods. The right-third of Table 1 presents a distribution of Standard & Poor's (S&P) long-term, issuer credit ratings at the time of the SEO for the rated firms in the sample. Of the SEO issues by rated firms, investment-grade rated firms account for roughly 35% of rated issues.

Table 2 provides summary statistics of SEO and firm characteristics for the firms in the sample. The left-half of Table 2 lists the results for the entire sample and the right-half by whether or not the issuing firm has a long-term, issuer credit rating from S&P at the time of the issue. For each variable, Table 2 reports distribution statistics as well as the

[1] Offerings types are identified using SDC's classifications and CRSP share codes.

difference in means (medians) by the presence of a credit rating. Statistical results on the differences in means (medians) are from t-tests (k-sample tests). Variable definitions are provided in Appendix A. The average SEO over the sample period raises $143.8 million in proceeds (*Offer Proceeds*). The average issue proceeds from the SEO scaled by the market capitalization of the issuing firm (*Issue Size*) at issue is 19.20%. The average gross investment bank fees (in dollar terms) as a percent of the SEO proceeds for the SEOs in the sample is 4.90%. Multiple bookrunners are used in 28.10% of the issues in the sample and are from underwriters who underwrite, on average, 3.10% of the entire SEO market in a given year. Additionally, 40.22% of the panel sample SEOs are shelf registration issues and 4.23% use an accelerated bookbuilding process.

[Insert Table 2 here]

Following Butler et al. (2005), I construct a liquidity index which captures the secondary market liquidity of the issuing firm's secondary market equity. The liquidity index is an average of four ranked measures of equity liquidity in the 6-months preceding the SEO issue date stopping 30 days before the issue date. The index includes the reciprocal of the Amihud (2002) illiquidity measure, the reciprocal of the bid-ask spread, volume, and turnover. By construction, the index ranges from 0 to 1 with 0.5 being the approximate mean. The average liquidity index for the issuing firms in the sample is 0.501. The average issuing firm has a market capitalization of $900 million and a share price of $25.81. The average daily standard deviation of equity returns for issuing firms over the sample period is 3.46%. Issues by firms listed on NASDAQ, NYSE, and AMEX exchanges account for 64.07%, 33.06%, and 2.87% of all issues in the sample, respectively. Finally, the average issuing firm has a market leverage ratio of 22.52% and has equity that is 55.76% institutionally owned.

SEO characteristics show distinct differences when offerings are conditioned by the presence of an issuer credit rating at issue (the right-half of Table 2). Interestingly, rated firms are responsible for larger issues as measured by *Offer Proceeds*, but smaller issues as measured by *Issue Size*. The investment banking fees as a percentage of offer proceeds, i.e., *Gross Fee*, paid by rated firms are 115 basis points less than those paid unrated issuers at the mean and 125 basis points less at the median. Issues by rated firms are more than twice as likely to use multiple bookrunners and tend to use underwriters who control a greater portion of the total SEO market. Rated issuers are nearly twice as likely to use a shelf registration and nearly 42% more likely to use an accelerated bookbuilding process. As it relates to firm characteristics, rated issuers are larger, have higher share prices, are more likely to trade on the NYSE, have equity which trades with greater liquidity and at a lower volatility, use more debt financing, and have higher institutional ownership, on average.

B. Panel Analysis Methodology

OLS estimates of the effects of being credit rated on the costs of issuing seasoned equity are only unbiased if the decision to become credit rated is independent of the decision, or costs, of issuing seasoned equity. However, the decision of a firm to obtain a credit rating is related, at least in part, to the benefits incurred by the firm for being rated. For example, a firm would choose to become rated when the benefits to doing so, such as reduced SEO issue costs, outweigh the costs of the rating. In such a case the two are endogenously determined creating a potential sample construction issue if used for analysis.

To account for the endogenous selection, I follow An and Chan (2008) and estimate a Heckman (1978) treatment effect model. In the first stage, I use a probit estimation to model the likelihood that a firm is credit rated at the time of its issue. Specifically, I model the firm's decision to obtain a credit rating by:

$$Rated_i^* = \boldsymbol{\gamma} * \boldsymbol{Z}_i + \eta_i$$

$$Rated_i = 1 \text{ if } Rated_i^* > 0$$

$$Rated_i = 0 \text{ if } Rated_i^* < 0$$

where $Rated_i^*$ is a latent variable. Z_i is a set of observable variables affecting the firm's choice of being credit rated. $\boldsymbol{\gamma}$ is a set of coefficients, and η_i is an error term. I use the vector of coefficient estimates, denoted $\hat{\boldsymbol{\gamma}}$, to construct the $\hat{\lambda}$ or inverse Mills ratio, as follows:

$$\widehat{\lambda_i} = \frac{\phi(\widehat{\gamma} * \boldsymbol{Z_i})}{\Phi(\widehat{\gamma} * \boldsymbol{Z_i})} \text{ if } Rated_i = 1$$

$$\widehat{\lambda_i} = \frac{-\phi(\widehat{\gamma} * \boldsymbol{Z_i})}{1-\Phi(\widehat{\gamma} * \boldsymbol{Z_i})} \text{ if } Rated_i = 0$$

where ϕ and Φ denote the density and cumulative distribution functions of the standard normal distribution, respectively. The inverse Mills ratio, $\hat{\lambda}$, is then added in the second-stage, OLS regression testing to address the endogenous selection.

The first stage of the Heckman two-stage procedure follows Faulkender and Petersen (2006) and describes the decision to become credit rated. Faulkender and Petersen (2006) model the decision to become rated as a function of firm size [*Ln(Mkt. Assets)*], firm age [*Ln(1+Age)*], profitability [*Profit*], tangibility of firm assets [*Tangible Assets*], firm growth opportunities [*Market-to-Book*], firm investments in brand name and intellectual capital [*Advertising/Sales*], volatility of a firm assets [*σ(Asset Return)*], two indicators which take a value of one if the firm trades on the NYSE or is a member of the S&P500 [*NYSE* and *SP500*] respectively, the natural log of the proportion of firms within the issuing firm's Fama and French (1997) 17-industry which are rated [*Ln(1+Pr(Rating))*], an indicator variable for non-linearities in a firm's age which takes a value of one if the firm has less than three years of Compustat coverage [*Young*], and an indicator which takes a value of one if the firm's market value of assets times the median debt ratio (0.183) is less than the minimum bond size required for the Barclay's US Aggregate Bond Index (formerly Lehman Brother's Bond Index) [*Barclay's*].[2] In addition to the aforementioned regressors, the model controls for year and Fama and French (1997) 17-industry fixed effects with robust standard errors clustered at the industry level. The coefficient estimates from the first-stage probit estimation are used to compute the inverse Mills ratio used in the second to control for in-sample bias.[3]

