

**IPOs: What we know and what we do not know.**  
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**Abstract:**

The IPO literature finds that for a very long time over the business cycle there are positive abnormal returns measured from either the opening or closing price on the first day of trading versus the offer price on IPOs both in US and international markets. This means that there is a significant underpricing of IPOs. Many studies have found autocorrelation of both the monthly number of IPOs and the monthly average initial returns on IPOs. Measuring the returns over the years after the IPO, the new shares, generally, have no abnormal returns during the period after issuance, but the abnormal returns become negative over time. However, this measurement is subject to controversy when different methodologies are employed. The time series data over the period after initial sale of these new IPO shares have extreme fluctuations in volume and prices.

**1. The decision to go public—i.e., to have an IPO.**

There is not presently a full model that can explain at what stage of a firm's lifecycle it is optimal to go public nor why the volume of IPOs varies dramatically across time and across countries. (See Pagano, Panetta, and Zingales, 1998) However, we can observe that the volume of IPOs varies directly with trends in share prices in each country. When share prices rise in all countries, the number of IPOs also rises. Also, market conditions may be viewed as a function of the relative costs of debt versus equity and private versus public placement costs.

**2. The mechanics of going public.**

The mechanics of going public are governed by security laws in each country, but there are some common elements across all countries. These common elements are:

**Investor Information:** There are requirement levels of firm information that must be given to investors prior to the IPO, like a prospectus. Also, the place of listing or trading of the new shares may also require specific information, like the number of prior years of financial data, etc. Many of the IPO studies have tried to relate the values of the investor information provided to the subsequent initial return of the IPO. For example, firm age, profitability, number of shares to be sold, size of the firm, partial adjustment phenomenon, insider sales, etc., are the type of variables that have been found to be related to the size of the initial return level. See later Explanations of underpricing.

**Investment Banker (IB) or underwriter:** Most firms select a lead investment banker to sell the new securities. There tends to be somewhat uniform fees (7% of the issue value in the U.S. and 6% in Japan) charged the issuing firm by the investment banker. If book building is used, the selected IB conducts

“road shows” or other type of information gathering activities to measure the demand for the securities at different prices. This demand schedule obtained prior to the pricing of the issue is a key element in the pricing decision by the IB. If auctions are used to price the new issue, the IB frequently is required to provide a range of prices for the issue to the public prior to the beginning of the auction. However, auctions are very different in many countries. At present, they are not used in as many issues as book building appears to be the most dominate method of selling new issues.

Underwriter reputation has been shown to affect initial return levels. IB frequently use comparable company multiples to come up with a preliminary price, or price range. Using comparable companies, one factor is typically not taken into account, namely the size of the public sale of new shares. **Currently, the literature is devoid of direct tests of whether the public sale relative size or a scarcity premium exists.**

Ownership structure: With an IPO the ownership structure will change and the shares sold in the IPO are designated as Primary shares, which are new shares, and Secondary shares, which are shares that were previously owned by existing shareholders, usually founders and managers of the firm. The size of the new issue relative to the existing shares and their distribution will change the ownership structure. The IPO is often a method of moving from firm founders toward a professional management of the firm. The IPO generally occurs at the end of the “entrepreneur activities” of the founder, but usually he/she will play a role in the future of the company.

Lock-up provisions: When going public, IPOs almost always commit to a “lock-up period,” whereby insiders are prohibited from selling shares without the written permission of the lead underwriter until a certain amount of time has passed. In the average is 180 days or 6 months. Obviously, using these lock-up provisions is an attempt to control the supply of shares sold during the period after the IPO by insiders or existing shareholders. Studies have found that in the week that the lockup expires, share prices fall approximately 2%. Further evidence that supply and demand shifts, unrelated to fundamentals, affect the price of IPOs comes from price patterns at the end of the quiet period, 40 days after an IPO starts trading. In the week around the end of the quiet period, average market-adjusted returns increase by 3%. For firms where investment banks initiate analyst recommendation at this time, the average jump is 4%; 0% if no initiation of research coverage.

The presence of Venture Capitalists (VC): Many firms may be financed by VCs who take an ownership position and have partial control over the entrepreneurs. The IPO may change this control as the VC distributes the shares to their limited partners. The use of an IPO may be a cheaper form of financing than provided by VC and will certainly provide liquidity to the existing pre-IPO shareholders.

Issue Size: With the fixed costs of an IPO to create a liquid market, the number of new shares in the IPO should be large enough to provide sufficient liquidity, but small enough so that the issuing firm does not raise more cash than it can profitably use. Remember Free Cash Flow problems when funds are too large and squandered.

Mechanism for pricing IPOs: There tend to be three mechanisms used in IPOs around the world: auctions, fixed-priced offers, or book building. In auctions the market-clearing price is determined after bids are submitted. In a fixed-priced offer, the price has been set prior to the allocation. If there is excess demand, shares are rationed on a pro rata or lottery basis. In book building, the IB canvases potential buyers and then sets an offer price. The predominant mechanism by which IPO shares are sold around the world has become book building.

