

Chapter 11: IPO Anomalies, Seasoned Offerings and Debt Underwriting

A. The IPO Underpricing Anomalies

A pricing anomaly occurs when a set of assets seems to consistently to violate generally accepted financial models and rules. Such violations either suggest that the generally accepted models or rules are incorrect or that there is some type of market inefficiency that prevents the assets from behaving as we might expect. *IPO anomalies* refer to three unexplained stock pricing patterns associated with initial public offerings of equities:

1. Short-term IPO returns are abnormally high relative to those of other securities of comparable risk.
2. IPOs seem to under-perform the market on a risk-adjusted basis in the long run (3-5 years).
3. The volume of IPOs and the magnitude of abnormal IPO performance seems to be cyclical.

The short-term IPO return anomaly has been well-established at least since Ibbotson [1975]. This well-known and dramatic pattern is that Initial Public Offerings (IPOs) have been shown to generate significant abnormally high short-term returns, particularly on the offer date. For example, in the classic IPO run-up from December 1999, stock in VA Linux was offered in an IPO at \$30 per share. By the end of its first day of trading, the stock had traded at \$239.25 per share. Does this imply an obvious profitable trading strategy? Yes, but apparently only for the institutional investors (and at least a few well-connected politicians such as former New York Senator Alphonse D'Amato and former House Speaker Tom Foley) lucky enough to be allocated shares.

While the VA Linux example is rather extreme, significant abnormal IPO returns typically exist after adjusting for risk.¹ Loughran and Ritter [2003] report that during the 1980s, first-day IPO returns averaged 7%. This average first-day return doubled to almost 15% between 1990 and 1998, and then jumping to 65% during the Internet bubble years of 1999-2000. Thus, it seems that unseasoned offerings with no trading histories do consistently generate abnormally high short-term returns. These one-day returns cannot be explained by risk alone. Such offerings seem underpriced even when there is substantially greater interest among investors than shares available of the IPO; that is, price run ups are greater for "hot" IPOs. Although many of these studies have found that IPOs tend to be riskier than other investments, empirical studies indicate that abnormally high offer date returns simply cannot be explained by any measure of IPO risk.

Additional evidence suggests that "favored" clients of the underwriting firm frequently are the beneficiaries of this apparent underpricing. Baron and Holmstrom (1980), Baron (1982), and Biais, Bossaerts, and Rochet (2002) all argue that by allocating underpriced IPOs to favored customers, underwriters and favored clients can benefit financially at the expense of issuers. Given that this underpricing phenomenon may seem to raise the cost of capital to issuing firms, there is substantial interest in both the academic and investing communities in finding an explanation for this persistent phenomenon. Some evidence exists which suggests that these IPO returns are due to the provision of useful price-setting information by IPO market participants and by price supports in the IPO aftermarket.

¹See, for example McDonald and Fisher [1972], Ibbotson [1975] and Ritter [1984].

| Company | Lead Underwriter | Offer Price | Pricing Valuation (\$mm.) | First Trade Price | First Trade Valuation (\$mm.) | Money Left on the Table (\$mm.) |
|--|-------------------------------|--------------------|----------------------------------|--------------------------|--------------------------------------|--|
| Visa | JP Morgan Goldman Sachs | 44.00 | \$17,864 | 56.50 | 22,939 | \$5,075 |
| United Parcel Service | Morgan Stanley | 50.00 | \$4,376 | 68.25 | 5,973 | \$1,597 |
| Twitter | Goldman Sachs | 26.00 | \$14,200 | 45.10 | \$15,523 | \$1323 |
| Goldman Sachs | Goldman Sachs | 53.00 | \$2,926 | 70.375 | 3,885 | \$959 |
| Priceline.com | Morgan Stanley Dean Witter | \$16 | \$160 | \$81 | \$810 | \$650 |
| Ivillage Inc | Goldman Sachs | \$24 | \$88 | \$95.88 | \$350 | \$262 |
| Pacific Internet | Lehman Brothers | \$17 | \$51 | \$88 | \$264 | \$213 |
| MarketWatch.com | BT Alex Brown | \$17 | \$47 | \$90 | \$248 | \$201 |
| United Pan-Europe Communications | Goldman Sachs | \$32.78 | \$577 | \$43 | \$757 | \$180 |
| Covad Communications Group | Bear Stearns | \$18 | \$140 | \$40.50 | \$316 | \$176 |
| Delphi Automotive Systems Corporations | Morgan Stanley Dean Witter | \$17 | \$1,700 | \$18.75 | \$1,875 | \$175 |
| ZDNet Group | Goldman Sachs | \$19 | \$190 | \$35.75 | \$358 | \$168 |
| OneMain.com | BT Alex Brown | \$22 | \$187 | \$38 | \$323 | \$136 |
| Autobytel.com | BT Alex Brown | \$23 | \$104 | \$52.75 | \$238 | \$134 |

Sources: Antoinette Schoar, MIT OpenCourseWare and Loughran, Ritter [2002], Ritter [2011] and Ritter [2015]. Some "first trade" prices were closing price, first trading day.

Table 6: Money Left on the Table

Many observers note that IPO underpricing transfers wealth from original owners of the firm going public to its new owners; that is, the underwriter is “leaving money on the table.” For example, Ritter [1998] notes that the Morgan Stanley August 1995 Netscape IPO of 5.75 million shares at \$28.00 per share left \$174 million on the table due to its increase to \$58.25 on its first day of trading. Shouldn’t Netscape’s original owners and management have been incensed at Morgan Stanley for this “loss” of \$174 million? Apparently, they were not. In fact, Netscape again retained Morgan Stanley for its November 1996 follow-on offering. Krigman, Shaw and Womack [2001] find that all 15 of their sample of 15 firms issuing follow-on offerings following IPOs exceeding 60% initial day returns retained their lead IPO underwriters. Perhaps the original owners actually originally expected a much lower payment for its shares. Netscape’s preliminary prospectus listed an anticipated offer price range of \$12-14 per share for 3,500,000 shares (plus a 15% overallotment option). Clearly, they must have been pleased at the increase of this offer price, which the underwriter undoubtedly attributed to its strong marketing efforts. In addition,

issuers are less likely to be angry about potential losses when the company issuing the IPO is responsible for their already substantial levels of wealth. Yet, it appears that Netscape didn't insist on its shares being marketed at an even higher price. Priceline.com apparently did not either, when its shares were offered by Morgan Stanley and Dean Witter for \$16, increasing to \$81 on its first day of trading, leaving \$650 million on the table (See Table 6 for a listing of IPO results). Apparently, as has been predicted in behavioral finance research, the perceived increase in wealth meant more to shareholders than their actual levels of wealth. So, original shareholders, purchasers of the IPO and the underwriter seem all to be quite happy with such an IPO result.