C. Panel Analysis Empirical Results

The second-stage regression specifications examine the association between the presence of a credit rating and SEO underwriting costs. The dependent variable in the specifications is the natural log of the ratio of the gross fees (in dollar terms) charged by the underwriting investment bank scaled by the offer proceeds [*Ln(Gross Fees)*]. The basis for the regression specifications follow the general methodology of Butler et al. (2005) and include important control variables identified from prior research as determinants of underwriter fees. Lee, Lochhead, Ritter, and Zhao (1996) document economies of scale in SEO offering. To control for this effect, I include the natural log of the issue proceeds [*Ln(Proceeds)*]. Carter and Manaster (1990) and Megginson and Weiss (1991) argue that the reputation of the lead underwriter matters in determining underwriter fees as underwriters with high reputation are able to either provide better service or extract rents, or both. I use the annual market share of the lead underwriter (*Und. Reputation*) to control for underwriter reputation under the premise that underwriters with better reputations charge higher fees (Habib and Ljungqvist; 2001). Butler et al. (2006) document a reduction in SEO underwriter fees for firms with improved secondary market liquidity thus I include a measure of secondary market liquidity preceding the SEO issuance [*Ln(Liquidity Index)*]. Finally, I include additional control variables from these studies to capture the within-sample variation across SEOs including firm size [*Ln(Mkt. Cap.)*], firm share price at issue [*Ln(Share Price)*], the volatility of equity returns preceding the SEO [*Ln(Equity Vol.)*], an indicator for when there is more than one underwriter involved in the SEO [*Mult. Book Runner*], and indicator variables that capture the exchange on which the issue occurs [*AMEX* and *Nasdaq*]. Formal variable definitions are provided in Appendix A. Statistical results are from an ordinary-least-squares regression framework consistent with Cao and Shi (2006) with fixed effects for year and Fama and French (1997) 17-industry and that computes robust standard errors clustered at the industry level.

[Insert Table 3 here]

Column (1) of Table 3 presents the results of an OLS regression analysis excluding the inverse Mills ratio computed in the first-stage probit estimation. The variable of interest in Column (1) is *Rated* which takes a value of one of the observation is for a credit rated firm at the time of SEO issuance, and zero otherwise. The negative coefficient estimate on *Rated* suggests that credit rated firms pay lower SEO underwriting fees controlling for known factors. The second column of Table 3 includes the inverse Mills ratio computed from the first stage. Two important results emerge from this estimation. First, the inverse Mills ratio coefficient is negative and statistically significant suggesting that selection

[2] Formal definitions of the construction of the variables used in the first-stage probit estimation are provided in Appendix A.
[3] Regressions results from the first-stage probit estimation are presented in Appendix B.

bias in the credit rating sample tends to be associated with a reduction in SEO fees. Second, the coefficient estimate on *Rated* is negative and statistically significant after controlling for within sample bias. The SEO underwriting fees paid by credit rated issuers are lower than those paid by unrated issuers after controlling for within sample bias and known determinants of SEO fees.

Column (3) of Table 3 presents the results from a regression specification where the credit quality of the rated firms is included as a covariate. I construct two indicator variables, *Investment Grade* and *Speculative Grade*, which take a value of one if the firm's credit rating falls into an investment-grade (BBB- or higher) or speculative-grade (BB+ or lower) category, respectively, and zero otherwise. The negative association between credit ratings and SEO underwriter fees exists for both investment-grade and speculative-grade issuers, on average. Credit rated firms benefit from their rating in terms of paying reduced gross underwriter fees for issuing SEO regardless of their credit rating quality (i.e., investment-grade or speculative-grade). However, the coefficient estimate on *Investment Grade* is 2.80 times the magnitude of the estimate on *Speculative Grade*. This finding is consistent with He et al. (2010) who find that information asymmetry increases as credit ratings decline thus leading to a reduction in the value certainty of credit ratings. The remainder of the coefficient estimates are generally consistent with the results of Butler et al. (2006) with the exception of the sign on *Mult. Book Runner*. Butler et al. (2006) argue that SEO fees should decline as multiple book runners coordinate, however, it could be the case that lead underwriters engage multiple book runners only when placement of the issue is difficult thus the positive sign.

In further analysis, I expand the regressor set of Butler et al. (2005) to include additional covariates identified is subsequent literature examining SEOs. For example, the works of Gao and Ritter (2010) and Gustofson and Iliev (2017) suggest that firms may elect to use accelerated bookbuilding in an attempt to reduce their cost of issuance. To the extent that accelerated issues are used more frequently by firms conditional on the presence of a credit rating, this decision may confound the association between credit ratings and the investment bank fees of issuance. To account for this effect, and others suggested by prior studies in the SEO space, I conduct additional analyses with an expanded set of regressors. Specifically, I add four measures to the specification of Butler et al. (2005): a measure of the market leverage of the issuing firm (*Mkt. Leverage*), the portion of outstanding shares owned by institutional investors (*% Inst. Owned*), and two indicator variables which take a value of one if the issue is a shelf registration (*Shelf Registration*) or uses accelerated bookbuilding (*Accelerated Book*). The results of these tests are presented in Columns (4) and (5). The coefficient estimates on the variables of interest remain qualitatively unchanged. The fees charged by investment banks in underwriting SEOs are lower for credit rated firms controlling for other factors. Further, I find support for Gao and Ritter (2010) and Gustofson and Iliev (2017) that SEO issue costs are reduced for firms that use an accelerated bookbuilding process.

IV. Credit Ratings and SEO Characteristics: Matched Sample Analysis

A. Matched Sample Construction and Methodology

The Heckman selection results produce unbiased estimates of the relation between the presence of an issuer credit rating and SEO issue costs if the models are appropriately specified. If, for example, the specifications include omitted regressors, then inferences gained from the approach are suspect. To attempt to address this potential issue, I employ an event study approach where the SEO fees paid by firms are examined subsequent to the initiation of a new long-term issuer rating. The SEO fees of the newly rated firms are then contrasted to an unrated, propensity-score matched control group. The sample of credit rating initiations come from *Bloomberg Data Services*. Firms are identified as having obtained a new issuer rating if their prior S&P long-term issuer rating, as identified by *Bloomberg Data Services*, is either missing or contains a value of "NR" which identifies a firm as being not-rated. To be included in the final sample of credit rating initiations I impose two additional restrictions: 1) the new rating must not be a "personal opinion" or "credit watch" rating; and, 2) the rating initiation must be by a firm with at least 6 months of prior trading data available on *CRSP* and who is tracked by *Compustat*. The sample identification procedure yields a final sample of 509 credit rating initiations.[4]

To evaluate the effects of credit rating initiations on SEO issue activity and costs, I employ a propensity score matching approach which combines a regression model suggested by Faulkender and Petersen (2006) to describe the decision to become credit rated with a matching approach similar to that of Li and Zhao (2006). In their work, Faulkender and

[4] Statistics on the distribution of the credit rating initiation sample by year, Fama and French (1997) 17-industry classification, and rating obtained are presented in Appendix C.

Petersen (2006) use an instrumental variable approach in order to deal with the identification and endogeneity issues associated with a firm's decision to become credit rated and their subsequent use of debt. The first stage of Faulkender and Petersen (2006) models the decision to become credit rated and the authors use the resultant coefficient estimates in order to compute a probability measure, based in part on their instrumental variables, which is then used in the second stage to instrument the presence of a credit rating. The authors employ this methodology due to the fact that they must address the issues of identification and endogeneity in a panel data setting. [5]

In my case, and specifically for the data on new credit rating initiations, I examine event data. As such, I have a specific date in which a firm elects to become credit rated. So, in order to capture the effect of the election to become credit rated on the investment bank fees associated with subsequent SEO issues, I elect to use a propensity matching technique where firms who become credit rated are matched to like firms who elect to not become rated. I accomplish this matching by using the probit regression model employed by Faulkender and Peterson (2006) in their first stage regression where the authors model the decision to become credit rated. I then use the coefficient estimates from my implementation of Faulkender and Peterson's (2006) first stage regression to compute, for each firm, the probability that the firm elects to become credit rated (i.e., their propensity scores). I then use these propensity scores to match firms from the credit rating initiation sample to like firms who elect to not become rated by matching newly rated firms to non-rated firms who have the closest propensity score. Thus my identification strategy attempts to address the endogeneity issues through propensity score matching and not through an instrumental variables approach.

