The Valuation and Pricing of Initial Public Offerings

By

Sergio Martínez
B.S. Industrial and Systems Engineering, Instituto Tecnológico y de Estudios Superiores de Monterrey, 1988
M.B.A., Southern Methodist University, 1991

and

Paul M. Perron
B.S. Mechanical Engineering, Worcester Polytechnic Institute, 1983
M.S. Mechanical Engineering, Rensselaer Polytechnic Institute, 1987
M.B.A., Rensselaer Polytechnic Institute, 1990

Submitted to the Sloan School of Management
in partial fulfillment of the requirements for the degree of
Master of Science in Management

at the
Massachusetts Institute of Technology

June 2004

© 2004, Sergio Martínez and Paul M. Perron. All rights reserved.
The authors hereby grant to MIT permission to reproduce and to distribute publicly paper
and electronic copies of this thesis document in whole or in part.

Signature of the Author: ____________________________

Sergio Martínez
MIT Sloan School of Management
May 5, 2004

Signature of the Author: ____________________________

Paul M. Perron
MIT Sloan School of Management
May 5, 2004

Certified by: ____________________________

Jonathan W. Lewellen
Jon D. Gruber Assistant Professor of Finance
Thesis Advisor

Accepted by: ____________________________

Stephen J. Sacca
Director, Sloan Fellows Program
The Valuation and Pricing of Initial Public Offerings

By

Sergio Martínez and Paul M. Perron

Submitted to the Sloan School of Management on May 7, 2004

in partial fulfillment of the requirements for the degree of

Master of Science in Management

ABSTRACT:

Going public is an incredibly exciting and dynamic event in a company’s life. The company and its management are transformed and will forever have to conduct their business differently. During the mid to late 1990s, many companies went public, creating multitudes of instant millionaires overnight, from company executives to administrative staff.

Many people recognized that Initial Public Offerings (IPOs) tend to significantly increase in price on the first day of trading. As a result, there have been many academic studies to try to determine the rationale as to why IPOs are typically underpriced. Most of these academic studies have focused on the analysis of 1st day pricing results and attempted to correlate these results to various hypotheses. We try to understand this phenomenon and corroborate the academic hypotheses by talking to those who set the offer price - the investment bankers, underwriters and company managers- to find out why underpricing occurs.

This thesis provides the reader with a better understanding of how companies are valued and the initial offering price determined, and explain the differences in opinion between academics, bankers, and management as to why underpricing occurs. To accomplish this task, we first focused on capturing underwriters’ opinions regarding the valuation and pricing of IPOs. We then interviewed executives that had taken companies public to compare and contrast their views with those from the bankers, and compared them to the conclusions from academics’ research.

Thesis Supervisor: Jonathan W. Lewellen
Jon D. Gruber Assistant Professor of Finance
Acknowledgements:

We want to thank Jonathan Lewellen for his time, support, and new ideas while we conducted this thesis.

We also want to thank our employers, CEMEX and United Technologies, for providing us with this unique opportunity to attend the Sloan Fellows Program.

Finally and most importantly, we are grateful to our families, especially our wives, Elena and Brenda, for their love and support throughout the year. Sergio provides special thanks to his children, Sergio, Paulina and Rodrigo, for their enthusiasm and support during the year. Paul wants to extend a special thanks to his children, Chris and Jeff, for their understanding and support, and for taking care of everything at home while he spent a year in Boston.
## Table of Contents

1. **Introduction** ................................................................. 5
2. **Background** ................................................................. 14
3. **Academics’ view on valuation** .......................................... 29
4. **Academics’ view on pricing** .............................................. 34
5. **Bankers’ view on valuation** ............................................. 43
6. **Bankers’ view on pricing** .................................................. 48
7. **Company management interviews** .................................... 64
8. **Conclusions** ................................................................. 77
9. **Appendices** ................................................................. 85
10. **Bibliography** ............................................................... 89
1. INTRODUCTION

There has been a lot written about Initial Public Offerings, or IPOs. Ordinary people have made significant sums of money by purchasing and quickly selling stocks at the time of their initial public offering. While over the years IPO stocks have increased 16% on average during the first day of trading, there have been some well known stocks such as eBay which have jumped to 360% of their initial offer price. During the peak of the dot com bubble in 1999, 457 companies went public, with an average initial price increase of 71.7% (see Figures 1.1 and 1.2). While these price increases are fabulous for the initial investors, they represent a loss in proceeds to the issuing company. What would cause the stock prices of companies to increase so dramatically during their IPOs?