Ritter [2019] commented that during the period July 2009 to June 2019, "over \$43 billion was left on the table by 1,155 operating companies going public in the U.S." excluding banks, ADRs and IPOs priced below \$5. "The average amount left on the table (\$37 million) is more than twice the fees paid to underwriters and represents, on average, 5% of the post-issue market cap of the firm." Clearly, IPOs are very beneficial to initial investors. These short run effects follow cycles (e.g., Ibbotson and Jaffe [1975] and Ibbotson, Sindelar and Ritter [1988]), with hot cycles exhibiting investor exuberance and cold cycles. Again, why such cycles exist is unclear.

On the other hand, we will shortly report that the evidence regarding longer-term IPO returns is not clear. Longer term returns on IPO's do not seem nearly so high; in fact, several studies report IPO returns to be negative over the period 20 days to two years after the IPO (See, for example, Ritter [1991]).

There are a number of theories intended to explain the underpricing phenomena. Why should money be left on the table by issuers and underwriters of IPOs? Is money really being left on the table or does this apparent value actually represent some sort of compensation to underwriters and initial IPO investors for providing useful information. One might expect that underwriters and issuers of IPOs along with each of the individual investors would have different sets of information regarding to the value of the issue. Many of the underpricing theories contend that underpricing is a form of compensation for the risk that a particular party bears because of an assumed informational advantage of one of the parties over another. Other theories propose underpricing is compensation for providing information to other IPO market participants. While these information-based theories do enhance our understanding of short-run IPO underpricing, they still leave many questions unanswered, hence, we will later discuss additional theories of underpricing.

B. Information Asymmetries and the Short-run IPO Anomaly

Many of the more robust explanations for the IPO short-run underpricing effects are based on information asymmetries. In these information-based theories, one group of market participants (issuing firms, underwriters and investors) has information that is superior to other groups, and underpricing is used to mitigate the adverse selection problem. Before discussing each of the three groups and how their information advantage affects the IPO market, we first present some evidence that IPO underpricing is related to information.

Closed-end Fund and Repeat IPOs

Providing support for the information theories of IPO underpricing are empirical studies on closed-end fund IPOs. Issuers of closed-end funds reveal their investments, securities with well-known values. Peavy (1990) examined 41 closed-end fund IPOs going public during 1986 and 1987 and found that their returns were not significantly different from zero, contrasting with

the overwhelming empirical evidence that non-fund IPOs are significantly underpriced. Clearly, the asymmetric information between the issuer, underwriter and investor for closed-end funds is less than for non-fund IPOs. Weiss (1989) analyzed 67 closed end funds that went public between 1985 and 1987 and obtained results similar to those of Peavy (1990), finding support for the asymmetric information theory, which holds that underpricing is related to information.

Muscarella and Vetsuypens (1989) in a study of “reverse leveraged buyouts,” argued that the information asymmetry should be significantly reduced for IPOs of companies that were once public, and then taken private. That is, repeat IPOs should produce lower short-term returns because their prior histories as public firms should make them more transparent. Supporting the information hypothesis, they found that for the 74 IPOs in their sample which had previously been public, then taken private, underpricing was significantly less than for other IPOs.

Next, we discuss explanations for IPO underpricing effects based on information asymmetries and which group has an informational advantage. These information-based theories typically take one of three forms:

1. *Underwriters hold superior information:* Underwriters hold superior information and use that information to either exploit their clientele (Baron [1982]) or to “certify” issues on behalf of issuing firms (Booth and Smith [1986]).
2. *Issuing firm managers hold superior information:* As we discuss shortly, Myers and Majluf [1984] argue that a firm's managers use their informational advantage over investors and will issue stock only when it is overpriced.
3. *Institutional investors have superior information:* Rock [1986] and Benveniste and Spindt [1989] argue that certain investors have superior information concerning IPO firm marketability and issuing firm competitors.

Investment Banks Hold Superior Information

Investment banks clearly make money underwriting IPOs. They also have certain informational advantages over issuing firms and purchasers of IPO shares. Here, we discuss the potential for underwriters to use their advantages to exploit their clients and their potential to use their informational advantage to assure investors that issuing firms are not exploiting them.

Investment Bank Exploitation

In early IPO underpricing research, Baron [1982] suggested that the underwriter has monopoly access to superior information about the issuing firm, and uses this access to price the issue to its own advantage. The underwriter's favored institutional clients obtain undervalued shares at the expense of the issuing firm, with the underwriter receiving some sort of *quid pro quo*. He argues that underwriters exploit their superior market knowledge and underprice new issues to facilitate their IPO marketing efforts, and to curry favor with buy-side institutional clients. Issuing firms accept this “exploitation” because the underwriter still markets the new issue better than the issuing firm could. In addition, the underwriter is able to more easily market the new issue if it is underpriced.

Loughran and Ritter note that during the 1990s, underwriters conspired with venture capital firms and the executives of issuing firms to allocate hot IPOs (a practice known as *spinning*) to their brokerage accounts. The venture capital firms and executives would receive IPO shares and could, in many instances, *flip* (quickly sell) them for substantial profits. Loughran and Ritter offer evidence that venture capital firms and executives would actually

“seek, rather than avoid, underwriters with a reputation for severe underpricing.”