Following Faulkender and Petersen (2006) in describing a firm's decision to be credit rated, I construct a probit regression model where the credit rating decision is modeled as a function of firm size [*Ln(Mkt. Assets)*], firm age [*Ln(1+Age)*], profitability [*Profit*], tangibility of firm assets [*Tangible Assets*], firm growth opportunities [*Market-to-Book*], firm investments in brand name and intellectual capital [*Advertising/Sales*], volatility of a firm assets [σ*(Asset Return)*], two indicators which take a value of one if the firm trades on the NYSE or is a member of the S&P500 [*NYSE* and *SP500*] respectively, the natural log of the proportion of firms within the issuing firm's Fama and French (1997) 17-industry which are rated [*Ln(1+Pr(Rating))*], an indicator variable for non-linearities in a firm's age which takes a value of one if the firm has less than three years of Compustat coverage [*Young*], and an indicator which takes a value of one if the firm's market value of assets times the median debt ratio (0.183) is less than the minimum bond size required for the Barclay's US Aggregate Bond Index [*Barclay's*]. The probit estimation includes fixed effects for year and industry using Fama and French (1997) 17-industry classifications and computes robust standard errors clustered by industry.

B. Matched Sample Empirical Results

I accomplish the propensity score matching by first estimating the aforementioned probit model across the universe of firm-years for firms who are covered in both *CRSP* and *Compustat* to obtain coefficient estimates.[6] Propensity scores are calculated for each firm using the coefficient estimates from the probit estimation and the firm's values for the regressors in a given year. Matching the credit rating initiation firms to an unrated control group is then achieved by selecting the unrated firm whose propensity score from the year preceding a credit rating initiation event most closely matches that of the newly rated firm in absolute difference. Matched firms are used only once in a given year yielding a sample of 1,018 firms, half of which being newly rated.[7] I then use the matched sample of rated and unrated firms to identify SEOs by the propensity-score matched firms. Validation of the matched sample is provided in Table 4.

[Insert Table 4 here]

Table 4 provides the descriptive statistics for the newly-rated (event firms) and control firms in the matched sample which issue seasoned equity and provides results from tests for differences in means (medians). Statistical significance on differences in means and medians is computed using t-tests for mean estimates and k-sample tests for median estimates. The results presented in the tables suggest that the propensity score matching procedure yielded desirable results, i.e., the match sample is similar to the newly rated sample across most dimensions. At the means, credit rating

[5] The probit regression model I employ to describe the decision to become credit rated and, as a result, to compute propensity scores can be found in Column VI, Table 7 of Faulkender and Petersen (2006).

[6] The results from the probit estimation used to compute propensity scores can be found in Appendix D.

[7] In unreported results, I impose the restriction that a firm can enter the control sample only once over the sample period. The results are qualitatively unchanged regardless of this restriction.

initiation firms tend to be larger, have increased secondary market liquidity, use more debt financing, and have higher institutional ownership relative to the unrated, match firms in the sample. The results are generally consistent at median values with the exception being that the difference in *Mkt. Leverage* is statistically insignificant at the median. As for the differences in SEO characteristics, SEO fees paid by the newly credit firms in the sample are 8.15% lower at the mean and 14.69% lower at the median than those paid by the unrated match firms. Additionally, firms in the newly rated subsample use an accelerated bookbuilding less frequently.

In addition to the previously discussed SEO and firm characteristics, I add five measures to the event study analysis to account for the time from the credit rating initiation to the SEO issue date and to control for potentially confounding events occurring in the interval. *Days to SEO* is a count of the number of days from the credit rating initiation date to the SEO issuance date. The median days to issuance is 183 across all issues in the event sample and is 154 days and 270 days for newly rated issuers and match firms, respectively. *Bond Issue*, *Earnings Ann.*, and *Acquisition* are indicator variables which take a value of one if the SEO issuing firm issues public debt, announces quarterly or annual earnings, or announces an acquisition, respectively, in the interval between the credit rating initiation date and the SEO issue date. Finally, I include a measure capturing the change in the number of analysts from the credit rating initiation date to the SEO issue date to control for changes in firm transparency stemming from changes in analyst following. At the mean, newly rated SEO issuers are more likely to issue public debt and are more likely to announce an acquisition during the time interval relative to unrated issuers.

I repeat a version of the prior regression tests examining the relation between credit ratings and the investment banking fees associated with issuing seasoned equity now over the propensity-score matched sample. Two sets of tests are performed over the propensity-score matched sample. The first includes an indicator variable, *New Rating*, which takes a value of one if the observation is for a newly rated firm, and zero otherwise. The second specification includes two additional indicator variables which capture the credit quality of the newly rated firm, i.e, *New Investment Grade Rating* and *New Speculative Grade Rating* which take a value of one if the observation is for a firm whose new credit rating falls into the investment-grade or speculative-grade category, respectively, and zero otherwise. The basis for the regression specifications again follow those of Butler et al. (2005) and include measures of issue and issuer characteristics [i.e., *Ln(Proceeds)*, *Ln(Mkt. Cap.)*, *Ln(Share Price)*, *Ln(Equity Vol.)*, *Und. Reputation*, *Mult. Book Runner*, *AMEX*, and *Nasdaq*], and a measure of secondary market liquidity preceding the SEO issue [i.e., *Ln(Liquidity Index)*]. Additionally, the regression specifications include controls for year and Fama and French (1997) 17-industry fixed effects and compute robust standard errors clustered at the industry level. The regression results are presented in Table 5.

[Insert Table 5 here]

The first column of Table 5 presents the results of the specification using *New Rating* as its variable of interest. The negative coefficient estimate on *New Rating* in the propensity score matched analysis is 3.15 times that on *Rated* in the panel analysis (i.e., -0.0718/-0.0228=3.15). SEO issuing firms that obtain a new credit rating prior to the SEO issue pay 7.18% lower gross underwriter fees in economic terms relative to unrated issuers. The second column of Table 5 presents results where *New Rating* is replaced with *New Investment Grade Rating* and *New Speculative Grade Rating*. Similar to the results presented for the panel analysis, firms who obtain a credit rating prior to the issuance of an SEO pay reduced underwriter fees regardless of the category of the rating (i.e., investment-grade or speculative-grade). The coefficient estimate on *New Investment Grade Rating* is 2.07 times that on *New Speculative Grade Rating*, however, both are statistically and economically meaningful. Firms that attain an investment (speculative) grade credit rating prior to SEO issue pay 12.18% (5.89%) lower gross underwriter fees. The differential effect is consistent with the reduction in value certainty as credit ratings decline suggested by He et al. (2010).

I expand the regressor set of Butler et al. (2005) to include the additional covariates previously discussed. The right two columns of Table 5 present the results from the expanded regression specifications. The coefficient estimates on *New Rating* and *New Investment Grade Rating* and *New Speculative Grade Rating* are attenuated slightly but are qualitatively similar regardless of the inclusion of the additional covariates. Investment bank fees for SEO issuance are lower for credit rated firms controlling for other factors. The negative coefficient estimates on *Shelf Registration* provide further support for the findings of Gao and Ritter (2010) and Gustofson and Iliev (2017).

