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The impact of lead underwriter ranking on the offer price revision of IPO firms: Evidence from the US

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ABSTRACT

This paper examines the effect of lead underwriter ranking on the offer price revision of IPO (initial public offering) firms from the perspective of underwriter quality. Using the offer price revision from the SDC (Securities Data Company) in the US and a sample of 2,188 IPOs from 1990 to 2019, we find that the offer price revision of IPO is positively associated with high-ranked lead underwriters, while negatively related to low-ranked lead underwriters. Additional analysis suggests that IPO underpricing has a positive relation with high-ranked lead underwriters but no relation with low-ranked lead underwriters. Moreover, our study reveals that IPO underwritten by low-ranked underwriters raise significantly lower amounts in IPO and have poorer long-run performance.

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IPO underpricing; issue size;
long-run performance

1. Introduction and overview

Underwriters play a vital role in the IPO process – from road shows to bringing firms public. Such a role primarily focuses on the reputation of underwriters (Loureiro, 2013). It is documented in the literature that the lead underwriters play a crucial role in the underwriting syndicate, and the reputation of the underwriters is associated with reduced uncertainty (e.g., Corwin & Schultz, 2005). However, the underwriter ranking/rating system is less explored in IPO literature from the perspective of the ability to control risks. As such, empirical evidence on the effectiveness of the underwriter ranking/rating system in IPO offer price revision is still lacking. The underwriter ranking/rating is based on underwriters' risk management ability and market competitiveness, and maintains stability in the capital market (Zhang et al., 2023). Because underwriters extract information on the demand for shares of the firms and, along with issuers, determine the price range based on the demand. In most cases, they set an IPO offer price that usually deviates from the expected price, which is referred to as an offer price

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revision. In effect, the final offer price of the IPOs is revised upward or downward based on the demand for the shares of issuing firms.

Since higher ranked underwriters have better networks with institutional investors and other underwriters, they collect or gather more information on the demand for the shares of the firms they underwrite. Further, with their networks and marketing campaigns (Cook et al., 2006), underwriters can create demand for the shares as well, leading to a general expectation that underwriter rank be positively associated with the offer price revision for the IPOs underwritten by high ranked underwriters. However, the opposite scenario can be observed for the IPOs underwritten by low ranked underwriters. As such, we may not see the same relation between underwriter ranking/rating and offer price revision for these IPOs. Thus, unlike the findings of prior studies, we explore the relationship between underwriter rankings/ratings and the offer price revision of IPOs from the perspective of underwriter quality to offer direct empirical evidence of the effectiveness of the ranking/rating system. We conjecture a non-linear relation between the levels of underwriter rank and offer price revision from these two scenarios. Based on IPO literature and related information theories, this paper tests this hypothesis of non-linearity nexus between lead underwriter quality and IPO offer price revision using 2,188 US IPOs from 1990 to 2019.

We estimate the offer price revision based on the definition commonly used in the IPO literature (Corwin & Schultz, 2005; Cook et al., 2006). It is measured by the offer price of an IPO minus the midpoint of the initial filing price range divided by the midpoint of the initial filing price range. Further, our sample IPOs are divided into three groups based on the offer price revision: (i) zero, (ii) downward, and (iii) upward. The rank of underwriters is obtained from Professor Jay Ritter's website, which is based on Carter and Manaster's (1990) measures of underwriter quality and later updated by Carter et al. (1998), and Loughran and Ritter (2004). The range of underwriter ranks is between 1.001 and 9.001 where higher ranks represent higher quality underwriters, and vice versa. When there are multiple lead underwriters in the underwriting syndicate, the average rank of the lead underwriters in the year when the IPO became effective is used as the rank of lead managers.

Our initial summary statistics of the offer price revision for IPOs according to underwriter ranks show an interesting pattern between these two variables. We find that the magnitude of the mean offer price revision decreases as the underwriter rank increases until the latter reaches 8. With an underwriter rank greater than 8, we observe the increasing trend of offer price revision. We also plot the pattern in the graphical form, where it shows a downward (upward) slope of offer price revision for underwriter rank with less than or equal to (greater than) 8, indicating a non-linear relation between these two variables.

We further investigate to confirm this non-linear relation between underwriter rank and offer price revision. We use several measures of offer price revisions as dependent variables and both continuous and dummy variables of the lead underwriter rank as main explanatory variables of interest, in addition to IPO characteristics as controls in the regression framework. Our underwriter rank dummy distinguishes between low and high ranked underwriters; if the rank of an underwriter is less than or equal to 7, then we consider the underwriter low-ranked, and vice versa. Underwriter rank dummy equals one for the low ranked underwriters, and zero otherwise. The rationale

behind using this threshold for the underwriter rank dummy is based on our preliminary analysis, which suggests that the mean underwriter rank in our sample is 6.816, which is very close to 7 (i.e., above sample-average ranked underwriters are defined as high-ranked and below sample-average ranked underwriters are defined as low-ranked underwriters), and that the downward offer price revision is more frequent for IPOs underwritten by underwriters with a rank equal to or below 7. Moreover, our construction of underwriter rank dummy is close to that of Corwin and Schultz (2005).¹

Employing sample IPOs underwritten by low-ranked underwriters, we document an inverse association between lead underwriter rank and offer price revision. In contrast, lead underwriter rank has a significant positive relation with the offer price revision for sample IPOs underwritten by high-ranked underwriters. Thus, these results suggest a non-linear relation between these two variables. We further discover that the mean offer price revision is lower for the IPOs underwritten by low-ranked underwriters. Since underwriter syndicate size significantly affects offer price revision (Corwin & Schultz, 2005), it might be interesting to investigate whether IPOs with low-ranked underwriters in larger syndicates have higher offer price revision. To test this, we use an interaction term between the underwriter rank dummy and syndicate size in the regression and find a significant negative effect of the interaction term on offer price revision. This suggests that IPOs underwritten by low-ranked underwriters have lower offer price revisions than those with high-ranked underwriters. As such, the lead underwriter rank appears to have more influence on offer price revision than underwriting syndicate size. This confirms our non-linearity conjecture between lead underwriter rank and offer price revision.

In furthering the robustness analysis of our baseline findings, we examine the relation separately for samples constructed by offer price revision: (i) zero, (ii) downward, and (iii) upward. We find that lead underwriter rank is significantly and negatively associated with the offer price revision for sample IPOs with zero and downward offer price revision, whereas it is positively related to sample IPOs with upward offer price revision. This result again confirms the non-linear relation between these two variables. As expected, the findings are the opposite when we use the underwriter rank dummy. We also investigate whether a high-ranked underwriter's decision to make the final offer price even higher than the filing price range, leading to the greater magnitude of the upward offer price revision, drives our results. Using both the linear probability model and logistic regressions, we report that, on average, IPOs underwritten by high-ranked underwriters appear to have a significantly higher probability of a greater offer price than the filing price range. This result also explains why we observe higher offer price revision for IPOs underwritten by high-ranked underwriters, confirming the non-linear relationship between lead underwriter rank and offer price revision.