Maynard (2002) argued that IPO underpricing facilitated spinning and obviously increased the profits associated with the practice. According to the January 22, 2002 SEC litigation release 17327 and related SEC news releases, between 1998 and 2000, the investment bank Robertson Stephens allocated IPOs to institutional clients almost exclusively on the basis of the amount of commission business generated during the prior 18 months. Credit Suisse First Boston (CSFB) received commission business equal to as much as 65 percent of the profits that some investors received from certain hot IPOs, such as the 1999 IPO of VA Linux that was discussed in the previous section.

In one egregious spinning case reported by Siconolfi [1997], Joseph Cayre, C.E.O. of GT Interactive Software was allocated shares of the hot IPO of Pixar by its underwriter, Robertson Stephens. Pixar shares popped by 77% on its first day of trading, netting Cayre, who flipped his shares at the end of the day a one-day profit of \$2 million. Why might Cayre have been allocated these shares? Consider that GT Interactive Software went public through a Robertson Stephens underwriting a month later.

If monopoly power among underwriters and issuer exploitation explain consistent IPO underpricing, we should expect that monopolistic exploitation will not diminish underwriter market shares. However, Beatty and Ritter [1986] find that underwriters whose IPOs experience abnormally high (or low) returns lose subsequent market share, though the relationship between abnormal returns and subsequent loss of market share was noisy. Thus, underwriters that exploit their clients do seem to lose market shares, which would seem to diminish their motives to exploit their clients. Furthermore, Muscarella and Vetsuypens [1989] cast doubt on the underwriter exploitation explanation based on their finding that when issuers act as their own underwriters, they experience as much IPO underpricing as other issuers employing underwriters. Why would an investment bank, say Goldman Sachs, allow itself to exploit itself when taking its own shares public?

Underwriter Certification

In a somewhat more benign explanation of IPO underpricing, Beatty and Ritter [1986] found that underpricing is an increasing function of the ex-ante uncertainty of the issue. They find that larger numbers of risk factors in the prospectus is associated with greater underpricing. Carter and Manaster [1990] demonstrated that as the risk of an issue increases, informed demand will increase, exacerbating the adverse selection problem. That is, more informed investors will tend to take up more shares as IPO risk increases, and IPO underpricing will increase as well as less informed demand diminishes.

It is difficult for low risk firms to credibly distinguish themselves from high-risk firms in an IPO context. However, they can employ high reputation investment banks to certify that they are low risk firms, which allows them to underprice by less. In a signaling scenario, firms will seek out high-reputation investment banks, which, in effect, stake their reputations on the worthiness of the issues that they underwrite. Booth and Smith [1986] hypothesize that the underwriter that maintains long-term relationships with its institutional clients stakes its reputational capital as a bond that IPO security prices reflect all potential negative inside information about the expected performance of the firm. Underpricing, at the cost of the issuing firm, provides both protection and compensation for the use of the underwriter's reputational capital. Numerous other studies have found that issues underwritten by low-prestige investment banks have higher initial returns than high-prestige banks. Among these are McDonald and

Fischer (1972), Logue (1973), Neuberger and Hammond (1974), Block and Stanley (1980), and Neuberger and LaChapelle (1983), and Johnson and Miller (1987).

These arguments imply that investment banks are reluctant to underwrite high-risk IPOs, which diminishes their demand in the market and increases underpricing for these high-risk IPOs. The most reputable underwriters prefer to stake their reputations on low-risk IPOs, so that low-risk IPOs and IPOs underwritten by the most reputable underwriters tend to be less underpriced.

Carter and Manaster [1990] develop a measure of underwriter reputation from "tombstone ads," ads that were placed in newspapers such as the Wall Street Journal to advertise IPOs. Essentially, more reputable underwriters tended to be placed at the tops of such ads and less prestigious underwriters were placed further down. Carter and Manaster developed reputation scores based on these placements. Their statistical analyses found that more reputable underwriters tended to place IPOs with significantly less underpricing than did less prestigious underwriters. These results evidenced the reliance of IPO issuers on their underwriter reputations.

Informed Issuers Time the Market

Announcement of a stock issue tends to quickly reduce share prices because of the adverse selection effect (e.g., Asquith and Mullins [1986]). Building on the pecking order theory of Myers [1984], Myers and Majluf [1984] argue that an issuing firm seeks to avoid underpricing uses its informational advantage over investors and will issue stock only when it is likely to be overpriced. The market is well aware of this adverse selection problem and will seek to avoid purchasing new shares unless it is known to be underpriced. This means that managers avoid issuing new equity whenever possible; new equity is at the bottom of the pecking order (after internal financing and various types of debt) when the firm needs to raise capital.

Thus, Mayer and Majluff suggest that this conflict between issuing firms and investors have the market respond by underpricing new equity issues, while managers seek to use their superior information to time the market when issuing new shares. Ultimately, managers will not issue new shares unless the growth opportunity to be financed helps existing shareholders more than they lose by selling underpriced shares. This conflict between shareholders and managers can lead to the firm failing to make positive NPV investments because the benefits of those investments is less than the underpricing that new shareholders require to take up new shares. However, when the value of growth opportunities is sufficiently high, managers will issue new shares that will be underpriced in the market.

Institutional Investor Information Production

Here, we discuss the possibility that underwriters target to sell their offerings to institutional investors who produce useful information in the bookbuilding and price-setting process. Consistent abnormal returns might be considered compensation to these professional investors who expend resources into research.