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V. Credit Ratings SEO Characteristics: The Market Costs of Issuance

Examining the link between credit ratings and the investment bank fees associated with the issuance of seasoned equity provides insight into the value of credit ratings in the SEO process. For the average newly rated firm in my event sample, the economic impact of being credit rated at SEO is a reduction in gross investment bank fees of 7.18%. In addition to the fees of issuance, issuers face additional, market-based costs of SEO issuance. For example, Corwin (2003) documents that the indirect costs of issuance comprise 22% of the total cost of issuance for the firms in his sample. Mola and Loughran (2004) find that this portion of SEO costs is increasing in the period 1986-1999. In an unpublished working paper, Liu and Malatesta (2006) explore how the presence of a credit rating affects the indirect costs of issuance. The authors find that firms who are credit rated at the time of their SEO issue are, on average, less underpriced and have higher abnormal returns than firms without a credit rating. In this section, I explore the findings of Liu and Malatesta (2006) by examining their findings over a longer period and in the context of the new credit rating sample.

To examine the association between the presence of credit ratings and the market-based costs of SEO issuance, I repeat a version of the regression specifications discussed in sections III and IV with two commonly used measures of market costs, i.e., underpricing and abnormal return (Corwin, 2003; Mola and Loughran, 2004; Liu and Malatesta, 2006). I construct a measure of SEO underpricing as negative one times the return from the closing trading price on the day prior to the issue date to the issue price. To account for commonly used asset pricing factors I also compute a measure of the cumulative abnormal return (CAR) of the three-day window centered on the SEO issue date. The coefficient estimates used to CARs are from a Carhart (1997) four-factor model estimated using daily stock price data in the six-month period preceding the SEO ending 30 days prior to the issue date.

[Insert Table 6 here]

In general, I find limited evidence on the link between credit ratings and the market-based costs of SEO issuance. The market costs of SEO underpricing for rated firms in the panel sample are reduced by approximately 63 basis points. This relation is statistically significant and is roughly consistent across all rated issuers regardless of rating quality (i.e., investment grade versus speculative grade). The direction of the association is similar for firms in the event study sample, but the coefficient estimates are no longer statistically significant. The statistical results examining the cumulative abnormal returns surrounding the issue provide qualitatively similar results. CARs are less negative for credit rated firms at issuance in both my panel sample and event sample. However, the relation is statistically significant only in the panel sample.

VI. Conclusion

Asymmetric information increases the adverse selection costs associated with investing in a firm's financial claims. Investors face losses when trading with informed traders. Credit rating agencies play an important role in alleviating information asymmetry in financial markets. In this study, I contribute to the results of Butler et al. (2005), An and Chan (2008), Lee and Masulis (2009), and Armitage et al. (2014) by examining the extent to which the engagement of a credit rating agency prior to the issue of seasoned equity acts to reduce the investment banking costs associated with the issue. Using a sample of U.S. common stock SEOs from 1990-2014, I document three main results. First, I advance the literature exploring the determinants of SEO investment banking fees by including the presence of a credit rating. The investment bank fees incurred by credit rated firms are significantly lower than those of their unrated peers. For newly credit rated firms, being credit rated prior to SEO issuance reduces gross underwriter fees 7.18% on average. This evidence contributes to the results of An and Chan (2008) as it suggests that the benefits to rated firms when issuing equity extend beyond the IPO.

In addition to documenting a reduction in underwriter fees for credit rated firms, I examine the differential effects for firms of differing credit quality; two important findings emerge. First, the reduction in underwriter fees for investment-grade issuers are two to three times as meaningful as to those to speculative-grade rated issuers. The reduction in investment banking fees for newly-rated, investment-grade issuers is 12.18%, on average, while the reduction for newly-rated, speculative-grade issuers is 5.89%, on average. Second, despite the economic differences in the cost reduction benefits between the two rating groups, speculative-grade firms still benefit from being credit rated prior to SEO issuance. The reductions in gross underwriter fees seem to be a function, to at least some extent, of the fact that the issuing firm is simply credit rated.

The underwriting costs of issuing equity account for one aspect of the total costs of issuance. In addition to the documented reductions in underwriting costs, I find limited evidence that the presence of a credit rating acts to reduce the indirect costs of SEO issuance, i.e., the market-based costs of issuance. Across a larger sample of firms and SEOs, I find evidence to suggest that credit rated firms suffer less from SEO underpricing. The dilutionary impacts of SEO issuance seem to be less pronounced for credit rated firms. I find that abnormal returns are also less negative for credit rated firms at issuance across the broader sample of SEOs. Although these effects do not hold for the event study sample, the panel sample results support the findings of Liu and Malatesta (2006) that credit ratings act to reduce the market-based costs of SEO issuance.

The results suggest that reducing information asymmetries prior to SEO issuance mitigates the adverse selection costs associated with add-on equity issues. Obtaining a credit rating prior to the issuance of seasoned equity mitigates information symmetries lessening the adverse impact of private information in SEO placement. In addition to the hiring of a more reputable underwriter suggested in Habib and Ljungqvist (2001), managers can obtain an issuer credit rating as a means to resolve uncertainty thus reducing their costs of raising equity capital. This study supports prior literature documenting the economic importance of credit ratings. The engagement of a credit rating agency serves to mitigate the problems of information asymmetry facilitating the less-costly placement of seasoned equity issues.

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Table 1: Distribution of Seasoned Equity Offerings

The sample consists of all seasoned equity offerings recorded in the Securities Data Company's (SDC) Global New Issues Database from January 1, 1990 through December 31, 2014 that satisfy the following criteria: the offering is not an initial public offering, unit offering, rights offering, mutual conversion, or an offering issued by a closed-end fund. Additionally, an issue must include at least some primary shares, be issued by a firm listed on NYSE, NASDAQ, or AMEX, have an offer price of at least $3.00 and less than $400.00, be issued by a firm whose has at least 6 months of prior trading data available on *CRSP* and who is tracked by *Compustat*; and not be originated by a firm in the finance or utility industries. Variable definitions are provided in Appendix A.

SEOs by Year					**SEOs by Fama-French 17-Industry**					**Credit Ratings**	
Year	**# of SEOs**	**Rated Firms**	**Unrated Firms**	**Gross Fees %**	**Industry**	**# of SEOs**	**Rated Firms**	**Unrated Firms**	**Gross Fees %**	**Issuer Rating**	**# of Observations**
1990	36	3	33	5.263	Food	90	30	60	4.876	AAA	-
1991	133	9	124	5.536	Mining	54	35	19	4.300	AA+	-
1992	119	16	103	5.459	Oil	474	274	200	4.327	AA	1
1993	286	65	221	5.223	Clths	52	9	43	4.934	AA-	3
1994	186	44	142	5.077	Durbl	72	12	60	5.261	A+	21
1995	278	40	238	5.210	Chem	54	21	33	4.566	A	43
1996	316	60	256	5.189	Cnsum	268	21	247	5.417	A-	46
1997	265	51	214	5.225	Cnstr	119	51	68	4.978	BBB+	70
1998	191	44	147	4.898	Steel	67	33	34	4.748	BBB	160
1999	222	68	154	4.887	Fabpr	26	7	19	5.153	BBB-	119
2000	216	50	166	4.931	Machn	626	115	511	5.065	BB+	75
2001	182	69	113	4.903	Cars	54	22	32	4.690	BB	142
2002	167	94	73	4.667	Trans	304	231	73	3.758	BB-	245
2003	213	80	133	4.876	Rtail	335	89	246	4.784	B+	233
2004	179	70	109	4.715	Other	2,042	377	1665	5.126	B	100
2005	146	45	101	4.933						B-	46
2006	164	52	112	4.788						CCC+	16
2007	185	66	119	4.526						CCC	5
2008	110	38	72	4.602						CCC-	2
2009	253	92	161	4.630						CC	-
2010	196	86	110	4.588						C	-
2011	184	52	132	4.709							
2012	207	74	133	4.449							
2013	143	41	102	4.398							
2014	60	18	42	4.582							
Total	4,637	1,327	3,310	4.903		4,637	1,327	3,310	4.903		1,327