Next, extant literature documents that offer price revisions are positively related to underpricing (Hanley, 1993; Cook et al., 2006; Corwin & Schultz, 2005). Thus, the lead underwriter rank appears as an explanatory factor for underpricing (Loughran & Ritter, 2004; Lowry et al., 2010). However, since we observe a non-linear relation between the lead underwriter rank and offer price revision, we hypothesise that lead underwriter rank will not be only positively associated with underpricing for all IPOs, irrespective of underwriter quality level, as reported in previous studies. As expected, we find that the lead underwriter rank is positively and significantly associated with

the underpricing for the IPOs underwritten only by high-ranked underwriters, but it has no significant association with underpricing for IPOs underwritten by low-ranked underwriters. Previous studies do not analyze underpricing separately for different groups of underwriters based on rank or quality. Rather, they examine the relation between these two variables for all IPOs and claim a straight positive relation, which is not valid, as our finding suggests. As we show, the non-linear relation between lead underwriter rank and offer price revision is driving this new finding on the relation between lead underwriter rank and underpricing.

Finally, we examine whether underwriter rank is associated with the long-run performance of the firm. Several studies document the poor performance of IPOs in the long-run. Stoll and Curely (1970), Ibboston and Jaffe (1975), and Stern and Bornstein (1985) suggest that abnormal returns on IPOs may be negative at some point after going public. Ibboston and Jaffe (1975) find that IPOs have a positive performance in the first year of going public, a negative performance over the next three years and a positive performance in the final year of a five-year period. However, Buser and Chan (1987) find a positive mean two-year market adjusted return of 11.2%, as they choose eligible IPOs of the NASDAQ/National Market System². Ritter (1991) finds evidence that IPOs significantly underperform a set of matching stocks during the three years after going public. Loughran and Ritter (1995), Spiess and Affleck-Graves (1995), and Lee (1997) report similar underperformance after seasoned equity offerings. Keloharju (1993), Levis (1993), Lee et al. (1996), and Arosio et al. (2001) report poor long-run performance of IPOs in countries other than the United States. Zhao et al. (2023) report poorer post-IPO performance for IPOs affected by market suspensions in China. In contrast, Lin et al. (2024) observe greater IPO long-run performance of IPO firms with innovator CEOs. We hypothesise the differential long-run performance of the firms between IPOs underwritten by low-ranked underwriters and high-ranked underwriters. Following Ritter (1991), we use the cumulative average market adjusted returns as a proxy for the long-run performance of IPOs. Using monthly returns of firms and equal-weighted market returns, we estimate the cumulative abnormal returns for one, two and three year/s. Consistent with the findings in previous studies, we find negative cumulative abnormal returns for our sample IPOs. However, to our interest, we find that IPOs underwritten by low-ranked underwriters have significantly lower cumulative abnormal returns for all three periods than those underwritten by high-ranked underwriters. This provides evidence that IPOs underwritten by low-ranked underwriters have poorer long-run performance.

Our finding that high-ranked underwriters are associated with higher offer price revision is supported by the signalling theory (Myers & Majluf, 1984) and the certification hypothesis (Booth & Smith, 1986) that reputable underwriters certify issuer quality through rigorous due diligence, which curbs information asymmetry, reduces uncertainty, and broadens the investor base. This may increase the demand for the shares, which will lead to a higher offer price revision.

Our study contributes to IPO literature in several ways. First and foremost, it builds on a large body of research exploring IPO underwriter quality, offer price revision, underpricing and long-run performance. More specifically, we add to the literature by showing a non-linear relation between the lead underwriter rank and offer price revision in IPOs. In particular, employing a sample of IPOs underwritten by low-ranked underwriters, we find that lead underwriter rank is inversely associated with offer price revision but has a significant

positive relation for the sample IPOs underwritten by high-ranked underwriters. Thus, we extend the previous research (Corwin & Schultz, 2005; Cook et al., 2006) that commonly shows a straightforward positive and linear relationship between these two variables. Our study diverges from prior literature by providing non-linear effects of underwriter quality. We further supplement the literature with the evidence that underwriter rank has more influence on offer price revision than underwriting syndicate size has, although the latter significantly affects the offer price revision, and that IPOs underwritten by high-ranked underwriters, on average, have a significantly higher probability of a greater offer price than the filing price range. Second, our study adds value to the explanation of underpricing. We document that the lead underwriter rank is significantly and positively associated with the underpricing for the IPOs underwritten only by high-ranked underwriters; however, it has no significant association with underpricing for IPOs underwritten by low-ranked underwriters. Previous research does not analyze underpricing separately for different groups of underwriters based on quality and thus provides an unexpected result that an increase in the lead underwriter rank increases the underpricing (Loughran & Ritter, 2004; Lowry et al., 2010), which is not true, as our finding suggests. Unlike prior literature, we document that IPO underpricing has a positive relation with high-ranked lead underwriters, but no relationship with low-ranked lead underwriters. Thus, we extend the previous research by showing that the non-linear relation between lead underwriter rank and offer price revision is driving the new finding on the link between lead underwriter rank and underpricing.

The rest of the paper is organised as follows. Section 2 presents hypotheses in brief, and Section 3 details of data gathering and sample selection process, and summary statistics. Section 4 provides empirical results and discussions for lead underwriter rank with offer price revision, issue size of IPOs, underpricing and long-run performance. Finally, Section 5 concludes the paper.

2. Hypotheses

The main predictions of the impact of underwriter ranking on the offer price revision of IPO in the US-listed firms are expressed in the hypotheses below. Following our discussion from the extant literature above, it can be argued that underwriters play an intermediary function in information disclosure in the stock market and can influence the offer price revision of IPO firms. Underwriters with a higher ranking/rating level are favoured and trusted by investors. High rating/high rank underwriters can guide IPO firms to establish a reliable information disclosure environment and accrue benefits from the offer price revision of the IPO. According to the certification effect (Booth & Smith, 1986), the reputable underwriters certify issuer quality through rigorous due diligence, which curbs information asymmetry, reduces uncertainty, and broadens the investor base. This may increase the demand for the shares, which will lead to a higher offer price revision. IPOs underwritten by prestigious underwriters also signal the issuer quality, consistent with the signalling theory by Myers and Majluf (1984). Therefore, we propose our hypotheses as follows:

H1: Lead underwriters with a higher ranking/rating can positively affect the offer price revision of IPO firms.

H2: Lead underwriters with a lower ranking/rating can negatively affect the offer price revision of IPO firms.