![Bar chart showing number of IPOs from 1980 to 2002.]

Note: IPOs with an offer price below $5.00 per share, unit offers, REITs, closed-end funds, banks and S&Ls, ADR's and IPOs not listed on CRSP within six months of issuing have been excluded.

Figure 1.1, Number of IPOs

---


As you can imagine, this phenomenon attracted a lot of attention from those in the academic world. There have been numerous studies analyzing stock price data, short term and long term, to determine what special patterns exist and why. Most of these studies center on the change in the stock price during the first day of trading. If this change is positive it’s referred to as either the initial pop, or the level of underpricing. From the investor’s perspective, the initial pop is great because it represents an almost instantaneous gain in wealth. To the company going public, it may represent lost capital, hence the term underpricing.

---

These academic studies have produced some excellent data analyses, many of which we refer to in various parts of this report. They have, however, tended to focus on the underpricing phenomenon, often in a somewhat negative tone as they imply that underpricing is an inefficiency in the capital raising process. The increase in stock price on the first day, multiplied by the number of shares issued or floated is the value of the ‘money left on the table’ (see Figure 1.3 for data). This money went to those who were able to purchase the stock for the initial offering price, and did not go to the company issuing the stock. While the authors of the current study agree that in pure terms this ‘money left on the table’ signifies inefficiencies in the system, we also thought there were probably some very good reasons as to why it occurred with such frequency.

Note: Money left on the table is calculated as the number of shares issued times the change from the offer price to the first-day closing price.

Figure 1.3, ‘Money left on the table’

---

We theorized that underpricing was a reflection of the increased risk associated with a new, public offering, that underwriters and management would tend to price conservatively to avoid potential future lawsuits, and that an increasing stock price creates momentum that can be capitalized later – either through a seasoned offering by the company, or by management (who often have shares and options) selling their shares when their typical lockup expires. All of these ideas, and many more, have also been discussed by the academics in their studies. There have been many such hypotheses investigated, such as winners curse, market feedback, bandwagon effect, and others. Most of the studies which we encountered focused on the underpricing aspect, using rigorous data analysis techniques to correlate the data to the hypotheses.

This type of analysis is well suited to academics, and we agree that it is a good way to begin the process of determining why underpricing is such a common occurrence. There is a significant amount of IPO pricing data available and it is always worthwhile to focus on the facts. By careful analysis of the end results, patterns can be revealed, and then hypotheses formulated and correlated with the data. However, by examining the pricing results, they are naturally focusing on the back end of the process. We felt there was an opportunity to fill a gap in the existing research process by talking to talk to the underwriters of IPOs to find out why they believe underpricing occurs, and to determine if there are logical reasons as to why underpricing is much more prevalent than overpricing.
In an attempt to answer the same question as the academics, we moved to the opposite end of the process – the beginning. To price an IPO, the company’s management works with underwriters and bankers to determine a base valuation range for the company. They then pull together a presentation about the company and travel around talking to potential investors in what is known as a “roadshow”. During and shortly after the roadshow, interested investors provide the underwriters with indications as to how much stock they would like to purchase in the offering range. The underwriter pulls all these indications of interest together to generate the order book (this is the “bookbuilding” process). Management and their underwriters will consider the book demand together with their initial valuation to determine the ultimate offering price (see Figure 1.4).

For our thesis, we initially decided to talk to the investment bankers and underwriters about how they value IPOs, and more importantly, how they price IPOs. We expected them to say that they valued IPOs of traditional companies (those with some history of earnings), primarily using a discounted cash flow model (DCF), supported of course with a multiples analysis. This is the approach that the authors have used in practice during M&A transactions, and it is also the approach we were taught in business school. Our expectation was that the valuation of high technology (a term we use as synonymous with little to no earnings history) companies would also be based on a DCF, but with more emphasis applied to multiples such as revenue or even multiples of patents, etc.