Table 2: Descriptive Statistics of SEO and Firm Characteristics

Table reports descriptive statistics on SEO and firm characteristics for the seasoned equity offerings (SEO) firms in the sample. The sample consists of all seasoned equity offerings recorded in the Securities Data Company's (SDC) Global New Issues Database from January 1, 1990 through December 31, 2014 that satisfy the following criteria: the offering is not an initial public offering, unit offering, rights offering, mutual conversion, or an offering issued by a closed-end fund. Additionally, an issue must include at least some primary shares, be issued by a firm listed on NYSE, NASDAQ, or AMEX, have an offer price of at least $3.00 and less than $400.00, be issued by a firm whose has at least 6 months of prior trading data available on *CRSP* and who is tracked by *Compustat*; and not be originated by a firm in the finance or utility industries. Statistical significance on differences in means and medians is computed using t-tests for mean estimates and k-sample tests for median estimates. Variable definitions are provided in Appendix A. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

					Issuer Rated Firms			Unrated Firms			Difference	
	N	Mean	Median	Std. Dev.	N	Mean	Median	N	Mean	Median	Mean	Median
SEO Characteristics												
Offer Proceeds (million $)	4,637	143.7673	76.3330	238.0910	1,327	272.6658	173.7450	3,310	92.0911	58.5000	180.5747 ***	115.2450 ***
Issue Size	4,637	0.1920	0.1596	0.1537	1,327	0.1501	0.1145	3,310	0.2088	0.1766	-0.0587 ***	-0.0621 ***
Gross Fee (%)	4,637	4.9034	5.0000	1.1013	1,327	4.0830	4.0000	3,310	5.2322	5.2500	-1.1492 ***	-1.2500 ***
Mult. Bookrunner	4,637	0.2810	0.0000	0.4495	1,327	0.4793	0.0000	3,310	0.2015	0.0000	0.2778 ***	0.0000 ***
Und. Reputation	4,637	0.0310	0.0083	0.0446	1,327	0.0371	0.0105	3,310	0.0286	0.0075	0.0085 ***	0.0030 ***
Shelf Registration	4,637	0.4022	0.0000	0.4904	1,327	0.6232	1.0000	3,310	0.3136	0.0000	0.3096 ***	1.0000 ***
Accelerated Book	4,637	0.0423	0.0000	0.2012	1,327	0.0535	0.0000	3,310	0.0378	0.0000	0.0157 **	0.0000 **
Firm Characteristics												
Liquidity Index	4,637	0.5012	0.5126	0.2289	1,327	0.5949	0.6165	3,310	0.4637	0.4590	0.1312 ***	0.1575 ***
Ln(Mkt. Cap)	4,637	6.8026	6.7332	1.4364	1,327	8.1490	8.0456	3,310	6.2629	6.2285	1.8861 ***	1.8170 ***
Share Price	4,637	25.8054	22.0500	16.9266	1,327	31.3676	28.6033	3,310	23.5755	19.9125	7.7922 ***	8.6908 ***
σ(Equity Return)	4,637	0.0346	0.0317	0.0176	1,327	0.0265	0.0224	3,310	0.0379	0.0352	-0.0114 ***	-0.0128 ***
AMEX	4,637	0.0287	0.0000	0.1669	1,327	0.0098	0.0000	3,310	0.0363	0.0000	-0.0265 ***	0.0000 ***
NASDAQ	4,637	0.6407	1.0000	0.4798	1,327	0.2698	0.0000	3,310	0.7894	1.0000	-0.5196 ***	-1.0000 ***
Mkt. Leverage	4,625	0.2252	0.1865	0.2122	1,326	0.3997	0.3900	3,299	0.1550	0.0702	0.2447 ***	0.3197 ***
% Inst. Owned	4,550	0.5576	0.5545	0.2614	1,303	0.6131	0.6443	3,247	0.5353	0.5225	0.0778 ***	0.1218 ***

Table 3: Credit Ratings and SEO Investment Bank Fees

This table reports the results of ordinary-least-squares testing on the relation between the investment bank fees charged at SEO offerings and the presence of an S&P long-term issuer credit rating and follows the methodology of Butler et al. (2005). The inverse Mills ratio in Column (3) is computed using the estimates generated from the probit specification presented in Appendix B. Variable definitions are provided in Appendix A. All specifications include fixed effects for year and industry using Fama and French (1997) 17-industry classifications and compute robust standard errors clustered by industry. *t*-statistics are reported in the parentheses below the coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Predicted Sign from Butler et al. (2006)	Dependent Variable = *Ln*(Gross Fees)				
		(1)	**(2)**	**(3)**	**(4)**	**(5)**
Rated		-0.0303***	-0.0228***		-0.0232***	
		(-4.057)	(-3.050)		(-3.085)	
Investment Grade				-0.0450***		-0.0485***
				(-4.067)		(-4.408)
Speculative Grade				-0.0161**		-0.0155*
				(-2.014)		(-1.919)
Ln(Liquidity Index)	-	-0.0114**	-0.0125***	-0.0134***	-0.0082*	-0.0091*
		(-2.358)	(-2.594)	(-2.774)	(-1.645)	(-1.829)
Ln(Proceeds)	-	-0.0305***	-0.0275***	-0.0279***	-0.0240***	-0.0244***
		(-5.767)	(-5.155)	(-5.221)	(-4.281)	(-4.350)
Ln(Mkt. Cap.)	-	-0.0868***	-0.0894***	-0.0872***	-0.0921***	-0.0897***
		(-18.000)	(-18.269)	(-17.402)	(-18.203)	(-17.292)
Ln(Share Price)	-	0.0007	0.0033	0.0027	0.0042	0.0037
		(0.129)	(0.564)	(0.471)	(0.716)	(0.629)
Ln(Equity Vol.)	+	0.1009***	0.0945***	0.0914***	0.0927***	0.0891***
		(13.115)	(12.207)	(11.598)	(11.917)	(11.255)
Mult. Book Runner	+	0.0647***	0.0650***	0.0647***	0.0599***	0.0594***
		(7.312)	(7.387)	(7.337)	(6.802)	(6.735)
Und. Reputation	-	0.1199**	0.1690***	0.1688***	0.1578***	0.1562***
		(2.155)	(2.989)	(2.996)	(2.774)	(2.756)
AMEX	+	0.0732***	0.0652***	0.0641***	0.0634***	0.0620***
		(5.767)	(5.106)	(5.017)	(4.932)	(4.825)
NASDAQ	+	0.0276***	0.0203***	0.0192***	0.0199***	0.0187**
		(3.880)	(2.786)	(2.644)	(2.722)	(2.554)
Shelf Registration					-0.0474***	-0.0539***
					(-2.707)	(-3.067)
Accelerated Book					-0.0335***	-0.0324***
					(-4.250)	(-4.099)
Mkt. Leverage					0.0123	0.0126
					(0.838)	(0.859)
% Inst. Owned					-0.0261**	-0.0268**
					(-2.324)	(-2.391)
Inverse Mills Ratio			-0.1297***	-0.1459***	-0.1258***	-0.1443***
			(-6.441)	(-6.845)	(-6.219)	(-6.755)
Constant		3.1305***	3.1432***	3.1083***	3.1717***	3.1323***
		(58.807)	(58.867)	(55.757)	(56.857)	(53.827)
Observations		4,637	4,637	4,637	4,550	4,550
Adj. R^2		0.596	0.600	0.601	0.602	0.603