Informed and Uninformed Investors

Consider a market in which both informed and uninformed investors can take up shares. Rock [1986] argues that underpricing is a result of the risk assumed by uninformed investors because of the informational advantage of informed investors. In Rock's adverse selection model, only a small number of perfectly informed investors know the value of a given IPO. These

investors will participate in the IPO only when it is good. Informed investors participate only in underpriced offerings and earn higher than normal returns. Regardless, informed investors do not have enough capital to take up the entirety of all new issues. Thus, uninformed investors' capital is needed to float new issues. Uninformed investors, unable to distinguish between underpriced IPOs and overpriced IPOs, participate in all new offerings. Uninformed investors will only be able to purchase a fraction of shares in the good IPOs because they compete with informed investors for shares. Uninformed investors buy up all of the shares in bad IPOs since informed investors avoid them. Since uninformed investors participate indiscriminately in the purchase of shares of IPOs, they will suffer from a "winner's curse" and will actually earn negative returns on their IPO portfolios, and lose interest in participating. Since uninformed capital is needed to support the IPO market, underwriters must underprice IPOs to retain the participation and capital of uninformed investors in this market that suffers from adverse selection. This underpricing increases the returns of both informed investors and uninformed investors whose capital is needed to float IPOs.

Thus, on average, IPOs must be underpriced for uninformed investors to potentially earn normal returns or and ensure their participation. Informed investors earn abnormally high returns while uninformed investors earn much less. Thus, underpricing keeps uninformed investors' capital in the IPO market. Koh and Walter [1989] find empirical evidence supporting the Rock model.

Information Exchange and Bookbuilding

Benveniste and Spindt [1990] propose a "book building" explanation for IPO underpricing, suggesting that informed investors reveal their information to the underwriter by their pre-market interest and orders before the offering price is set. Underwriters, who regularly sell new issues to the same groups of institutional investors, use this preliminary indication of interest to help determine the actual offer price of the IPO. While this pre-market commitment to purchase shares is not binding on participating institutional investors, institutions who fail to follow through on their commitments risk lower allocations or inability to participate in future IPOs. Underpricing is regarded as compensation to informed investors for the information that informed investors convey to the underwriter through their preliminary offers. This information is used in the price-setting process.

Benveniste and Spindt argue that IPO investors are rewarded with underpricing for truthfully providing positive pricing information in the bookbuilding process. While prospective buyers tend to be happy to offer negative information to keep IPO prices low, positive information provision can increase the price that they pay for the IPO. When investors provide positive information, underwriters do not fully adjust IPO prices upwards, which leaves some underpricing rewards for investors. Because investors already have strong incentives to provide negative information (providing negative information may help reduce the actual IPO offer price), negative information is not rewarded through underpricing. The model of Benveniste and Spindt offers the following empirical predictions:

1. Underpricing is directly related to the ex-ante value of investors' information.
2. Underpricing is directly related to the level of pre-market sales.
3. Underwriters give the same priority to the same group of investors.
4. Underpricing is directly related to the level of pre-market interest.
5. Issues with the greatest uncertainty are likely to experience the most underpricing.

6. Issuing firms facing the highest levels of uncertainty issue shares on a best efforts basis.

Hanley (1993) provides empirical support for Benveniste and Spindt's "partial-adjustment phenomenon." She argues that underwriters who are less certain as to the price of an issue are more likely to set wider initial price ranges to provide more flexibility in setting the final offer price. She finds that the proportional width of the price range is positively correlated with underpricing, indicating that riskier firms underprice more to compensate investors for their roles in risk resolution. In her sample of IPOs issued from 1983 to 1987, she found that IPOs with a final offer price above the initial filing range had a mean initial day return of 20.7%, compared to the initial day IPO returns of 10.0% and .6% for IPOs priced within and below the preliminary offer price range. Thus, it seems that, in a manner consistent with Benveniste and Spindt, positive information revealed in the premarket bookbuilding process may lead to higher levels of underpricing. Loughlan and Ritter [2002] obtained similar results for a sample drawn from the 1990s.

Cascading and Follow-on Offerings

Regardless of whether the issuing investment bank may be shirking marketing duties, underpricing may still serve a useful marketing function. For example, Ibbotson [1975] suggests that IPOs are underpriced to "leave a good taste in investors' mouths so that future underwritings from the same issuer could be sold at attractive prices." Welch [1992] argues that underpricing can cause a domino or cascade effect among investors that ultimately raises demand for the issue. The firm underprices the new issue to attract early buyers enhancing interest by other buyers. Furthermore, initial underpricing may heighten interest in subsequent offers of shares (e.g., Allen and Faulhaber [1989]). Greenblatt and Hwang [1989] claim that underpricing is a signal by a more informed issuer to indicate firm value and the variance of expected returns to less informed investors, which improves the issuer's ability to make a follow-on offering.² However, Aggarwal, Krigman and Womack (2002) find that only 26.4% of firms sell secondary shares in the IPO, downplaying Welch's 1989 finding that recent IPO firms were more likely to conduct SEOs than other firms. Regardless, Boehmer and Fishe (2001) demonstrate that IPO underpricing improves liquidity of the offering by increasing the after-issue trading volume of the stock. Similarly, Booth and Chua [1996] suggest that underpricing promotes widely dispersed share ownership, further increasing the liquidity of shares.

Chemmanur [1993] argues that underpricing is intended to encourage information production and dissemination by investors so that the issuer can receive higher prices for subsequent issues of securities (recall the cascading argument of Welch [1992]). Sherman [1992] argues that in best efforts offerings, issuers maintain an option to withdraw from the market their securities if demand for them is low. Issuers pay for this option by accepting reduced prices for the securities that they offer.

Information and Money Left on the Table

However, the theory that institutional investors are compensated by underpricing for providing information in the price-setting process seems insufficient to explain the full extent of underpricing in most IPOs. Loughran and Ritter [2003] suggest that in 1999 and 2000, the

²Welch (1989) and Allen and Faulhaber (1989) also develop signaling models where underpricing is a direct signal to the market about the value of a firm.

average IPO left on the table was \$79 million, adding up to \$63 billion for all IPOs. They suggest that this sum seemed much too large to serve as adequate compensation for purchasing analyst pricing assistance. Besides, they suggest, if issuing firms require analyst coverage, why pay for it by leaving money on the table rather than simply pay a higher gross spread? Do underwriters and perhaps executives of issuing firms somehow benefit from leaving money on the table? And why leave so much money on the table?