Contrary to our beliefs, though, a fellow student who had previously worked at an investment bank made a statement during one of our finance classes, that the quickest way to get walked out of an investment bank was to value a high tech company using a
DCF. The authors of this report were surprised and somewhat skeptical about the statement, and in further discussions with each other, the basis of this thesis was formed.

**Figure 1.4**

- **Issuing Company**
- **Underwriters**
- **Roadshow / Bookbuilding**
- **Institutional Investors**
  - Initial Pricing
  - Retail Investors (along for the ride)
  - Secondary Investors

**1st day results**
Because we both had existing relationships with various investment bankers, we thought that we would be able to have open, honest discussions with them on the topics of valuation and pricing of IPOs. However, we decided in advance that the names of all individuals and the companies they work for would remain anonymous.

As we began speaking with the bankers about the process, we realized that management of the companies going public may have a somewhat different perspective on the process. We decided that it would also be beneficial to speak to management from a variety of companies that went public in the past several years. In the end, we were able to speak with six different bankers and six management representatives (mostly CFOs). We believe that the individual insights we obtained are valuable from a qualitative point of view, lend a somewhat unique perspective on the IPO pricing process, and could prompt further, in-depth studies, even though the total number of interviews is not significant from a statistical perspective.

The other key player in the pricing part of the process is the institutional investor. It would be very informative to discuss these topics from their perspective, because they conduct an independent valuation and then factor in all the intangibles such as banker relationships, mutual fund flows, IPO market attributes and opportunity costs into their indications of interest during the roadshow/bookbuilding process. However, due to lack of contacts within the institutional investor industry, time constraints, and our belief that the management and underwriters had the final say in determining the offering price, we
decided to not to attempt to speak with any institutional investors, but to focus on the underwriters and company management.

Initially, we focused on conversations with the bankers/underwriters. We should note that in 2003, ten of the top investment firms in the U.S. were required to pay about $1.4 billion in penalties, disgorgement and funding of independent research and investor education due to allegations that their practices had created inappropriate influence by investment banking over research analysts, creating conflicts of interest. Part of this settlement was due to the banks engaging in inappropriate spinning of hot IPO allocations (spinning in this context refers to allocating shares in lucrative IPOs to company executives who are in a position to give the firms their company’s investment banking business)\(^3\). While these allegations did not address valuation and underpricing per se, it created a sensitive environment on Wall Street. In fact, it was very difficult to have access to several bankers. An underwriter at one major bank cancelled a planned meeting after talking to his legal department. Another would only speak with us when his communications person was present. Having said this, we found the bankers and underwriters that did meet with us to be very open during our conversations.

Access to management was also limited for several reasons. We utilized public information to identify companies that went public, then called the CFOs of those companies (assuming that the CFO was in a prominent position during the time of the

IPO) to ask if they would speak with us. From their perspective, they would have to take 45 minutes of their time to discuss aspects of the IPO process, and the information they provided will be part of a public document. This presents a certain level of risk and at least, an inconvenience in talking to us, with little upside for them. In addition, the Sarbanes-Oxley Act of 2002 has resulted in management of public companies being sensitive with information disclosure.
2. BACKGROUND

To best address the issues of valuation and pricing of IPOs, the overall IPO process should be understood. This process is rather complex and begins with the company’s decision to go public. Once this decision is made, the process involves many participants, including company management, underwriters, lawyers, the SEC, legal counsel, and others. The process typically takes up to 180 days, and can be fairly costly to the company.

2.1 Rationale for going public

An Initial Public Offering (IPO) is a company’s first public issue of common stock. The offering can be primary, in which new shares are sold, or secondary, in which the owners of the company sell their existing shares. Shares are sold to raise capital for the company or money for the individuals, depending on whether the offering is primary or secondary. A mixed offering is when the company decides to go public with both a primary and a secondary offering. When thinking about going public, the most important question a CEO should ask is, “Why do I want to go public?”  

There are many reasons to support going public, but there are also a number of disadvantages.