3. Data and summary statistics

We collect data from several sources to investigate how underwriter quality affects offer price revision. Our US IPO data are collected from the Securities Data Company's (SDC) Global New Issues Database for the period 1990 and 2019. There are 15,508 initial public offerings for this period. If the SDC database contains earlier offerings by the same firm, we remove them from the sample. Again, following previous literature, we apply some IPO sample selection criteria. For instance, we discard acquisition companies, financial institutions, real estate investment trusts (REITs), American Depository Receipts (ADRs), closed-end funds, limited partnerships, auctions, unit offerings (packages of shares and warrants), best effort issues, and firms not found in Refinitiv. Further, we also remove IPOs for which SDC has no offer price and filing price range, offer prices are zero, and the number of shares offered is zero. The resulting final sample consists of 2,188 IPOs. We also calculate several variables (for example, underpricing and market volatility before IPO) using data from Refinitiv. [Table 1](#) presents the variable description in Panel A and summary statistics for these variables in Panel B.

Our main variables of interest are offering price revision and lead underwriter rank. Panel B of [Table 1](#) reports that the offer price revision is negative i.e., on average, the sample IPOs make a downward offer price revision. The average rank of lead underwriters for our sample IPOs is 6.816.³ Thus, we consider underwriter rank greater than 7 (which is very close to the mean) high-ranked or better-quality underwriters, and vice versa. There are more than two underwriters, on average, in the underwriting syndicate, and approximately 38% of IPOs are backed by venture capitalists (VC).⁴ Underpricing is quite visible and common, with a mean value of approximately 10%. Results in the summary statistics also suggest that underwriters typically avoid bringing firms public when the overall stock market is volatile.

4. Empirical results and discussion

4.1 Lead underwriter rank and offer price revision

Conventionally, any underwriter syndicate is potentially connected with information production. Underwriters usually aim to extract information regarding the market demand for potential IPO shares during the road show and book building process. In particular, they collect information from institutional investors and transmit information to the institutions through their networks with other underwriters and institutional investors (Bajo et al., 2016). While information production by underwriters is reflected in the offer price revisions, in most cases, the final offer price is revised based on public and private information on investor demand for the issues (Benveniste & Spindt, 1989). Corwin and Schultz (2005) contend that if underwriters have information about the IPO issue that the demand will be higher, they are more likely to make upward offer price revisions, and vice versa. Moreover, underwriters are linked to demand creation for shares of issuing firms they underwrite through their marketing campaigns

Table 1. Variable definition and summary statistics.

This table presents variable definitions in Panel A and summary statistics in Panel B. The sample consists of 2,188 IPOs between 1990 and 2019.

Panel A: Variable Definition

Variable	Definition
Offer Price Revision	Offer price minus midpoint of the initial filing price range divided by the midpoint of the initial filing price range
Zero Offer Price Revision	An indicator variable equal to one if offer price revision is zero, and zero otherwise
Downward Offer Price Revision	An indicator variable equal to one if offer price revision is negative, and zero if positive
Upward Offer Price Revision	An indicator variable equal to one if offer price revision is positive, and zero if negative
Lead Underwriter Rank	Rank of lead underwriters involved in the IPOs. The rank of underwriters' measures underwriter quality. The range of underwriter ranks is between 1.001 and 9.001; higher ranks represent higher quality underwriters. When there are multiple lead underwriters in the underwriting syndicate, then average rank of the lead underwriters in the year when the IPO became effective is used as the rank of lead managers
Lead Underwriter Rank Dummy	An indicator variable equal to one if the lead underwriter rank is equal to or below 7 (low-ranked underwriters), and zero otherwise (high-ranked underwriters)
Underwriter Syndicate Size	Total number of leads, co-leads and co-managers for an IPO
Underpricing	Initial returns in IPOs, which is the percentage change between the closing price on the first day of stock and the offer price of the IPO
VC	An indicator variable equal to one if the firm received financing from venture capitalists prior to the IPO, and zero otherwise
Days between Filing and Issue Dates	Natural log of the number of days between the time the offering's registration statement is filed with the Securities and Exchange Commission (SEC) and the offer date of the IPO
NYSE	An indicator variable equal to one if the IPO firm is listed on the NYSE, and zero otherwise
NASDAQ	An indicator variable equal to one if the IPO firm is listed on the NASDAQ, and zero otherwise
Market Volatility before IPO	Standard deviation of the value-weighted NYSE, NASDAQ and AMEX index return for one week prior to the IPO issue dates
IPO Issue Size	Natural logarithm of amount sold in IPO or proceed from IPO
Revenue	Natural logarithm of one plus revenue before IPO
Long-run performance	Cumulative abnormal returns for 1-year, 2-year, and 3-year periods after IPO

Panel B: Summary Statistics

Variable	Obs.	Mean	Std Dev	25th Pct	Median	75th Pct
Offer Price Revision	2,188	-0.002	0.206	-0.115	0	0.094
Lead Underwriter Rank	2,180	6.816	2.337	5.5	8.001	8.833
Lead Underwriter Rank Dummy	2,180	0.321	0.467	0	0	1
Underwriter Syndicate Size	2,188	2.143	1.147	2	2	3
Underpricing	2,188	0.102	0.446	0	0.076	0.208
VC	2,188	0.375	0.484	0	0	1
Days between Filing and Issue Dates (non-log)	2,188	81.49	111.726	48	60	78
NYSE	2,188	0.127	0.333	0	0	0
NASDAQ	2,188	0.74	0.439	0	1	1
Market Volatility before IPO	2,188	0.006	0.004	0.004	0.005	0.007
IPO Issue Size	2,188	3.318	0.964	2.734	3.352	3.870
Revenue	1,870	3.387	1.678	2.399	3.410	4.432
CAR for 1-year	2,188	-0.038	0.641	-0.428	-0.036	0.46
CAR for 2-year	2,188	-0.099	0.922	-0.638	-0.099	0.430
CAR for 3-year	2,188	-0.098	1.092	-0.766	-0.100	0.519

during the road show and book building process (Cook et al., 2006). Since high ranked and reputable underwriters have strong networks with institutional investors and other underwriters, they can convince their institutional clients to purchase the shares of the

Table 2. Offer price revision by lead underwriter rank.

This table presents the summary statistics of the offer price revision for IPOs underwritten by lead underwriters with different ranks. The sample consists of 2,188 IPOs between 1990 and 2019. Offer Price Revision is offer price minus midpoint of the initial filing price range divided by the midpoint of the initial filing price range. Lead underwriter rank is the rank of lead underwriters involved in the IPOs. The rank of underwriters' measures underwriter quality. The range of underwriter ranks is between 1.001 and 9.001; higher ranks represent higher quality underwriters. When there are multiple lead underwriters in the underwriting syndicate, the average rank of the lead underwriters in the year when the IPO became effective is used as the rank of lead managers.