Table 4: Descriptive Statistics for the Propensity Matched Sample

This table presents descriptive statistics on seasoned equity offerings for newly rated and matched control firms following the initiation of a new long-term issuer credit rating. The sample covers the time period January 1st, 1990 through December 31st, 2014. Variable definitions are provided in Appendix A. Statistical significance on differences in means and medians is computed using t-tests for mean estimates and k-sample tests for median estimates. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

					New Issuer Rated Firms			Matched Unrated Firms			Difference	
	N	Mean	Median	Std. Dev.	N	Mean	Median	N	Mean	Median	Mean	Median
SEO Characteristics												
Offer Proceeds (million $)	185	201.7368	142.2000	241.8133	140	209.4364	145.8805	45	177.7824	91.2500	31.6540	54.6305
Issue Size	185	0.3614	0.1818	0.8208	140	0.3141	0.1758	45	0.5086	0.2515	-0.1945	-0.0757
Gross Fee (%)	185	4.4550	4.5000	0.8785	140	4.3609	4.2545	45	4.7479	4.9870	-0.3870***	-0.7325*
Mult. Bookrunner	185	0.4054	0.0000	0.4923	140	0.4143	0.0000	45	0.3778	0.0000	0.0365	0.0000
Und. Reputation	185	0.0324	0.0063	0.0447	140	0.0340	0.0063	45	0.0273	0.0063	0.0067	0.0000
Shelf Registration	185	0.6216	1.0000	0.4863	140	0.6357	1.0000	45	0.5778	1.0000	0.0579	0.0000
Accelerated Book	185	0.0757	0.0000	0.2652	140	0.0571	0.0000	45	0.1333	0.0000	-0.0762*	0.0000*
Days to SEO	185	623.00	183.00	1341.75	140	532.50	154.00	45	752.00	270.00	-219.500	-116.000*
Firm Characteristics												
Liquidity Index	185	0.4435	0.4496	0.1870	140	0.4619	0.4721	45	0.3861	0.4052	0.0758**	0.0669*
Ln(Mkt. Cap)	185	7.3104	7.2549	1.0013	140	7.4006	7.3775	45	7.0297	6.8882	0.3709**	0.4893*
Share Price	185	22.4258	18.7900	15.1407	140	22.7055	19.5625	45	21.5556	16.1250	1.1500	3.4375
σ(Equity Return)	185	0.0293	0.0278	0.0133	140	0.0286	0.0274	45	0.0315	0.0281	-0.0029	-0.0007
AMEX	185	0.0216	0.0000	0.1458	140	0.0214	0.0000	45	0.0222	0.0000	-0.0008	0.0000
NASDAQ	185	0.3676	0.0000	0.4835	140	0.3786	0.0000	45	0.3333	0.0000	0.0452	0.0000
Mkt. Leverage	184	0.2539	0.2493	0.1436	139	0.2672	0.2639	45	0.2128	0.1917	0.0544**	0.0722
% Inst. Owned	165	0.5999	0.5692	0.2540	121	0.6292	0.6174	44	0.5191	0.5034	0.1101**	0.1140**
Confounding Events												
Bond Issue	185	0.4270	0.0000	0.4960	140	0.5000	0.5000	45	0.2000	0.0000	0.3000***	0.5000***
ΔAnalysts	164	0.0914	0.0278	1.5637	119	0.0244	0.0909	45	0.2688	0.0000	-0.2443	0.0909
Earnings Ann.	185	0.8595	1.0000	0.3485	140	0.8429	1.0000	45	0.9111	1.0000	-0.0683	0.0000
Acquisition	185	0.1722	0.0000	0.2738	140	0.1999	0.0250	45	0.0863	0.0000	0.1136**	0.0250

Table 5: Propensity Matched Credit Rating Initiations and SEO Investment Bank Fees

This table reports the results of ordinary-least-squares testing on the relation between the investment bank fees charged at SEO offerings and the presence of a credit rating controlling for the characteristics of the issuing firm and issue. *New Rating* is an indicator variable which takes a value of one if the observation is for a firm which obtained an S&P long-term issuer credit rating preceding the SEO offering and zero otherwise. *New Investment Grade Rating* and *New Speculative Grade Rating* are indicator variables which take a value of one if the observation is for a firm whose new credit rating falls into the investment-grade or speculative-grade category, respectively, and zero otherwise. Variable definitions are provided in Appendix A. All specifications include fixed effects for year and industry using Fama and French (1997) 17-industry classifications and compute robust standard errors clustered by industry. *t*-statistics are reported in the parentheses below the coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dep. Var. = *Ln*(Gross Fees)			
	(1)	**(2)**	**(3)**	**(4)**
New Rating	-0.0718**		-0.0620*	
	(-2.662)		(-1.984)	
New Investment Grade Rating		-0.1218***		-0.0813**
		(-3.581)		(-2.655)
New Speculative Grade Rating		-0.0589*		-0.0579**
		(-2.038)		(-2.323)
Ln(Liquidity Index)	0.0487	0.0505	0.0245	0.0258
	(1.109)	(1.149)	(0.821)	(0.839)
Ln(Proceeds)	-0.0811***	-0.0824***	-0.1356***	-0.1361***
	(-3.127)	(-3.265)	(-4.142)	(-4.196)
Ln(Mkt. Cap.)	-0.0637***	-0.0586***	-0.0456**	-0.0445**
	(-4.016)	(-3.541)	(-2.347)	(-2.262)
Ln(Share Price)	0.0276	0.0271	0.0516**	0.0519**
	(1.323)	(1.273)	(2.218)	(2.293)
Ln(Equity Vol.)	0.0460	0.0279	0.1022*	0.0949*
	(0.916)	(0.509)	(2.168)	(1.906)
Mult. Book Runner	0.0563	0.0546	0.0775*	0.0754*
	(1.398)	(1.381)	(1.891)	(1.801)
Und. Reputation	0.2533	0.2771	0.4433	0.4453
	(0.757)	(0.725)	(0.828)	(0.804)
AMEX	-0.0127	-0.0123	-0.0776	-0.0809
	(-0.175)	(-0.159)	(-1.418)	(-1.523)
NASDAQ	-0.0150	-0.0143	-0.0306	-0.0304
	(-0.477)	(-0.441)	(-0.765)	(-0.755)
Shelf Registration			-0.1183***	-0.1165***
			(-3.328)	(-3.387)
Accelerated Book			0.0254	0.0252
			(0.351)	(0.355)
Ln(Days to SEO)			0.0242	0.0242
			(0.830)	(0.822)
Mkt. Leverage			0.1519**	0.1401**
			(2.506)	(2.228)
% Inst. Owned			0.0437	0.0417
			(0.880)	(0.843)
Bond Issue			0.0015	0.0029
			(0.036)	(0.074)