Although the usual reasons that companies choose to go public are to raise capital and provide liquidity there are other significant reasons. According to Broude (1997), the main reasons for a company to go public are:

1. To raise capital for growth of the company when the issue is primary.

---

2. To obtain liquidity for management and existing shareholders, often viewed as an exiting strategy for existing owners. An IPO creates a market so that insiders can realize a return on their original investments and diversify their personal holdings. Most underwriters dislike the idea of management bailing out of the company at the moment of the IPO, therefore most require management and significant stockholders (> 5% ownership) to keep their stock for a period of 6 to 24 months after the IPO (referred to as the lock-up period).  

3. To create a currency for the acquisition of other businesses. Acquisitions are typically used to expand geographically, add complimentary business units, or otherwise diversify operations. Bank financing can be difficult to obtain, therefore stock is used instead of cash or debt to pay for the acquisitions, especially when the primary assets of the company are intangibles such as people or client relationships (banks typically require tangible assets to back significant loans). Acquisitions using stock can provide a tax benefit to the target company’s owners. The stock deal can be structured to defer the seller’s tax liability until they sell the stock of the acquiring company.  

4. To use the stock as equity compensation to help attract, reward, and retain key personnel. Equity plans help align management interests and other employees with the company’s stockholders since the eventual value of the equity to employees depends on increasing the value of the company’s stock for all its owners. An IPO helps in the implementation of equity compensation plans since

---

9 Ibid, pp. 24-25.
10 Ibid, pp. 24-25.
the stock is valued daily at the market price, making it clear if management is perceived as creating value for the stockholders.

5. To enhance the firm’s reputation with customers, suppliers and other third parties. Publicly traded companies are often perceived to be more stable and substantial than similarly sized private companies.  

6. To raise relatively inexpensive financing. Stock can be the least expensive form of capital available to a business both in terms of percentage of ownership sold to new investors and the control that must be given up by existing stockholders. Unlike debt, equity capital does not need to be repaid and it doesn’t generally subject the company to the pressure of meeting financial commitments and other covenants on an ongoing basis.

7. To raise funds much more inexpensively than in a private equity placement. The valuation achieved in an IPO can often be 50% to 100% higher than the value obtained in a private placement. Private investors insist on a higher discount relative to the fundamental value to compensate them for the non-liquidity of the investment.

8. To distribute stock among a broad mix of institutional and retail investors. Venture Capital firms generally negotiate substantial limitations on management’s operation of the company, preferential voting rights and substantial penalties if the company fails to achieve its business plans. Stock in IPOs is generally

---

12 Ibid, pp. 24-25.
13 Ibid, p. 25.
distributed broadly among many owners; therefore there are few restrictions in the use of funds.\textsuperscript{14}

The first formal theory on the decision to go public appeared in an article written by Zingales in the \textit{Review of Economic Studies} in 1995. Zingales observed that it is easier for an acquirer to spot a potential takeover target when the target company is public because in the three years following an IPO, turnover in control is twice that of similar privately held companies. This effect is even stronger for IPO's of subsidiaries of publicly traded companies.\textsuperscript{15} Others have agreed, saying that by going public entrepreneurs help facilitate the acquisition of their company for a higher value than they would get from an outright sale.\textsuperscript{16}

There are also several disadvantages to companies that go public. There is the added expense of the IPO process of approximately 8\% (assumes an average $100 million offering), plus ongoing expenses related to increased financial reporting and investor relations (see Figures 2.1 and 2.2). While management may not have the problem of meeting debt covenants, they will be under constant pressure to meet short term financial performance from the shareholders. This pressure could cause them to make different and sub-optimal decisions than if they were private. In addition, there is a loss of privacy for all those classified as insiders. These people will have their compensation figures publicly available. When the company is public, there is always a chance that the

\textsuperscript{14} Ibid, p. 25.
\textsuperscript{16} Ibid, p. 1798.
company could become the target of hostile takeovers.\textsuperscript{17} Lastly, there is the potential for investor lawsuits if the stock price drops significantly. In these situations, there are lawyers that will scrub the prospectus to see if there were any miss-statements which could form the basis of a class action suit.