However, under book building, the IB has complete discretion in allocating shares and this has a dark side. There has been recent allocation scandals in the US when IBs have provided IPO shares to favored clients and executives to get future business. These abuses are called “spinning.” An example was the case of the previous CEO of WorldCom who was given an account in which many new IPO issues were placed which he “flipped out” (i.e., sold) on the first day of trading for large profits. The stated objectives of these accounts were to create future business with the firm. There has also been evidence of abuses between IB and favored investors who agree to subsequent purchases of the IPO shares in the after market. This practice called “laddering” is explicitly prohibited. During the 1999-2000 internet bubble, the average initial return in the US was about 65% and there were abuses of “spinning” and “laddering” in the allocation of IPO shares by IB. The impact of all this is that there was increased money left on the table (the number of shares offered times the initial return) by the issuing firm when the IB deliberately underpriced the IPO and allocated the issues to their most favored clients so that those clients could profit. Thus, the IB has two clients: the issuing firm and the buying clients. Underpricing, especially with spinning and laddering, favors the buying clients at the expense of the issuing firm clients.

On the other hand, auctioned IPOs in France, Israel, Japan, Taiwan, and the US have been associated with low but positive initial returns, compared with fixed-price offers and book building IPO sale regimes. **At present, the popularity of book building relative to auctions has not been fully explained.**

Explanations of underpricing.

There are three players in the IPO process: the issuing firms, investment bankers, and investors. The objectives of the three players are often different. There have been a number of suggested reasons for underpricing (i.e., having a positive initial return on IPOs). Here is a quick review of the major suggested reasons.

1. Dynamic information acquisition. This is from Benveniste and Spindt (1989). In order to induce truthful revelation for a given IPO, the IB must underprice issues for which favorable information is revealed by more than those for which unfavorable information is revealed. Those IPOs for which the offer price is revised upwards will be more underpriced than those for which the offer price is revised downward (partial adjustment phenomenon-Hanley, 1995). The empirical results are consistent with these suggestions.

2. Prospect theory. Another important issue is why do issuing firm shareholders accept the underpricing? The issuing firm's executives are seeing a personal wealth increase relative to what they had expected based on the file price range, even as they agree to leave money on the table. Loughran and Ritter (2002) argue that the issuing firm's executives bargain less hard for a higher offer price in this circumstance than they would otherwise. Loughran and Ritter also use prospect theory to explain why underwriters prefer to underprice IPOs rather than charge higher gross spreads. Issuers pay less attention to the opportunity cost of underpricing than the direct cost of gross spreads. If underwriters can allocate underpriced IPOs to buy-side clients who are competing for favorable allocations by overpaying for other services, part of the profits that investors receive on underpriced IPOs will wind up in the pockets of the underwriters.

3. Corruption. Loughran and Ritter (2002) argue that an agency problem between the decision makers at issuing firms (the top executives and venture capitalists) and other pre-issue shareholder (including the limited partners of venture capital firms) also contributes to a willingness to hire underwriters with a history of leaving large amounts of money on the table. While underpricing results in excessive dilution of all pre-issue shareholders and underwriter with other hot IPOs to allocate can make side payments to the decision makers of an issuing firm. This is "spinning." If shares are not allocated on a discretionary basis, the opportunity to give the decision makers preferential access is not present. This may account for part of the higher underpricing observed with book building IPOs than with auctions.

4. The Winner's curse. Since the allocation under book building depends upon demand for the issue, some less informed investors will get more of an issue than informed investors. Thus, if the uninformed investors will be allocated a smaller fraction of the most desirable new issues, and a larger fraction of the least desirable new issues, there is a winner's curse. The less informed investors will only submit purchase orders if, on average, IPOs are underpriced sufficiently to compensate them for the bias in the allocation of new issues. The evidence from numerous studies are consistent with there being a winner's curse, other explanation of the underpricing phenomenon exist.

5. Informational cascades. If potential investors pay attention not only to their own information about a new issue, but also to whether other

investors are purchasing, bandwagon effects, or information cascades, may develop [see Welch (1992)]. These cascades can work in a positive way and result in excessive demand for specific IPOs or in a negative way on other issues. In the negative case, an issuer faced with weak demand may find that cutting the offer price won't work, and its only alternative is to postpone the offering, and hope that market conditions improve.

6. Lawsuit avoidance. The frequency and severity of future class action lawsuits can be reduced by underpricing, since only investors who lose money are entitled to damages. Fear of lawsuits has been mentioned as one rationale for why internet IPOs were underpriced so much in 1999-2000.

7. Signalling. Several signaling models have formalized the notion that underpriced IPOs "leave a good taste" with investors, allowing the firms and insider to sell shares in the future at higher prices. The IPO firms follow a dynamic issue strategy, in which the IPO will be followed by a seasoned offering. However, various empirical studies find that the hypothesized relation between initial returns and subsequent seasoned new issues is not present.