The Role of Venture Capital

There is one more institution whose participation in IPO markets seems related to underpricing. Venture capital ownership of issuing firms seems to have a significant effect on IPO returns and underpricing, but the evidence on exactly what these effects are seems quite mixed. Megginson and Weiss [1991] and Barry, Muscarella, Peavy, and Vetsuypens [1990] compare IPOs with and without venture capital (VC) backing and find that first-day returns of VC backed IPOs are significantly lower than those of non-VC backed IPOs. Megginson and Weiss argue that their results suggest that venture capitalists certify the true value of the firm and therefore reduce underpricing. Thus, underwriters with superior access to issuer information can credibly validate issuer financial health, thereby increasing investor demand and supporting higher security offer prices (Puri [1999]). Venture capital firms and underwriters taking equity positions in IPOs, especially with lock-up provisions supports this certification explanation, and seems to support the information based explanations for the IPO anomaly, particularly when considered as a solution to the adverse selection problem discussed by Myers and Majluf [1984]. Barry, Muscarella et al. focus on the monitoring role of venture capitalists along with owners and board members, finding that these monitoring by these agents all tended to reduce IPO underpricing. Barry et al. emphasized the important monitoring role of venture capitalists in reducing IPO underpricing, again supporting the information based explanations.

Bradley and Jordan [2003] further examine the roles of venture capital in the underwriting process by focusing on four variables: share overhang (the proportion of shares held by the issuer relative to the number sold to the public), file range amendments, venture capital backing, and previous issue underpricing. First, Bradley and Jordan find that underpricing is more significant for firms that retain a higher proportion of post-IPO shares. Thus, the cost of underpricing is reduced by share overhang because unsold shares are not underpriced. Megginson and Weiss [1991] noted that venture capitalists own an average of 36.6% of the firm prior to the IPO and 26.3% immediately thereafter, suggesting that VC share overhang was substantial with VC backed firms. But why might overhang be related to the relationship between VC presence and IPO returns? Do VC firms receive some sort of *quid pro quo* from underwriters (See Loughran and Ritter [1992])? Do VC firms try to establish their reputations and long standing relationships with underwriters by leaving money on the table? VC firms that succeed in taking firms public are more likely to solidify relationships with underwriters and subsequently be able to take additional firms public. Gompers [1996] finds that younger VC firms appear to engage in more grandstanding than their older VC counterparts.

Bradford and Jordan also find that approximately 40% of firms issuing IPOs file amendments. Issues with amended filings with upward (downward) price revisions are more (less) underpriced than issues with no revisions. VC backed firms are more likely to file SEC amendments. While results concerning the relationship between venture capital backing and underpricing are generally mixed in the literature, Bradley and Jordan find that venture capital backing is directly related to IPO underpricing. They also find that underpricing from recent

IPOs is directly related to subsequent IPO underpricing. That is, IPO underpricing seems to occur in cycles, consistent with Ibbotson and Jaffee [1975] and Ritter [1984].

F. Regulatory and Lawsuit Protection Explanations

The information asymmetry models are useful in addressing the anomaly if IPO underpricing, but other factors also seem related to this effect. For example, consider that the Securities Act of 1933, along with its many amendments and associated regulations imposes significant legal burdens on the issuing firm and its underwriters. Many IPOs produce a variety of lawsuits, including "gadfly suits," and issuing firms and their underwriters will make efforts to minimize these costs. In addition, as we suggested above, investors often behave in manners that are inconsistent with rational wealth maximization, leading to several behavioral explanations for the short-run IPO effect.

Regulations and Lawsuit Avoidance

Ibbotson [1975], Tinic [1988] and Hughes and Thakor [1992] argue that underpricing is a form of insurance to protect underwriters against potential due diligence legal liabilities. The Securities Act of 1933 requires all parties to an offering to perform "due diligence" and requires that parties attempt to include all relevant information in the prospectus. If any party neglects its "due diligence," it may be subject to criminal and/or civil prosecution.

Tinic notes that in 1986, two bulge bracket (at that time) underwriters, Alex Brown & Sons and Rothschild, Unterberg and Towbin were defendants in a total of 130 lawsuits involving their underwriting activities. Tinic hypothesizes "that underpricing serves as a form of insurance against legal liability and the associated damages to the reputations of investment bankers." Tinic's theory of underpricing focuses on the role of due diligence requirements on the underwriting process. If an issue is overpriced, the investment bank may be subjected to legal liabilities. Therefore, underpricing reduces the probability that investment banks will be sued for lack of due diligence, and reduces the expected payment should the underwriter lose the lawsuit. Tinic provides empirical support for his hypothesis by showing that underpricing seems to be a post-Depression phenomenon, when securities laws were in effect.

On the other hand, Keloharju [1993] demonstrates that the IPO effect prevails in Finland, despite the fact that class action lawsuits are rarely filed. In addition, Vos and Cheung [1992] report that New Zealand, which has a legal environment similar to that of the U.S., did not experience a change in underpricing when it passed securities legislation similar to that passed in the U.S. in 1933. Furthermore, the costs of underpricing seem to dwarf the average lawsuit frequencies and associated settlement costs (Alexander [1993]). On the other hand, perhaps these potential legal costs are low precisely because of the efforts that issuers and investment banks undertake to avoid lawsuits to begin with. Drake and Vetsuypens [1993], in a comparison of 93 IPO firms that were sued with a sample of matched non-sued IPO firms found that average initial returns of the sued firms were larger than those of non-sued IPO firms. Thus, they also find that strong initial returns do not seem to hedge against lawsuit liability.

IPO Price Revisions

If strong market demand leads to an IPO offer price that varies by than more than 20% from the limits of the expected range, the SEC requires that a price amendment to the prospectus must be filed. This delays the actual offering of the IPO. In a regulation-based explanation of the IPO anomaly, Barcaskey (2005) finds that IPOs priced at the 20% SEC limit are significantly

more underpriced than IPOs filing amendments for larger price increases. He argues that accepting larger underpricing avoids the cost and risk associated with filing price amendments with the SEC and delaying the offering. Nevertheless, IPO underpricing is more pronounced when the actual amended offer price is 20% greater than the upper limit of the preliminary offer range. Violating this 20% restriction increases the cost and risk of the IPO, leading the issuer more willing to underprice the IPO.