<table>
<thead>
<tr>
<th>Proceeds ($M)</th>
<th>Gross Spread</th>
<th>Other Costs</th>
<th>Total Direct Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 – 10</td>
<td>9.05%</td>
<td>7.91%</td>
<td>16.96%</td>
</tr>
<tr>
<td>10 – 20</td>
<td>7.24%</td>
<td>4.39%</td>
<td>11.63%</td>
</tr>
<tr>
<td>20 – 40</td>
<td>7.01%</td>
<td>2.69%</td>
<td>9.70%</td>
</tr>
<tr>
<td>40 – 60</td>
<td>6.96%</td>
<td>1.76%</td>
<td>8.72%</td>
</tr>
<tr>
<td>60 – 80</td>
<td>6.74%</td>
<td>1.46%</td>
<td>8.20%</td>
</tr>
<tr>
<td>80 – 100</td>
<td>6.47%</td>
<td>1.44%</td>
<td>7.91%</td>
</tr>
<tr>
<td>100 – 200</td>
<td>6.03%</td>
<td>1.03%</td>
<td>7.06%</td>
</tr>
<tr>
<td>200 – 500</td>
<td>5.69%</td>
<td>0.86%</td>
<td>6.53%</td>
</tr>
<tr>
<td>500 +</td>
<td>5.21%</td>
<td>0.51%</td>
<td>5.72%</td>
</tr>
<tr>
<td>Average</td>
<td>7.31%</td>
<td>3.69%</td>
<td>11.00%</td>
</tr>
</tbody>
</table>

Figure 2.1, Direct Costs of a Public Offering, 1990 – 1994\textsuperscript{18}


\textsuperscript{18} Jonathan W. Lewellen, “Raising Capital,” MIT course 15.414 class notes, lecture 14, p. 20.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal</td>
<td>$600,000</td>
</tr>
<tr>
<td>Accounting</td>
<td>$400,000</td>
</tr>
<tr>
<td>Printing</td>
<td>$150,000</td>
</tr>
<tr>
<td>Blue Sky</td>
<td>$10,000</td>
</tr>
<tr>
<td>Transfer Agent</td>
<td>$5,000</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>$60,000</td>
</tr>
<tr>
<td>Filing Fee</td>
<td>$30,000</td>
</tr>
<tr>
<td>NASD Fee</td>
<td>$10,000</td>
</tr>
<tr>
<td>NASDAQ</td>
<td>$95,000</td>
</tr>
<tr>
<td>6.5% Underwriting Fee</td>
<td>$6,500,000</td>
</tr>
<tr>
<td>Total</td>
<td>$7,860,000</td>
</tr>
</tbody>
</table>

Figure 2.2, Cost of an IPO\(^{19}\)

2.2 Participants in the IPO process

The initial public offering process is an intense, dynamic period unlike any other in the business lifecycle. It consumes management's time, it can be frustrating, but also it can be very rewarding.\(^{20}\) There are several classes of participants involved in the IPO process. The most important participants and their functions are:

---


Managers of the company: Company personnel will have to provide the necessary information to prepare the registration document and will have to be actively involved in all aspects of the registration process. Due to the time and energy required from top level management during the IPO process, especially from the Chief Executive Officer (CEO), the Chief Financial Officer (CFO), and the company’s Legal Counsel, having a strong management team in place to run the company’s business during this period is essential.21

Underwriters: There are many investment banking firms in the U.S. that manage the IPO process. Underwriters provide the company with procedural and financial advice, they actually purchase the stock from the company, and then they allocate shares to the investors (resell it to the public). If they view selling the common stock as risky, the underwriters will participate on a best-offer basis.22 In this case, the underwriter promises to sell as much of the issue as possible but does not guarantee the company that they will sell the entire amount. Otherwise, they will agree to a firm commitment and will guarantee the company that they will sell all of the stock offered. Usually more than one underwriter will participate in the process. The lead underwriter will represent the underwriters syndicate (collectively referred to as the ‘syndicate’). Sometimes there will be two lead underwriters that will jointly manage the process. One banker implied that companies are relying on multiple lead underwriters more often today than several years ago, especially when the issue is too large for a single underwriter to manage or when the company management hopes to obtain a broader investor base.