ΔAnalysts			0.0102	0.0094
			(1.380)	(1.306)
Earnings Ann.			-0.0182	-0.0211
			(-0.180)	(-0.203)
Aqcuisition			-0.0160	-0.0159
			(-0.286)	(-0.293)
Constant	2.5096***	2.4135***	2.6724***	2.6425***
	(13.403)	(12.229)	(8.549)	(8.282)
Observations	185	185	146	146
Adj. R^2	0.625	0.632	0.717	0.718

Table 6: Credit Ratings and the Market Costs of SEO Issuance

This table reports the results of ordinary-least-squares testing on the relation between the market-based costs of SEO issuance and the presence of a credit rating controlling for the characteristics of the issuing firm and issue. *Rated* is an indicator variable which takes a value of one if the observation is for a rated firm (panel sample) or for a firm which obtained an S&P long-term issuer credit rating preceding the SEO offering (event sample), and zero otherwise. *Investment Grade* and *Speculative Grade* are indicator variables which take a value of one if the observation is for a firm whose credit rating falls into the investment-grade or speculative-grade category, respectively, and zero otherwise. Variable definitions are provided in Appendix A. All specifications include fixed effects for year and industry using Fama and French (1997) 17-industry classifications and compute robust standard errors clustered by industry. *t*-statistics are reported in the parentheses below the coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dep. Var. = *Underpricing*				**Dep. Var. = CAR[-1,1]**			
	Panel Sample		**Event Sample**		**Panel Sample**		**Event Sample**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Rated	-0.0063***		-0.0130		0.0075***		0.0168	
	(-3.325)		(-0.999)		(2.586)		(1.042)	
Investment Grade		-0.0061**		-0.0125		0.0065*		0.0200
		(-2.537)		(-0.735)		(1.801)		(0.916)
Speculative Grade		-0.0063***		-0.0131		0.0078**		0.0162
		(-3.052)		(-1.007)		(2.478)		(0.948)
Ln(Liquidity Index)	-0.0135***	-0.0135***	0.0200*	0.0199*	0.0033	0.0033	0.0110	0.0113
	(-5.792)	(-5.787)	(1.939)	(2.002)	(1.254)	(1.265)	(0.426)	(0.449)
Ln(Proceeds)	-0.0025	-0.0025	0.0049	0.0049	0.0046*	0.0046*	0.0020	0.0020
	(-1.599)	(-1.599)	(0.778)	(0.775)	(1.936)	(1.941)	(0.144)	(0.143)
Ln(Mkt. Cap.)	0.0011	0.0011	-0.0061	-0.0061	-0.0005	-0.0006	-0.0028	-0.0027
	(0.779)	(0.779)	(-0.930)	(-0.896)	(-0.273)	(-0.317)	(-0.347)	(-0.308)
Ln(Share Price)	-0.0073***	-0.0073***	-0.0183**	-0.0183**	-0.0032	-0.0032	-0.0147*	-0.0147*
	(-4.062)	(-4.064)	(-2.567)	(-2.566)	(-1.189)	(-1.181)	(-1.838)	(-1.821)
Ln(Equity Vol.)	0.0267***	0.0267***	-0.0383**	-0.0381*	-0.0245***	-0.0243***	-0.0282	-0.0295
	(11.044)	(10.902)	(-2.489)	(-2.165)	(-7.322)	(-7.141)	(-1.691)	(-1.355)
Mult. Book Runner	0.0018	0.0018	-0.0568	-0.0568	-0.0052	-0.0052	-0.2122	-0.2119
	(0.735)	(0.733)	(-0.432)	(-0.432)	(-1.344)	(-1.340)	(-1.567)	(-1.553)
Und. Reputation	0.0237	0.0237	0.0095	0.0095	-0.1395***	-0.1395***	0.0063	0.0060
	(1.035)	(1.034)	(0.772)	(0.764)	(-4.551)	(-4.549)	(0.511)	(0.481)
AMEX	-0.0022	-0.0022	-0.0161	-0.0160	-0.0030	-0.0030	0.0118	0.0113

	(-0.461)	(-0.463)	(-0.894)	(-0.941)	(-0.413)	(-0.405)	(0.470)	(0.483)
NASDAQ	0.0010	0.0010	0.0042	0.0042	0.0109***	0.0109***	0.0363**	0.0363**
	(0.512)	(0.507)	(0.561)	(0.559)	(3.649)	(3.660)	(3.049)	(3.003)
Shelf Registration	0.0087***	0.0087***	0.0016	0.0015	-0.0123***	-0.0122***	0.0073	0.0076
	(4.037)	(4.032)	(0.137)	(0.133)	(-3.865)	(-3.858)	(0.660)	(0.650)
Accelerated Book	0.0057	0.0058	-0.0221	-0.0221	-0.0116**	-0.0116**	-0.0430	-0.0431
	(1.396)	(1.397)	(-1.366)	(-1.341)	(-2.080)	(-2.083)	(-1.702)	(-1.666)
Mkt. Leverage	0.0104**	0.0105**	-0.0236	-0.0233	-0.0321***	-0.0323***	-0.0213	-0.0234
	(2.253)	(2.237)	(-0.742)	(-0.817)	(-4.757)	(-4.709)	(-0.474)	(-0.548)
% Inst. Owned	-0.0196***	-0.0196***	0.0621**	0.0621***	0.0563***	0.0563***	0.1112***	0.1109***
	(-5.398)	(-5.404)	(3.025)	(3.079)	(10.998)	(11.004)	(6.362)	(6.591)
Ln(Days to SEO)			-0.0105	-0.0105			-0.0093*	-0.0093*
			(-1.538)	(-1.535)			(-2.045)	(-2.014)
Bond Issue			0.0030	0.0030			0.0158	0.0161
			(0.621)	(0.597)			(1.427)	(1.330)
ΔAnalysts			-0.0017	-0.0017			-0.0014	-0.0015
			(-0.802)	(-0.794)			(-0.280)	(-0.331)
Earnings Ann.			0.0243	0.0244			-0.0005	-0.0011
			(1.099)	(1.111)			(-0.047)	(-0.096)
Aqcuisition			0.0088	0.0088			0.0133	0.0132
			(0.524)	(0.522)			(0.673)	(0.643)
Inverse Mills Ratio	-0.0123**	-0.0124**			-0.0080	-0.0073		
	(-2.239)	(-2.155)			(-0.977)	(-0.844)		
Constant	0.1759***	0.1756***	-0.1260	-0.1252	-0.1613***	-0.1597***	-0.1282	-0.1332
	(11.218)	(10.789)	(-1.044)	(-0.949)	(-6.984)	(-6.698)	(-0.687)	(-0.644)
Observations	4,550	4,550	146	146	4,550	4,550	146	146
Adj. R^2	0.160	0.160	0.355	0.355	0.085	0.085	0.483	0.484

Appendix A: Variable Definitions

Variable	Definition
<u>SEO Characteristics</u>	
Offer Proceeds	The total dollar amount of the SEO offering in millions.
Issue Size	SEO offer proceeds scaled by the market capitalization of the issuing firm 20-trading days prior to the date of the issue.
Gross Fee	The total fees paid to the SEO underwriter scaled by the offer proceeds.
Mult. Bookrunner	An indicator variable which takes a value of one if the SEO has more than one bookrunner, and zero otherwise.
Und. Reputation	The market share of the lead underwriter in the year of the SEO.
Shelf Registration	An indicator variable which takes a value of one if the issue is a shelf registration, and zero otherwise.
Accelerated Book	An indicator variable which takes a value of one if the issue uses an accelerated bookbuilding process, and zero otherwise.
Days to SEO	A count of the number of days between the credit rating initiation date and the SEO issue date.