Ranks	Obs.	Mean	Std Dev	Min	25th Pct	Median	75th Pct	Max
<= 3	188	-0.027	0.136	-0.429	-0.063	0	0	0.556
3.001-4	164	-0.040	0.165	-0.5	-0.100	0	0	1
4.001-5	50	-0.048	0.145	-0.354	-0.167	0	0	0.333
5.001-6	155	-0.041	0.169	-0.5	-0.133	-0.036	0.05	0.857
6.001-7	143	-0.055	0.149	-0.455	-0.167	-0.077	0.063	0.375
7.001-8	262	-0.018	0.185	-0.615	-0.125	0	0.091	0.667
8.001-9	736	0.023	0.212	-0.515	-0.104	0.037	0.146	1
9 <	480	0.024	0.258	-0.861	-0.133	0	0.143	1.8

firms they underwrite, leading to rising demand for the shares of those firms. On the other hand, high quality underwriters choose to underwrite high quality firms (Fernando et al., 2005) that have the capability to increase the demand for their shares, thus the relation between underwriter rank and offer price revision is subject to selection bias. Given that underwriters, especially lead managers, play a crucial role in the underwriting syndicate and collect/create demand for potential IPO shares, and the reputation of the underwriters is related to reduced uncertainty, we believe that lead underwriter quality is associated with higher offer price revision.

In Table 2, we present the mean offer price revision of IPOs underwritten by underwriter rank. We observe an interesting pattern in the relation between these two variables. We find that the magnitude of the mean offer price revision decreases as the underwriter rank increases until the latter reaches 8. With an underwriter rank greater than 8, we observe the increasing trend of offer price revision. Figure 1 presents the pattern in graphical form. It shows a downward (upward) slope of offer price revision for underwriter rank with less or equal to (greater than) than 8, indicating a non-linear relation between these two variables. These findings suggest that the previously documented linear relation between these two variables in the literature is not valid if we deep down to various underwriter rank groups and link them to offer price revisions. In the next stage, this initial finding of a non-linear relation between underwriter rank and offer price revision is further investigated thoroughly to confirm.

We further show the non-linear relation in Figure 2, where we plot the number of IPOs for different offer price revision groups and underwriter ranks. We breakdown our sample IPOs into three offer price revision groups: (i) IPOs with downward offer price revision where the offer price is smaller than the mid of the filing price range, (ii) upward offer price revision where the offer price is greater than the mid of the filing price range, and (iii) zero offer price revision where the offer price is equal to the mid of the filing price range.⁵ Figure 2 shows that the pattern of the number of underwritten IPOs for different offer price revision groups is different for underwriter rank groups. Very low-ranked underwriters (with ranks less than or equal to 4) underwrite a few IPOs with upward offer price revisions, but more IPOs with zero and downward

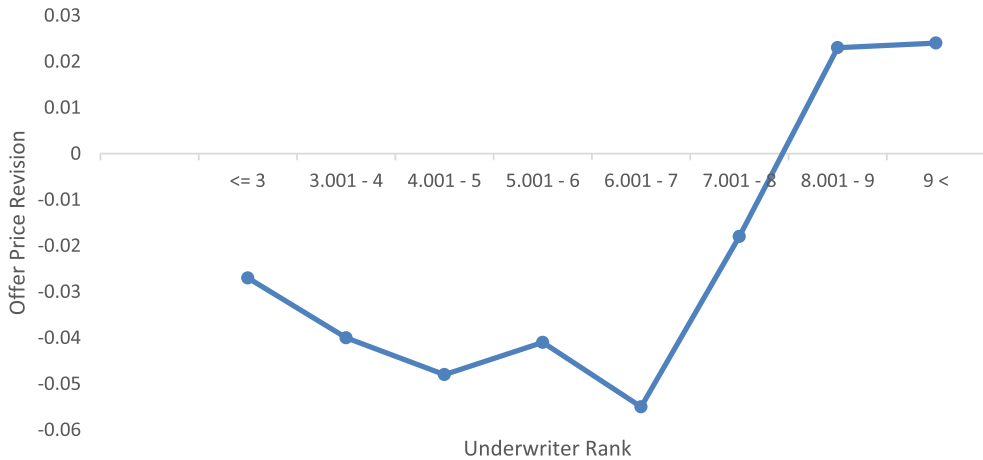


Figure 1. Mean offer price revision for different ranks. The x-axis represents the ranges of lead underwriter ranks and the y-axis represents the mean offer price revision in IPOs for each range of the lead underwriter ranks.

offer price revisions. In the next underwriter group (rank between 4 and 5), the number of IPOs for different offer price revision groups is almost equal. Offer price revision is mainly downward for IPOs underwritten by underwriters with ranks between 5 and 7. For the next underwriter rank group (rank between 7 and 8), downward and upward price revisions are mostly similar. An upward offer price revision is more common with an underwriter rank above 8. Results in [Figure 2](#) suggest that downward offer price revision is more frequent for IPOs underwritten by underwriters with ranks equal to or below 7, thus confirming the non-linear relation that we report in [Table 2](#) and [Figure 1](#). Based on this result, we construct an underwriter rank dummy equal to or below 7 as low-ranked and above 7 as high-ranked underwriters to use in our subsequent analyses. Another reason for using this threshold for the underwriter rank dummy is that the mean underwriter rank in our sample is 6.816, which is very close to 7.

Next, we investigate the relation between lead underwriter rank and offer price revision in the regression framework. Results are reported in [Table 3](#). We use different samples in different columns of [Table 3](#) depending on our classification of underwriter rank. IPOs with lead underwriter rank (continuous variable) below or equal to 7 and above 7 are used in Columns (1) and (2), respectively. Columns (3) and (4) provide results based on the full sample using the lead underwriter rank dummy (dummy variable). Column (1) shows the negative relation between the lead underwriter rank and offer price revision, implying that underwriters with a rank below or equal to 7 are associated with downward offer price revision. However, the statistically insignificant relation suggests more zero offer price revisions, which we observe in [Figure 2](#). Nevertheless, the result in Column (1) confirms that these underwriters usually do not underwrite IPOs with positive or upward offer price revisions. In Column (2), the lead underwriter rank is significantly and positively related to the offer price revision in conjunction with underwriter size, implying that underwriters with a rank above 7 are associated with upward offer price revision. This implies that while size matters, underwriter