In a firm commitment issue, the underwriter assumes the risk that the stock price doesn’t hold during the IPO. In addition, the underwriters will typically want to help to stabilize the stock’s price performance in early aftermarket trading. When the stock price falls well below the offer price, it reflects poorly on the underwriter’s judgment and their reputation could be hurt for months. The SEC requires that this stock cannot be resold at a higher price. The underwriters can also withdraw their support at their discretion, without notice.\(^{23}\)

**Internal counsel:** Lawyers are an essential part of the IPO process. The company’s securities counsel will become the quarterback of the registration process. They are responsible for drafting the prospectus along with help from the other participants of the IPO process. They must have the ability to evaluate large amounts of information and turn documents quickly. One of their objectives is to protect the company’s interests when dealing with the underwriters and the SEC staff.\(^{24}\)

**Underwriter’s Counsel:** Generally, they are responsible for drafting the underwriting agreement. They also review the entire registration statement and any related agreements and contracts that are filed as exhibits to ascertain on behalf of the underwriter that the registration statement is complete and not misleading. In addition they usually prepare the Blue Sky filing that is necessary to have the registration approved by state regulators.\(^{25}\) Blue-Sky Laws are laws passed by various states to protect investors against


securities fraud. These laws require sellers of new stock issues or mutual funds to register their offerings and provide financial details on each issue so that investors can base their judgments on relevant data. Each individual state has its own securities laws known as “Blue Sky Laws” (they received their name purportedly from a judge who asserted that a particular stock offering had as much value as a patch of blue sky).²⁶

**Investors:** The most important stock buyers are institutional investors. They purchase most (70% to 90%) of the shares in IPO’s and do ~ 70% of the daily trading on the NYSE. Some examples of institutional investors are mutual funds, banks, insurance companies, pension funds, labor union funds, corporate profit-sharing plans, and college endowment funds.²⁷ The remaining of investors are retail investors. They purchase securities and commodities on their own behalf and typically buy shares of stock or commodity positions in much smaller quantities than institutional investors.²⁸

Investors get information about the IPO during the company’s roadshow. Investment bankers also get an indication of interest from investors during the roadshow and start to generate potential orders (bookbuilding).

There has been an increase in academic attention on how shares are allocated due to the public concern on the perception unfairness, given the large ‘money left on the table’ in

---

recent years. Some academics point out that if underwriters are given discretion in share allocation, the allocation will not be in the best interests of the issuing firm. Also, evidence to date suggests that where bookbuilding is used, institutions do receive preferential allocations. Due to its scale, institutional investors are better informed and more important clients than retail investors. Since this subject is very sensitive, the authors did not raise this matter with the bankers.

**Reporting accountants and auditors:** The prospectus contains statements and information written by, or verified by, the reporting accountants to the new issue i.e.: the letter which accountants address to both the Board and shareholders regarding their opinion of the financial statements and position of the company at the end of the fiscal year. The auditor can be a credible signal of the quality of the IPO and its market valuation. The reputation of the firm of accountants is potentially a signaling device for conveying the credibility of the issue. There is a significant negative relationship between the auditor quality and risk as measured by the number of risk factors listed in the prospectus.

**Securities and Exchange Commission (SEC):** Companies must register the issuance of securities with the SEC. The SEC’s mission is to protect investors and maintain the integrity of the securities markets. Its role is not to judge the merits of the proposed

---


offering but to ensure that all material information about the company has been disclosed as required so that all of the potential investors are fully aware of the inherent risks of the company.

**Exchange:** This is the place where the shares are listed and traded. The choice of the exchange listing is part of the IPO process. The main securities trading markets in the U.S. are the National Association of Securities Dealers Automated Quotations (NASDAQ), the New York Stock Exchange (NYSE), the American Stock Exchange (Amex), the regional markets, and the over-the-counter markets (OTC). The listing requirements can be extensive, requiring a certain number of shareholders and specific market values. A partial set of requirements is listed in Figure 2.2. Although from 1992 through 2001, 84% of all IPOs were listed on NASDAQ, they only represented 44% of the dollar value, whereas 14% were listed on the NYSE but with 55% of the dollar value. Only 2% of the IPO stocks were listed on Amex, representing 1% of the dollar value (see Figure 2.3).