8. The IPO as a marketing event. Publicity is generated by a high first-day return. This publicity could generate additional investor interest or additional product market revenue from greater brand awareness.

9. Perhaps these suggestions work differently over time. The underpricing phenomenon has persisted for decades, and in all countries, with no signs of declining. Perhaps, the relative importance of different theories of underpricing has changed over time. It is possible that in the 1980s, dynamic information acquisition and winner's curse models can explain much of the underpricing. In the 1990s, when the average initial returns were much higher, behavioral and agency explanations of underpricing became more important.

Stabilization activities. Stabilization, or price support, activities are legally allowed manipulation practices at the time of securities offerings. In the US, IB can overallocate securities and then cover the resulting short position by retiring some of the securities and/or exercising an overallocation option (known as a Green Shoe option). In the US, almost all IPOs give the underwriter the option of selling up to an additional 15% shares. In about 2/3s of the US IPOs, the overallocation option is exercised fully. Penalty bids are also permitted, in which the lead underwriter will take back the commission of a broker whose client immediately resells ("flip") the securities that he/she has been allotted. Since 115% of the issue can be sold, this commits the syndicate to covering their naked short position of 20% of the offer size. If strong aftermarket demand is expected, leading to a price rise, IB generally do not take a naked short position.

Over-Allotment option: Frequently, the IB requires that additional share of the issuing company be made available to the IB to sell if there is excessive demand for the new issue. The presence of this option affects the initial

returns as it affects the underpricing of IBs and the demand and supply schedules of shares.

Hot-issue markets. There is autocorrelation of both the monthly number of IPOs and the monthly average first-day returns on IPOs. Also, there is autocorrelation of both volume and average initial returns. However, the extreme swings in the volume of IPOs are interesting. The IPO market seems to be hypersensitive to changes in market conditions. Rather than just lowering offer prices by 20% when market drop by 20%, volume tends to dry up.

Long-run performance. This is a controversial area of discussion. However, there is a tendency for anomalies to disappear once they have been identified. This may be due to chance or the market learns and begins to price securities differently. Using both style matches and size (market cap), Ritter (1991) shows that IPOs have underperformed other firms of the same size by an average of 3.8% during the 5 years after the first day of sale of the IPO shares. When size and book-to-market (style) matching is used, however, the underperformance shrinks to 2.2% per year. Brav, Geczy and Gompers (2000) show that most IPOs fall in the extreme small growth category. Lowry (2003) reports that high IPO volume is a reliable predictor of low equally weighted market returns during the following year. IPOs do not dramatically underperform relative to a style benchmark, but firms apparently display some ability to time their IPOs for periods when future returns on small growth firms are low. The mystery of why small growth firms have such low returns on average remains unanswered. One unexplored area of research is the effect of market manipulation. The lowest returns are on the very smallest IPOs. These stocks are mostly likely to be taken public by underwriters with regulatory problems, and these IPOs are least likely to be back by venture capitalists. Furthermore, there is a little or no institutional investor interest in these stocks.

A number of reasons have been advanced for the long-run returns on IPOs. The most plausible is the argument that with costly short-selling and heterogeneous beliefs among investors, the most optimistic investors will determine the market price. As more information becomes available about a firm over time, the divergence of beliefs will decrease, and the marginal holder will no longer be as overoptimistic.

The controversy is related to the way the portfolio is rebalances over time. Remember that the Fama-French 3-factor regression weights each period equally, but rebalances quarterly. I suggest that it is this rebalancing that reduces the chance of abnormal returns. The reason for the difference in sensitivities is that the book-to-market effect is concentrated among very small firms (small growths firms, whether they are recent issuers or not, have extremely low stock returns, and small value firms have high returns). A high proportion of IPOs are very small growth firms, whereas SEOs are less concentrated in this extreme style category. Conclusions about

underperformance are also affected by the sample period chosen and whether equal or value weighting is used.

The low returns on issuing firms partly reflect underperformance relative to a style benchmark, and partly a market-timing issue. In vesting an equal amount in each issuing firm tends to overweight periods with low market returns, and underweight periods with high market returns.

There are many unresolved issues remaining. For example, even though there is abundant evidence that issuing firms face negatively-sloped demand curves for their shares, marketing of financial securities is a relatively unexplored research area. The number of companies going public also varies dramatically from country to country. Differences in corporate governance, laws and their enforcement, and culture explain much of the differences, but study of this important topic is still in its infancy.

Note: This material was taken from many sources and one of the primary sources was Ritter, J. R., 2003, Investment banking and securities issuance, Chapter 5 of *Handbook for the Economics of Finance*, Edited by G. M. Constantinides, M. Harris, and R. Stulz (Elsevier B.V.) pp. 255-306.

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