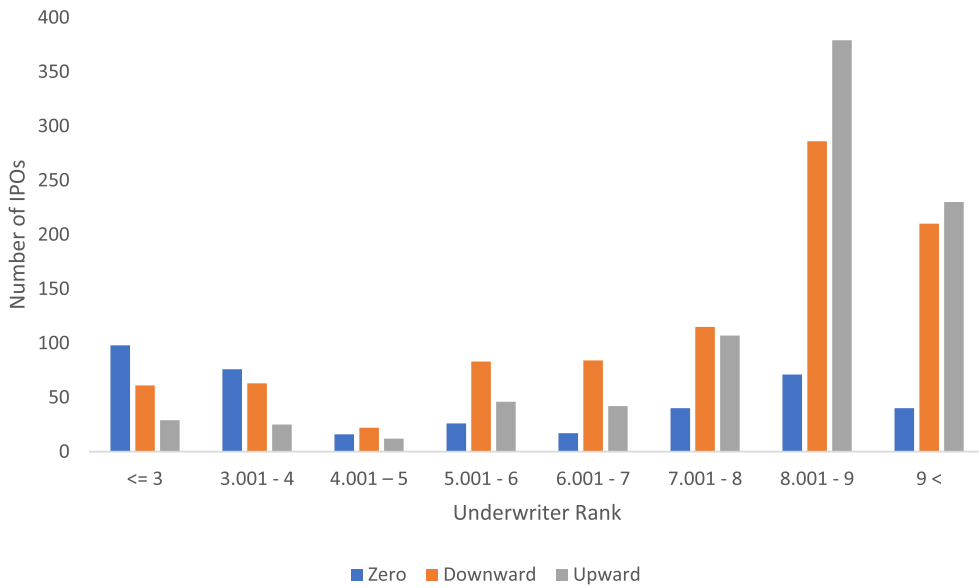


Figure 2. Frequency distribution of IPOs by offer price revision and underwriter ranks. The x-axis represents the ranges of lead underwriter ranks and y-axis represents the number of IPOs.

rank or quality is more important for IPO offer price revision indicating non-linear effects. In Column (3), we find that the lead underwriter rank dummy is negatively and significantly related to offer price revision. This result again confirms that IPOs with a lead underwriter rank below or equal to 7, i.e. low-ranked underwriters, have lower offer price revision than those with a lead underwriter rank above 7 (high-ranked underwriters). Thus, these results confirm the non-linear relation between these two variables.

In each column of Table 3, we control several IPO characteristics. One important variable is underwriter syndicate size, measured by the total number of leads, co-leads, and co-managers. Corwin and Schultz (2005) provide evidence that syndicate members can produce useful information, and a larger syndicate size is more likely to adjust the offer prices according to the information revealed during the filing period. Bajo et al. (2016) also find that the underwriter network is positively related to the absolute value of the offer price revision. We find in most columns that our results are in line with Corwin and Schultz (2005), that the underwriter syndicate size is positively related to the offer price revisions. Other control variables suggest that an increase in market volatility before IPO and days between filing and issue dates are negatively associated with the offer price revision.

Given that previous studies reveal underwriter syndicate size significantly affects offer price revision, it might be interesting to investigate whether IPOs with underwriters ranked below or equal to 7 (low-ranked underwriters) in larger syndicates have higher offer price revision as well. In Column (4), we include an interaction term between the underwriter rank dummy and syndicate size. The negative and significant effect of the higher magnitude of the interaction term on offer price revision suggests that these IPOs have lower offer price revision than those with underwriters ranked above 7,

Table 3. Lead underwriter rank and offer price revision.

This table presents linear probability models and OLS estimates of offer price revisions in IPO. The sample consists of 2,188 IPOs between 1990 and 2019. The dependent variable, Offer Price Revision, is offer price minus midpoint of the initial filing price range divided by the midpoint of the initial filing price range. In Columns (1) and (2), samples are divided into IPOs with lead underwriter rank less than or equal to 7 (low-ranked underwriters) and greater than 7 (high-ranked underwriters), respectively. Description of the independent variables is in Table 1. *t*-statistics based on the robust standard errors are reported in parentheses under the parameter estimates. ***, ** and * indicate significance at 1%, 5% and 10%, respectively.

Variable	Offer Price Revision			
	(1)	(2)	(3)	(4)
Lead Underwriter Rank	-0.006 (-1.188)	0.023** (2.196)		
Lead Underwriter Rank Dummy			-0.038*** (-3.267)	-0.002 (-0.106)
Underwriter Syndicate Size	0.008 (0.319)	0.065*** (3.169)	0.040*** (2.841)	0.065*** (3.547)
Lead Underwriter Rank Dummy X Underwriter Syndicate Size				-0.065** (-2.277)
VC	-0.053*** (-2.747)	-0.004 (-0.284)	-0.006 (-0.508)	-0.005 (-0.447)
Days between Filing and Issue Dates	-0.032** (-2.374)	-0.058*** (-4.611)	-0.046*** (-4.958)	-0.045*** (-4.961)
NYSE	-0.022 (-0.372)	-0.046 (-1.369)	-0.030 (-1.303)	-0.027 (-1.177)
NASDAQ	-0.005 (-0.285)	-0.032 (-1.121)	-0.023 (-1.611)	-0.016 (-1.087)
Market Volatility before IPO	2.768 (1.458)	-5.949** (-2.039)	-3.148 (-1.504)	-3.051 (-1.443)
Constant	0.115* (1.808)	0.091 (0.894)	0.218*** (4.955)	0.190*** (4.169)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Adj. R^2	0.111	0.158	0.125	0.128
Number of Observations	547	1,303	2,001	2,001

indicating more influence of underwriter rank than underwriting syndicate size on offer price revision. This result further confirms our non-linearity argument between lead underwriter rank and offer price revision. It is interesting to note that the underwriter syndicate size is associated with a 4% increase in offer price revision, while the underwriter rank or quality dummy is associated with a 3.8% decrease in offer price revision, thus retaliating with a non-linear relation (i.e. positive with high-ranked and negative with lower-ranked underwriters). However, the interaction term between underwriter size and underwriter rank or quality dummy decreases the offer price revision by 6.5%, implying the economic significance of our results for IPO firms. In other words, firms observe more economic benefits with high-ranked underwriters compared to lower-ranked, irrespective of underwriter size, meaning underwriter rank or quality matters for IPO performance.

Now, in Table 4, we further explore the relation between lead underwriter rank and offer price revision, separately for the three offer price revision groups (e.g., zero, downward and upward). For each group, we use both the continuous and dummy variables of the lead underwriter rank. We find in Columns (1) and (3) of Table 4 that lead underwriter rank is significantly and negatively associated with the zero and downward offer

Table 4. Lead underwriter rank and classification of offer price revision.

This table presents linear probability models and OLS estimates of different groups of offer price revisions in IPO. The sample consists of 2,188 IPOs between 1990 and 2019. The dependent variable, Offer Price Revision, is offer price minus midpoint of the initial filing price range divided by the midpoint of the initial filing price range. Description of the independent variables is in Table 1. *t*-statistics based on the robust standard errors are reported in parentheses under the parameter estimates. ***, ** and * indicate significance at 1%, 5% and 10%, respectively.