Barcaskey [2005] and Jaffee [1999] discuss the scenario involving the IPO of Andover.net, which had a first day return of 252%. Jaffe argued that demand was so strong that the shares could easily have been brought to the market at \$24 per share yet ended up being priced at \$18. The lower price was accepted because a price amendment would have been necessary under SEC regulations since the higher price exceeded the preliminary offer range by more than 20%. Andover.net executives were anxious to float its IPO before the anticipated IPO of a potential competitor, leading them to forgo the SEC amendment and associated delay. The delay and risk associated with the filing of the amendment was unacceptable to Andover.net.

Barcaskey finds that SEC regulations do act as an impediment to IPO price revisions and contribute to IPO underpricing. Similar to Benveniste and Spindt, Barcaskey finds that IPOs constrained by the upper regulatory threshold are the most underpriced, while IPOs constrained by the lower regulatory threshold tend to be somewhat less underpriced. However, unlike Benveniste and Spindt, Barcaskey argues that SEC regulations are an important contributor to IPO underpricing. Money left on the table in an IPO can be explained by the regulatory cost, delay and risks of filing a price amendment.

D. Other Explanations

Behavioral Explanations

Loughran and Ritter [2002] offer a behavioral-based explanation to the underpricing phenomenon. They find that initial IPO returns are directly related to market returns in prior weeks, interpreting this to suggest that public information is not fully incorporated into the offer price. They argue that underpricing is acceptable to issuers because they are more concerned with increases in their wealth levels than money left on the table. Unanticipated price increases represent both increased wealth levels and money left on the table. Furthermore, underpricing benefits underwriters by reducing their costs of marketing IPOs and creating goodwill with their clients.

Another explanation concerns the behavior of other prospective IPO investors. A Goldman Sachs partner once warned against raising the price of the hot Microsoft IPO too much by saying “Coming out \$1 too high would drive off some high investors. Just a few significant defections could lead other investors to think that the offering was losing its luster” (See Uttal [1986]).

Price Support Explanations

Recall from the previous chapter that underwriters often support prices of shares that they bring to the market, often taking advantage of greenshoe options (See Table 5.c). Ruud [1993], Schultz and Zaman [1994], Hanley, Kumar and Seguin [1993] and others find evidence that IPO returns are due, at least in part, to underwriter price supports in the aftermarket. For example, Ruud finds that approximately one fourth of 463 IPOs from 1982 and 83 have first day returns equal to zero and that the distribution of IPO returns is skewed to the right. Approximately two thirds of those IPOs with zero first day returns have zero or negative returns over the following

week. This suggests that underwriters are providing price supports for "cold" IPOs early in the aftermarket, delaying drops in market prices for at least one week.

Schultz and Zaman suggest that underwriters provide price support for IPOs by placing purchase orders for new issues in a manner described in the previous chapter. At the same time, they secure an over-allotment option enabling them to purchase additional shares from the issuer at a specified price. They oversell (short) the offering, knowing that if the price rises, underwriters can exercise their over-allotment options. If the issue price falls, they cover short positions with the shares purchased as a result of the price support. Thus, if the IPO is hot (its market price increased), additional shares will be sold to investors due to the over-allotment option.

Other Explanations

One of the more vexing problems with many of the underpricing explanations is that they seem to support why it exists as a market phenomenon, but not why it exists in individual instance. For example, some of the theories suggest that underwriters allow underpricing to exist to ensure that the IPO market remains viable for a future stream of offerings. However, why would a given issuer permit its underwriter to underprice its own IPO? For example, why would Goldman Sachs permit its own IPO to be underpriced? How might the partners of Goldman Sachs benefit by selling its shares to the market at a discount?

Brennan and Franks [1997] propose a control theory arguing that managers in the issuing firm intentionally underprice the IPO to limit the monitoring that accompanies large blocks of shares being placed with a single investor. Underpricing the IPO attracts a wider participation in the IPO, forcing shares to be allocated and rationed among a larger group of investors. This more dispersed IPO participation reduces the incentives of any single shareholder to monitor the management of the issuing firm, allowing managers greater discretion on private benefit consumption. Smart and Zutter (2002) offer support to this control hypothesis, finding evidence that dual class IPOs are less underpriced than other IPOs. This means that managers of firms that issue shares with inferior voting rights retain more control in their firms and do underprice IPO shares as much.

In direct contradiction to the argument of Brennan and Franks, Stoughton and Zechner (1997) argue that issuers intentionally underprice to encourage institutional investors to take up IPO shares in an effort to obtain the improved monitoring associated with institutional investors holding large blocks. Field and Sheehan [2002] find no relationship between ownership structure and underpricing.

Epilogue

Clearly, the offer date IPO price run-up (underpricing) effect has not been satisfactorily explained by any one of the theories offered in this section. Additional work in this field continues and the various explanations remain hotly disputed.

E. Long-run IPO Performance

It has been well established that IPO returns tend to be extremely high on issue dates; it also seems that many small investors lack access to this lucrative market, particularly for the spectacular performers. Ritter [1991], using a sample of 1,526 IPOs and paired firms matched by size and industry, found that the 3-year performance of IPOs was worse than their matched counterparts. Shiller [1990] argued that the IPO market is subject to fads and that investment

banks act as the “impresarios,” deliberately underpricing issues for publicity and promoting enthusiasm for the issue, in much the same way that the promoter of a concert might promote enthusiasm for his event. Shiller’s “impresario” hypothesis predicts that IPOs will underperform the market in the long run, especially those IPOs with larger short-term price run-ups.