Underpricing	Negative one times the return from the closing trading price on the day prior to the issue date to the issue price. Higher vales reflect increased dilutionary costs, or underpricing.
CAR[-1,1]	The cumulative abnormal return (CAR) of the three-day window centered on the SEO issue date using a Carhart (1997) four-factor model estimated using daily stock price data in the six-month period preceding the SEO ending 30 days prior to the issue date to obtain coefficient estimates.
Firm Characteristics	
Rated	An indicator variable which takes a value of one if the firm has an *S&P* long-term issuer rating, and zero otherwise.
Investment Grade	An indicator variable which takes a value of one if the firm has an investment grade (BBB- or higher) *S&P* long-term issuer rating, and zero otherwise.
Speculative Grade	An indicator variable which takes a value of one if the firm has a speculative grade (BB+ or lower) *S&P* long-term issuer rating, and zero otherwise.
Liquidity Index	Each observation is ranked from least liquid to most liquid across Amihud, Volume, Ask-Bid Spread, and Turnover. The average rank is computed for each observation and this value is scaled by the total number of observations. The liquidity Index ranges from zero to one.
***Ln*(Mkt. Cap.)**	The natural log of the market capitalization of the firm 10-days before the SEO date.
Share Price	The price at which the firm's equity trades 10-days before the SEO date.
σ(Equity Return)	The standard deviation of the firm's daily returns over a six-month period ending 10-days before the date of the SEO.
AMEX	An indicator variable which takes a value of one if the firm's equity trades on the AMEX, and zero otherwise.
NASDAQ	An indicator variable which takes a value of one if the firm's equity trades on the Nasdaq, and zero otherwise.
Mkt. Leverage	The book value of debt scaled by the sum of the book value of debt plus market capitalization.
% Inst. Owned	The percentage of shares outstanding held by institutional investors.
Event Study Confounding Events	
Bond Issue	An indicator variable which takes a value of one if the issuing firm issues public debt in the interval between the credit rating initiation and the SEO issue date, and zero otherwise.
ΔAnalysts	The difference in the number of analysts following the firm from the quarter immediately preceding the credit rating initiation date to the quarter immediately preceding the SEO issue date.
Earnings Ann.	An indicator variable which takes a value of one if the issuing announces earnings in the interval between the credit rating initiation and the SEO issue date, and zero otherwise.
Acquisition	An indicator variable which takes a value of one if the issuing firm announces an acquisition in the interval between the credit rating initiation and the SEO issue date, and zero otherwise.

Appendix B: Propensity to be Rated at SEO Issue

This table reports the results of a probit regression where the likelihood that an SEO firm has an S&P long-term credit rating at the time of the SEO issue is modeled as a function of the characteristics of the firm, following Faulkender and Petersen (2006). Variable definitions are provided in Appendix A. The regression specification includes fixed effects for year and industry using Fama and French (1997) 17-industry classifications and computes robust standard errors clustered by industry. *t*-statistics are reported in the parentheses below the coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable = Rated (1 if yes)	
SP500	-0.362**
	(-1.999)
NYSE	0.236***
	(2.715)
Ln[1 + Pr(Rating)]	1.746***
(% of other firms in industry)	(3.599)
Young	0.100
	(0.925)
Barclay's	-0.107
	(-0.355)
Ln(Mkt. Assets)	0.783***
	(14.599)
Ln(1 + Age)	0.271***
	(4.600)
Profit	0.044
	(0.862)
Tangible Assets	0.465**
	(2.359)
Market-to-Book (Assets)	-0.325***
	(-12.628)
Advertising/Sales	2.165
	(0.685)
σ(Asset Return)	0.042
	(0.131)
Constant	-7.205***
	(-17.579)
Observations	4,637
Pseudo R^2	0.498

Appendix C: Distribution of Credit Rating Initiations

This table provides summary statistics on the distribution of credit rating initiations by year, industry, and rating class. The sample consists of new long-term issuer credit rating initiations by Standard and Poor's over the time period January 1st, 1990 through December 31st, 2014. Firms are identified as having obtained a new issuer rating if their prior rating, as identified by *Bloomberg Data Services*, is either missing, blank, or contains a value of "NR" which identifies a firm as being not-rated. Firms are classified into 17 industries following the classification methodology of Fama and French (1997).

Year	No. of Observations	Fama-French 17-Industry	No. of Observations	Issuer Credit Rating	No. of Observations
1990	1	FOOD	16	AAA	-
1991	1	MINING	10	AA+	-
1992	2	OIL	52	AA	4
1993	10	CLTHS	9	AA-	3
1994	17	DURBL	6	A+	6
1995	23	CHEM	17	A	16
1996	37	CNSUM	18	A-	22
1997	53	CNSTR	17	BBB+	23
1998	47	STEEL	15	BBB	39
1999	33	FABPR	3	BBB-	38
2000	30	MACHN	74	BB+	28
2001	20	CARS	10	BB	56
2002	30	TRANS	29	BB-	93
2003	16	RTAIL	44	B+	88
2004	20	OTHER	189	B	69
2005	24			B-	19
2006	14			CCC+	5
2007	12			CCC	-
2008	11			CCC-	-
2009	11			CC	-
2010	16			C	-
2011	21				
2012	18				
2013	19				
2014	23				
Total	**509**				

Appendix D: Construction of the Matched Sample

This table provides the results from a probit estimation following Faulkender and Petersen (2006) where the likelihood that a firm has an S&P long-term issuer credit rating is modeled as a function of the firm's financial characteristics. The sample used is the universe of firm's who exist in both CRSP and Compustat over the time period 1990-2014. The specification includes fixed effects for year and industry using Fama and French (1997) 17-industry classifications and computes robust standard errors clustered by industry. *t*-statistics are reported in the parentheses below the coefficients. Variable definitions are provided in Appendix A. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable = Rated (1 if yes)	
SP500	0.626***
	(36.065)
NYSE	0.446***
	(42.246)
Ln[1 + Pr(Rating)]	0.034
(% of other firms in industry)	(0.612)
Young	-0.207***
	(-8.400)
Barclay's	-0.573***
	(-19.930)
Ln(Mkt. Assets)	0.455***
	(108.287)
Ln(1 + Age)	0.222***
	(27.476)
Profit	-0.153***
	(-12.794)
Tangible Assets	0.794***
	(40.056)
Market-to-Book (Assets)	-0.229***
	(-46.038)
Advertising/Sales	1.102***
	(3.188)
σ(Asset Return)	0.170***
	(5.495)
Constant	-4.553***
	(-120.149)
Observations	157,271
Pseudo R^2	0.480