Variable	Offer Price Revision					
	Zero		Downward		Upward	
	(1)	(2)	(3)	(4)	(5)	(6)
Lead Underwriter Rank	-0.042*** (-7.502)		-0.023*** (-2.898)		0.023*** (2.898)	
Lead Underwriter Rank Dummy		0.134*** (5.497)		0.138*** (3.861)		-0.138*** (-3.861)
Underwriter Syndicate Size	-0.031 (-1.213)	-0.069*** (-2.786)	-0.119*** (-3.168)	-0.112*** (-3.030)	0.119*** (3.168)	0.112*** (3.030)
VC	-0.059*** (-2.850)	-0.071*** (-3.465)	0.005 (0.163)	0.006 (0.181)	-0.005 (-0.163)	-0.006 (-0.181)
Days between Filing and Issue Dates	-0.021 (-1.313)	-0.017 (-1.089)	0.105*** (4.297)	0.106*** (4.343)	-0.105*** (-4.297)	-0.106*** (-4.343)
NYSE	-0.136*** (-3.180)	-0.194*** (-4.626)	0.099 (1.592)	0.094 (1.532)	-0.099 (-1.592)	-0.094 (-1.532)
NASDAQ	-0.152*** (-4.511)	-0.200*** (-6.013)	0.047 (0.986)	0.043 (0.923)	-0.047 (-0.986)	-0.043 (-0.923)
Market Volatility before IPO	2.045 (0.663)	1.562 (0.506)	8.996* (1.735)	8.806* (1.696)	-8.996* (-1.735)	-8.806* (-1.696)
Constant	0.720*** (8.733)	0.449*** (5.592)	0.213* (1.740)	0.005 (0.039)	0.787*** (6.427)	0.995*** (8.099)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.159	0.140	0.128	0.133	0.128	0.133
Number of Observations	2,001	2,001	1,597	1,597	1,597	1,597

price revision IPOs, whereas it is positively related to upward price revision IPOs, as shown in Column (5). These results actually reflect what we illustrate in Table 2 and Figures 1 and 2. Column (2) suggests that IPOs with lead underwriter rank below or equal to 7, i.e., low-ranked underwriters, have a higher probability of zero offer price revision compared to those underwritten by underwriters with ranks above 7 (high-ranked underwriters). We obtain this result since we do not make separate groups for downward and upward offer price revision IPOs; rather, we group the IPOs between zero and non-zero offer price revisions. Columns (4) and (6) show the results when we group the IPOs based on downward and upward offer price revisions, respectively. As per expectation, we find in Column (4) that IPOs with lead underwriters rank below or equal to 7, i.e., low-ranked underwriters, have a significantly higher probability of downward offer price revisions. Our finding is further confirmed in Column (6), which suggests that these IPOs have a significantly lower probability of upward offer price revision. It is noted here that Columns 3 and 5, as well as Columns 4 and 6, show results in opposite directions because of the nature of the construction of the samples based on downward and upward offer price revision.

In regard to control variables, we note a significant negative association of underwriter syndicate size with the zero and downward offer price revision IPOs, while a positive association with upward offer price revision, as expected. Similarly, days between filing

Table 5. Lead underwriter rank, offer price and filing price range.

This table presents OLS, and logits estimates of greater offer price than filing price range. The sample consists of 2,188 IPOs between 1990 and 2019. The dependent variable is an indicator variable equal to one if the offer price is greater than the filing price range, and zero otherwise. Description of the independent variables is in Table 1. *t*-statistics (*z*-statistics) based on the robust standard errors are reported for OLS (logistics) regressions in parentheses under the parameter estimates. ***, ** and * indicate significance at 1%, 5% and 10%, respectively.

Variable	Offer Price > Filing Price Range		
	OLS		Logit (3)
	(1)	(2)	
Lead Underwriter Rank Dummy	-0.168*** (-7.357)	-0.155*** (-5.608)	-1.217*** (-5.429)
Underwriter Syndicate Size	0.091*** (3.540)	0.118*** (3.666)	0.770*** (3.818)
VC	0.061*** (2.679)	0.045* (1.649)	0.252 (1.608)
Days between Filing and Issue Dates	-0.046** (-2.476)	-0.029 (-1.335)	-0.153 (-1.320)
NYSE	-0.011 (-0.262)	0.018 (0.350)	0.241 (0.674)
NASDAQ	0.009 (0.342)	0.015 (0.428)	0.243 (0.915)
Market Volatility before IPO	-3.689 (-1.437)	-9.677*** (-2.752)	-51.894** (-2.474)
Revenue	-0.003 (-0.472)	-0.004 (-0.429)	-0.040 (-0.651)
Constant	0.423*** (4.765)	0.371*** (3.475)	
Industry Fixed Effect	No	Yes	Yes
Year Fixed Effect	No	Yes	Yes
Adj. R^2 /Pseudo R^2	0.071	0.122	0.092
Number of Observations	1,861	1,676	1,357

and issue dates and market volatility variables are inversely and positively related to downward and upward offer price revisions, respectively.

Underwriters usually set the final offer price towards the upper-end of the filing range when they identify the higher demand for the shares of the IPOs they underwrite, which refers to upward price revision. However, in some cases, they set the offer price even higher than the filing price range. This fact may, on average, lead to a greater magnitude of the upward offer price revision. We examine whether this drives our results for the high-ranked underwriters. Since better quality underwriters can obtain more information regarding the demand for shares during the IPO process, as well as creating and increasing the demand, we predict that they, along with the issuer, determine greater offer prices than the filing price range for the IPOs with higher demands. Table 5 reports results using OLS and logistic regressions where the dependent variable is an indicator variable equal to one if the offer price is greater than the filing price range.

In all columns of Table 5, the lead underwriter rank dummy is negatively and significantly associated with the dependent variable. These results suggest that IPOs with an underwriter rank below 7, on average, have a significantly lower probability of a greater offer price than the filing price range, whereas the opposite is true for an underwriter rank above 7. This result also explains why we observe higher offer price revision for IPOs underwritten by high-ranked underwriters, thus confirming

Table 6. Lead underwriter rank and IPO issue size for different groups of offer price revision. This table presents OLS estimates of IPO issue size. The sample consists of 2,188 IPOs between 1990 and 2019. The dependent variable is the natural logarithm of amount sold in IPO or proceed from IPO. Description of the independent variables is in Table 1. *t*-statistics based on the robust standard errors are reported in parentheses under the parameter estimates. ***, ** and * indicate significance at 1%, 5% and 10%, respectively.

Variable	IPO Issue Size		
	IPOs with Zero Offer Price Revision (1)	IPOs with Downward Offer Price Revision (2)	IPOs with Upward Offer Price Revision (3)
Lead Underwriter Rank Dummy	-0.766*** (-5.622)	-0.505*** (-8.054)	-0.687*** (-8.465)
Underwriter Syndicate Size	0.168 (1.118)	0.370*** (4.421)	0.323*** (3.702)
VC	-0.036 (-0.371)	-0.057 (-0.928)	0.063 (1.281)
Days between Filing and Issue Dates	-0.101 (-1.026)	-0.095* (-1.906)	-0.033 (-0.783)
NYSE	0.548** (1.981)	0.670*** (4.617)	0.853*** (6.608)
NASDAQ	0.409*** (3.086)	0.188** (2.005)	0.325*** (4.101)
Market Volatility before IPO	13.113 (1.285)	10.950 (1.256)	4.379 (0.570)
Revenue	0.121*** (2.669)	0.206*** (6.940)	0.171*** (6.711)
Constant	2.885*** (6.058)	2.538*** (9.705)	2.671*** (12.213)
Industry Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
Adj. R^2	0.718	0.583	0.620
Number of Observations	198	599	637

the non-linear relation between lead underwriter rank and offer price revision. Regarding control variables, our results suggest that IPOs with larger syndicate size and backed by venture capitalists are associated with a higher probability of greater offer price revision than the filing price range; however, market volatility indicates the opposite.