However, a paper by Krigman, Shaw and Womack [1997] found that IPOs that perform well (up between 10% and 60%), but not spectacularly (up by more than 60%) on the issue date tend to be better long-term performers, by 14% over the first year. Ritter [2015] suggested that underwriters attempt to underprice IPOs by 15% to 30%, and those IPOs that substantially outperform this range are overbid by investors. In addition, those IPOs that are sold (flipped) on the issue date by their original purchasers tend to be outperformed over the longer term by IPOs that are held beyond their original purchasers on the issue date. The lessons here for the small investor who must purchase the IPO after its date of issue are to avoid the particularly hot issues and those that have been flipped by their original purchasers. One additional observation noted by Ritter [2015]: shares from smaller IPOs (<\$50 million in pre-IPO revenues) tend to underperform more in the long run than shares from larger IPOs.

Long-term underperformance by IPOs have a number of possible explanations. Some observers have noted that the initial buyers into the IPO, who were most optimistic about the IPO prospects, sell into a market with less optimistic buyers. Furthermore, the most successful marketing and pricing efforts for an IPO are likely to be those with the most successful unsubstantiated hype. Survey results and other empirical findings suggest that perhaps as many as one-fourth of buyers of IPO shares do not perform proper fundamental analyses (e.g., Fabozzi, Focardi, and Jonas [2017]). In addition, IPOs brought to market during hot market cycles might be expected to draw less enthusiasm during later cooler market cycles when they are sold. In addition to these explanations for the long-run IPO effect, there is statistical evidence suggesting that larger and venture capital – backed IPOs do not suffer the long-term effect as badly as smaller and non-VC-backed IPOs.

F. Seasoned Equity Offerings

As observed by Donaldson [1961] and Myers [1984] who argued in favor of a “pecking order theory,” public corporations tend to finance capital investment and debt repayment through retained earnings or with new issues of debt. Nevertheless, in many instances, a firm will seek to raise funds through a secondary or *seasoned equity offering* (SEO), a new issue of stock that is substantially similar to already outstanding shares. The term *follow-on offering* (FPO) refers to an additional seasoned equity offering that follows the IPO within a short period, and might be a part of the wider IPO strategy. U.S. firms tend to make SEOs through firm commitment offers (much like IPOs) whereas European firms are more likely to make use of rights offerings.

Virtually every study of U.S. SEOs agrees that, on average, the value effects of SEOs are statistically significant and negative; that is, shareholder wealth is reduced upon the announcement of an SEO. For example, Masulis and Korwar (1986) found that SEOs were accompanied by -3.25% two day abnormal returns for industrial offers. Why does shareholder wealth decline on the announcement of a corporate SEO announcement? Consider the following:

- SEOs, particularly when accompanied by leverage decreases, stock, are generally perceived as signaling managerial pessimism (Myers and Majluf [1984]). For example, an SEO might signal that the firm cannot borrow or has liquidity problems.
- SEOs increase free cash flows under the control of managers along with their related agency costs (Jensen [1986] and Smith [1986]). These free cash flows placed in

managerial hands mean that managers have the opportunity to increase agency costs (e.g., loot firm assets or misuse SEO proceeds).

- SEOs, if not extended directly by existing shareholders (in a non-diluted offering), dilute the control of existing shares by increasing the total number of shares and votes outstanding.
- SEOs exert downward pressure on share market prices.
- SEOs decrease corporate leverage ratios and associated tax benefits.
- Equity issue transaction and brokerage costs typically range from 4.03% to 6.09% of the new capital raised (Eckbo and Masulis [1992]), which may often exceed the NPV of the new investment of the funds.
- An SEO may cause a temporary excess supply in shares, temporarily decreasing their price.

Why would managers acting in shareholders' best interests make SEOs when existing shareholders appear not to benefit? In some instances, existing shareholders might benefit or at least not be hurt in some scenarios. A number of potential explanations have been proposed in the financial literature to answer this question:

- An SEO can be used to enable founding or existing shareholders to cash out their positions. Sometimes, the term secondary equity offering, as distinguished from seasoned equity offering, refers specifically to shares cashed out by existing shareholders (non-dilutive offerings). Secondary equity offerings in which existing shareholders sell their shares do not normally require a new prospectus or registration, and do not dilute other shareholders' control positions.
- SEOs do offer firms needing to raise capital to do so without increasing debt.
- SEOs can help firms reduce debt by providing equity capital.
- SEOs of shares held by founders, insiders and other shareholders do not experience such negative share price reactions in the marketplace. Such SEOs do not provide managers with the opportunity to misuse additional shareholder capital.
- Follow-on offerings, a form of SEO following an IPO are often essential for raising capital shortly after market prices have already been established by an IPO. Follow-on offerings might or might not already be registered.
- SEOs can enable managers to exploit their special information and other unique abilities to time the market by selling shares when their prices are high. However, this does potentially raise issues with the well-known adverse selection problem.

G. Debt Underwriting

As in the case of underwriting stock, debt underwriters (or dealers) purchase debt securities from the corporate or other institutional issuer in a "bought deal" seeking to sell the debt securities at a profit. The underwriters, which usually participate as part of a syndicate, will normally resell the debt securities either directly in secondary markets or to dealers who will distribute the securities to their clients. Alternatively, the investment bank can place debt to investors through an agency deal. Issues brought to the market include corporate bonds, municipal bonds and commercial paper. In addition to managing the registration and marketing processes, the lead underwriter (or investment bank in an agency deal) will lead the process in having the debt rated by credit agencies such as Moodys and S&P (see Table 7 below).

Publicly traded bonds are an important source of funding for larger corporations, municipal and state governments as well as many other institutions. As we discussed earlier, large, well-known, credit-worthy firms needing to borrow for a short period of time may issue large denomination short notes frequently referred to as commercial paper (discussed in an earlier chapter). Firms requiring funds for longer periods of time may issue corporate bonds. These longer-term instruments are often issued with a variety of features, including callability, convertibility, sinking fund provisions, etc. There are a large number of different types of corporate bonds. The terms of the bond will be specified in a contract known as a *bond indenture*, which dictate or specify the bonds' interest rate, how much money is being borrowed through the issue, any collateral for the loan (if any), when payments will be made, maturity date(s), and what additional features the bonds will have.