4.2 Lead underwriter rank and issue size in IPO

Issue size or proceeds are important IPO characteristics. It reflects the dollar amount raised by selling shares at the time of IPO. The variable is commonly used as a proxy for firm size in IPO literature. Since low-quality firms are usually underwritten by low-quality underwriters (Fernando et al., 2005), we believe that low-ranked underwriters raise comparatively lower amounts from IPOs. We also test this conjecture, and the results are reported in Table 6.

We find in all columns (samples according to offer price revision group) that the lead underwriter rank dummy is negatively and significantly associated with the issue size, implying a significantly lower amount raised in IPOs underwritten by low-ranked underwriters. However, the opposite is true for IPOs underwritten by high-ranked underwriters. It is also expected that bigger firms can sell more shares and thus raise a larger amount in IPOs. Regarding control variables, using revenue as a proxy for firm size,

we find positive and significant results, as expected. Further, using underwriter syndicate size as a proxy for underwriter quality, we find that a larger syndicate size helps to raise a larger amount in IPOs. These findings validate our conjecture that underwriter quality does matter in raising the dollar amounts through IPO share selling. As well, other size factors deserve due consideration in the IPO process. Our findings are consistent with the previous research.

4.3 Lead underwriter rank and underpricing

The offer price revision is positively associated with underpricing, as documented in the literature. Specifically, Hanley (1993) reveals that underpricing is higher for those IPOs that adjust their offer prices upward from the filing range. Both Corwin and Schultz (2005) and Cook et al. (2006) also support this claim. On the other hand, previous research suggests a positive relation between lead underwriter rank and underpricing, implying that underpricing increases if underwriter rank increases (Loughran & Ritter, 2004; Lowry et al., 2010). They presume that underwriters provide aftermarket support, including analyst coverage of the issue. Issuers' increased attention to analyst coverage, rather than pricing, appears to lead highly ranked underwriters to spend less effort on accurately pricing the issue. Since highly ranked underwriters tend to have the best analyst coverage, issuers may accept lower offer prices, suggesting larger underpricing to obtain analyst coverage from these underwriters. However, as we observe a non-linear relation between the lead underwriter rank and offer price revision, we believe that lead underwriter rank will not be positively associated with underpricing for all IPOs as previous studies reported. We test our prediction, and the results are reported in Table 7.

We provide evidence that the lead underwriter rank is positively and significantly associated with the underpricing for the IPOs underwritten only by high-ranked underwriters. Since high-quality firms are underwritten by high-quality underwriters (Fernando et al., 2005), our findings are consistent with the previous research that underpricing serves as a means of signalling firm quality (Allen & Faulhaber, 1989; Grinblatt & Hwang, 1989; Welch, 1989). We find that higher underpricing is for IPOs with upward offer price revision (Column 7), which leads to higher underpricing for IPOs underwritten by high-ranked underwriters (Column 8). We do not find any significant association between lead underwriter rank and underpricing for IPOs underwritten by low-ranked underwriters (Columns 1 to 4). Prior research does not analyze underpricing separately for different groups of underwriters based on quality; rather, they scrutinize the relation between these two variables using the full sample and find a straight positive relation, which is not true, as our finding suggests. As per our findings, the non-linear relation between lead underwriter rank and offer price revision is driving the new finding on the association between lead underwriter rank and underpricing. In addition, we also report a positive association between offer price revision and underpricing for the sample IPOs underwritten by high-ranked underwriters (Column 8), rather than for the sample IPOs underwritten by low-ranked underwriters (Column 4). It signifies that more underpricing happens when IPOs are underwritten by high-ranked underwriters compared to IPOs underwritten by low-ranked underwriters.

Table 7. Lead underwriter rank and underpricing for different groups of offer price revision.

This table presents OLS estimates of underpricing. The sample consists of 2,188 IPOs between 1990 and 2019. The dependent variable, Underpricing, the initial returns in IPOs, is the percentage change between the closing price on the first day of stock and the offer price of the IPO. Description of the independent variables is in Table 1. *t*-statistics based on the robust standard errors are reported in parentheses under the parameter estimates. ***, ** and * indicate significance at 1%, 5% and 10%, respectively.

Variable	Underpricing							
	IPOs Underwritten by Low-Ranked				IPOs Underwritten by High-Ranked			
	Zero (1)	Downward (2)	Upward (3)	Full Sample (4)	Zero (5)	Downward (6)	Upward (7)	Full Sample (8)
Lead Underwriter Rank	0.047 (1.013)	0.054 (1.555)	0.025 (0.217)	0.009 (0.323)	0.004 (0.101)	0.010 (0.732)	0.084** (2.515)	0.045*** (2.713)
Offer Price Revision				0.239 (1.020)				0.541*** (7.925)
Underwriter Syndicate Size	0.076 (0.286)	-0.142 (-0.845)	-0.267 (-1.054)	-0.058 (-0.552)	-0.062 (-0.840)	-0.013 (-0.564)	0.056 (0.804)	-0.001 (-0.031)
VC	-0.270 (-0.947)	-0.273** (-2.550)	-0.429 (-1.159)	-0.143* (-1.734)	0.043 (0.770)	-0.037 (-1.417)	0.043 (0.854)	0.027 (1.090)
Days between Filing and Issue Dates	0.075 (0.495)	-0.094 (-0.654)	-0.138 (-1.051)	-0.053 (-1.074)	0.059 (1.172)	0.039*** (2.880)	-0.051* (-1.708)	0.002 (0.132)
NYSE	0.066 (0.252)	0.199 (1.107)	0.000 (.)	0.201* (1.785)	0.108 (0.668)	0.012 (0.238)	0.056 (0.554)	0.109 (1.519)
NASDAQ	0.197 (1.054)	0.170 (0.972)	-0.041 (-0.094)	0.262** (2.408)	0.015 (0.185)	-0.031 (-1.330)	0.101 (1.095)	0.097 (1.565)
Market Volatility before IPO	-42.207 (-1.597)	-0.186 (-0.011)	39.185 (0.603)	3.132 (0.398)	-5.123 (-0.698)	-1.217 (-0.599)	4.592 (0.554)	1.051 (0.319)
IPO Issue Size	-0.147 (-1.176)	0.004 (0.041)	0.616* (1.985)	0.076 (1.010)	-0.008 (-0.128)	-0.018 (-0.816)	0.002 (0.046)	-0.035 (-1.526)
Revenue	0.017 (0.200)	-0.012 (-0.213)	-0.016 (-0.125)	-0.046 (-1.502)	-0.012 (-0.651)	0.005 (0.747)	-0.042** (-2.155)	-0.017* (-1.714)
Constant	0.092 (0.133)	0.166 (0.246)	-0.978 (-0.992)	-0.007 (-0.028)	-0.063 (-0.191)	-0.103 (-0.975)	-0.242 (-0.800)	-0.152 (-1.050)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.331	0.268	0.300	0.325	-0.120	0.037	0.243	0.299
Number of Observations	82	142	56	397	83	389	533	1,140

Table 8. Lead underwriter rank and long-run performance.

This table presents OLS estimates of long-run performance. The sample consists of 2,188 IPOs between 1990 and 2019. The dependent variable is the cumulative abnormal returns for 1-year, 2-year, and 3-year periods after IPO. Description of the independent variables is in Table 1. *t*-statistics based on the robust standard errors are reported in parentheses under the parameter estimates. ***, ** and * indicate significance at 1%, 5% and 10%, respectively.

Variable	Cumulative Abnormal Returns		
	1-year (1)	2-year (2)	3-year (3)
Lead Underwriter Rank Dummy	-0.093** (-2.009)	-0.199*** (-2.951)	-0.237*** (-2.974)
Underwriter Syndicate Size	0.018 (0.362)	0.098 (1.443)	0.145* (1.810)
Offer Price Revision	-0.243*** (-2.814)	-0.305** (-2.321)	-0.194 (-1.301)
Underpricing	-0.123*** (-2.719)	-0.136** (-1.965)	-0.098 (-1.320)
VC	0.021 (0.549)	-0.007 (-0.138)	-0.040 (-0.639)
Days between Filing and Issue Dates	-0.007 (-0.244)	-0.015 (-0.374)	-0.005 (-0.116)
NYSE	0.079 (1.047)	0.100 (0.926)	0.164 (1.264)
NASDAQ	0.099* (1.833)	0.064 (0.820)	0.103 (1.122)
Market Volatility before IPO	-0.378 (-0.070)	-6.517 (-0.787)	-11.796 (-1.283)
IPO Issue Size	0.044 (1.625)	0.035 (0.955)	0.021 (0.462)
Constant	-0.219 (-1.419)	-0.157 (-0.706)	-0.157 (-0.596)
Industry Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
Adj. R^2	0.050	0.056	0.056
Number of Observations	2,001	2,001	2,001

4.4 Lead underwriter rank and long-run performance

In this section, we compare the long-run performance of IPOs underwritten by low-rank and high-rank underwriters. Following Ritter (1991), we use the cumulative average market adjusted returns as a proxy for the long-run performance of IPOs. Using monthly returns of firms and equal-weighted market returns, we estimate the cumulative abnormal returns for one, two and three year/s. Based on our findings that IPOs underwritten by low-ranked underwriters have a higher probability of downward price revision, raise a lower amount in IPOs, and have lower underpricing, we believe that these IPOs are more likely to have poor long-run performance than those underwritten by high-ranked underwriters. Results are reported in Table 8.

As expected, we find that IPOs underwritten by low-ranked underwriters have significantly lower cumulative abnormal returns for all three periods. Interestingly, the magnitude of the coefficient, underwriter rank dummy, gets lower for the two-year period followed by the three-year period, implying that the long-run performance of these IPOs becomes poorer with time. Again, underwriter syndicate size is positively related to the cumulative abnormal returns, indicating that the firm's long-run performance increases as the number of managers increases in the underwriting syndicate. Corwin and Schultz (2005) find that if more managers are added to an IPO syndicate, then the

number of both market makers and analysts issuing reports in the aftermarket increases. Hence, consistent with Corwin and Schultz (2005), our finding directly shows that adding more managers to an IPO syndicate increases the firm's performance.

5. Conclusion

In this paper, we investigate how underwriter quality affects the offer price revision in IPOs. Using 2,188 US IPOs between 1990 and 2019, we provide new evidence of a non-linear relationship between the lead underwriter ranking/rating and offer price revision. Specifically, we find that lead underwriter rank is negatively associated with offer price revision for the sample of IPOs underwritten by low-ranked underwriters, but it has a significant positive relation for the sample IPOs underwritten by high-ranked underwriters. We also find that underwriter rank has more influence on offer price revision than underwriting syndicate size has, although the latter significantly affects the offer price revision, and that, on average, IPOs underwritten by high-ranked underwriters have a significantly higher probability of a greater offer price than the filing price range. We provide further evidence that the lead underwriter rank is positively and significantly associated with the underpricing for the IPOs underwritten only by high-ranked underwriters, but it has no significant association with underpricing for IPOs underwritten by low-ranked underwriters. In summary, only the high-ranked underwriters, not all underwriters as suggested by the previous research, are associated with the higher offer price revision and larger underpricing. The non-linear relation between lead underwriter rank and offer price revision is driving the new finding on the relation between lead underwriter rank and underpricing. In further analysis, we find that IPOs underwritten by low-ranked underwriters raise significantly lower amounts in IPOs and have poorer long-run performance.

Our findings provide new pieces of evidence in the IPO literature. Contrary to prior studies showing a positive and linear relation between the lead underwriter rank and offer price revision, our study is the first to provide solid evidence of a non-linear relation between these two variables, depending on underwriter quality or lead underwriter rank. A number of robustness analyses also support our baseline finding. Thus, we contribute to the literature with the use of lead underwriter rank ranging between 1.001 and 9.001 in the relationship between underwriter quality and offer price revision, breaking down the analysis into examining the association between the lead underwriter rank and underpricing, investigating whether underwriter quality/rank has more influence on offer price revision than underwriting syndicate size and probability of setting a larger offer price than the filing price range, as well as raising IPO proceeds and firms' long-run performance. These findings offer valuable insights for corporate managers, underwriters, investors and regulatory bodies. Specifically, our findings have practical implications for IPO firms that they should choose higher-ranked underwriters for better performance during the IPO process and also in the long run. Also, regulators should monitor the underwriters so that they continuously improve their ranking and bring quality IPOs to the public to contribute to the economy.

Notes

1. Corwin and Schultz (2005) consider, without providing any justification, an underwriter to be prestigious if the rank of the underwriter is equal to or greater than 8.

2. To be eligible for National Market System, NASDAQ stocks should have income of \$300,000 or more in the most recent fiscal year before going public.
3. SDC sometimes provides double entries for IPOs, which typically happens when the initial entry has an error regarding the underwriters' information. We use the updated information for the underwriters from the second entry that SDC has reported.
4. The number of underwriters in the underwriting syndicate reaches 30 for some IPOs.
5. Mid of the filing price range is used to calculate the offer price revision since the former is considered the expected price for an IPO.

Data availability statement

Data is available from the authors on request.

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