Callable bonds may be called by the issuing institution at its option. This means that the issuing institution has the right to pay off the callable bond before its maturity date. The callable bond typically has a *call date* associated with it as well as a *call price*. The call date is the first date (and perhaps only date) that the bond can be repurchased by the issuing institution. The call price is normally set higher than the bond's par value and represents the price that the issuing institution agrees to pay the bond owners. Because the issuing institution retains the option to force early retirement of callable debt, the call provision can be expected to reduce the market value of the callable bond relative to otherwise comparable non-callable bonds.

Convertible bonds can be convertible by bondholders into equity or other securities. This normally means that the convertible bondholder has the right to exchange the convertible bond for a specified number of shares of common stock or some other security. The convertibility provision of such a bond enhances its value relative to otherwise comparable non-convertible bonds.

Debentures are bonds that are not backed by collateral. Many other bonds are either backed by collateral or have some other device such as *sinking fund* provisions to provide for additional safety for bondholders. One type of sinking fund provisions provides for the issuing institution to place specified sums of money into a fund at specified dates that will be accumulated over time to ensure full satisfaction of the firm's obligation to bondholders. In some instances, sinking funds will be used to retire associated debt early. *Serial bonds* are issued in series with staggered maturity dates.

Many more innovative bonds have been offered in the market. *Floating rate* bonds have coupon rates that rise and fall with market interest rates or benchmarks; reverse floaters have coupon rates that move in the opposite direction of market interest rates. *Indexed bonds* have coupon rates that are tied to the price level of a particular commodity like oil or some other value like the inflation rate. *Catastrophe bonds* make payments that depend on whether some disaster occurs, like an earthquake in California or a hurricane in Florida. These catastrophe bonds provide a sort of insurance for issuers against the occurrence of the disaster. In some respects, purchasers of these bonds are providing this insurance to the issuers.

Most corporate bonds are rated by well-known agencies with respect to anticipated default risk. Corporations pay institutions like Standard & Poor's and Moody's to rate the risk of their issues. Other rating agencies include Fitch, A.M. Best, Duff and Phelps and Dun and Bradstreet. Bonds without ratings assigned by these agencies are very difficult to sell; in fact, many institutions face restrictions on purchasing bonds that are either unrated or have ratings below a given level. Standard & Poor's and Moody's use the rating schemes depicted in Table 7.

| Description | Standard & Poor's | Moody's |
|---------------------------------|------------------------------|----------------|
| Least likely to default | AAA | Aaa |
| High quality | AA | Aa |
| Medium grade investment quality | A | A |
| Low grade investment quality | BBB | Baa |
| High grade speculative quality | BB | Ba |
| Speculative | B | B |
| Lower grade speculative | CCC | Caa |
| Highly speculative | CC | Ca |
| Likely bankruptcy | C | C |
| Already in default | D | D |

Table 7: Standard & Poor's and Moody's Corporate Bond Ratings

Exercises

1. Why are offer date IPO returns directly related to IPO underpricing? That is, why does substantial IPO underpricing lead to larger IPO returns?

2. Companies often attempt to take their shares public before their industry rivals, and sometimes the competition turns into a scramble to offer the shares. A 1999 *Business Week* article by Robert Hof quotes E-Loan CEO Jeff Larsen saying “Every month makes a difference. The idea of a competitor beating us to an IPO is very threatening.” Hof describes how at the time E-Loan was in a race with Mortgage.com to establish supremacy in the online mortgage business, winning that race by offering its IPO on June 29th, 1999.
 - a. How would you expect for underpricing on the E-Loan IPO to compare to the average level of IPO underpricing?
 - b. Predict the performance of Mortgage.com IPO.

3. To what extent do non-dilutive secondary offerings help corporations raise money to fund operations and/or growth?

4. While corporate shareholders maintain voting power in the firm, bondholders also obtain and hold some degree of control in the corporation. How do bondholders obtain and exercise power in the corporation? How does their exercise of power differ from that of banks that lend money to firms?

Exercise Responses

1. Underpricing exists where the issuing firm sells its securities for less than their true value. Underpriced IPO returns are high because their prices in the secondary market after the IPO need not be too low. Thus, IPO secondary market returns are high because their selling prices are not set too low as are their initial offer prices; significant rises in prices over time produce significant IPO returns.

2.a. E-Loan's IPO offer date return was 164%, substantially exceeding the offer date average return for IPOs.

b. Since E-Loan was anxious to market its IPO before its competitor, Mortgage.com, could bring its own IPO to the market, E-Loan would be willing to accept a lower price for its IPO, leading to a particularly high offer date return. The "loser" in this race, Mortgage.com need not underprice its IPO as it no longer competes in the IPO market against the E-Loan, the "winner." It is unlikely that the IPO race loser would be regarded to be as hot as the winner. Additional note: Mortgage.com's stock dropped below its \$8 offer price when it began trading on August 12th 1999; that is, it was overpriced. Mortgage.com ultimately went out of business after unsuccessfully attempting to raise additional capital.

3. Non-dilutive secondary offerings do not normally help corporations raise money because the offered shares are normally held by existing shareholders wanting to cash out. Non-dilutive offerings do not increase the number of outstanding shares, they simply transfer shares from existing owners to the general public.

4. Corporate bondholders exercise their control in the firm through their trading transactions, and through any control rights, contingent or absolute, specified in the bond indenture agreement. Bondholders obtain power in the firm through their bond purchase decisions and their decisions to exercise control rights as specified in the bond indenture agreement. When bondholders refuse to purchase bonds, bond prices are reduced and borrowing becomes more costly or even impossible to the firm. While lending banks also have certain powers as specified in their lending agreements (e.g., to call back loans, change interest rates, sell collateral), banks can also voice their concerns, deny additional loans and other services and control the nature of the relationships that they maintain with borrowers. Also, judgments resulting from bankruptcy filings often transfer control rights from shareholders to corporate creditors.

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