---

<table>
<thead>
<tr>
<th><strong>NASDAQ National Market Listing Requirements</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>$6M in net tangible assets, $1M in pretax income, 400 round lot shareholders, $8M public float market value.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>NYSE Listing Requirements</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1M public shares with a market value of $40M, pretax income of $2.5M, and 2,000 round lot U.S. shareholders.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>AMEX Listing Requirements</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>$750,000 pretax income, $3M market value of public float, $3+ stock price, and $4M in stockholder’s equity.</td>
</tr>
</tbody>
</table>

Figure 2.2, Examples of Listing Requirements\(^{32}\)

<table>
<thead>
<tr>
<th>Year</th>
<th>NASDAQ Offerings</th>
<th>Dollar Value of NASDAQ Offerings (Millions)</th>
<th>NYSE Offerings</th>
<th>Dollar Value of NYSE Offerings (Millions)</th>
<th>Amex Offerings</th>
<th>Dollar Value of Amex Offerings (Millions)</th>
<th>Total Offerings</th>
<th>Total Dollar Value of Offerings (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>442</td>
<td>$13,586</td>
<td>80</td>
<td>$15,662</td>
<td>6</td>
<td>$112</td>
<td>528</td>
<td>$29,359</td>
</tr>
<tr>
<td>1993</td>
<td>520</td>
<td>$16,070</td>
<td>97</td>
<td>$22,308</td>
<td>11</td>
<td>$147</td>
<td>628</td>
<td>$38,525</td>
</tr>
<tr>
<td>1994</td>
<td>444</td>
<td>$13,187</td>
<td>82</td>
<td>$18,164</td>
<td>13</td>
<td>$269</td>
<td>539</td>
<td>$31,619</td>
</tr>
<tr>
<td>1995</td>
<td>476</td>
<td>$16,734</td>
<td>72</td>
<td>$14,753</td>
<td>9</td>
<td>$283</td>
<td>557</td>
<td>$31,770</td>
</tr>
<tr>
<td>1996</td>
<td>680</td>
<td>$24,498</td>
<td>88</td>
<td>$11,948</td>
<td>18</td>
<td>$510</td>
<td>786</td>
<td>$36,956</td>
</tr>
<tr>
<td>1997</td>
<td>494</td>
<td>$19,367</td>
<td>87</td>
<td>$18,202</td>
<td>22</td>
<td>$880</td>
<td>603</td>
<td>$38,450</td>
</tr>
<tr>
<td>1998</td>
<td>273</td>
<td>$13,757</td>
<td>68</td>
<td>$35,848</td>
<td>21</td>
<td>$387</td>
<td>362</td>
<td>$49,992</td>
</tr>
<tr>
<td>1999</td>
<td>485</td>
<td>$50,425</td>
<td>49</td>
<td>$54,419</td>
<td>11</td>
<td>$138</td>
<td>545</td>
<td>$104,982</td>
</tr>
<tr>
<td>2000</td>
<td>397</td>
<td>$52,585</td>
<td>48</td>
<td>$59,700</td>
<td>6</td>
<td>$230</td>
<td>451</td>
<td>$112,515</td>
</tr>
<tr>
<td>2001</td>
<td>63</td>
<td>$7,840</td>
<td>35</td>
<td>$36,393</td>
<td>3</td>
<td>$26</td>
<td>101</td>
<td>$44,259</td>
</tr>
</tbody>
</table>

| Total | 4274 | $228,049 | 706 | $287,396 | 120 | $2,982 | 5100 | $518,427 |

| % of Total | 84% | 44% | 14% | 55% | 2% | 1% |

**Figure 2.3, Number & Value of IPOs**

### 2.3 The Process of Going Public

As mentioned previously, the IPO process is time consuming. The process will normally last up to 6 months from the time management identifies an investment banker until the stock is listed and traded at the exchange. The first important decision made by the company is to choose an investment banker and sign a letter of intent with them. This selection process occurs during the ‘beauty pageant’ where each of the potential underwriters comes in to meet the company and discuss their preliminary valuations. Once the underwriters are selected, the IPO team drafts the registration statement and the prospectus. Extensive due diligence of the company is conducted by the lawyers and

---

underwriters. When the draft of the registration statement is ready, it is registered with the U.S. SEC for its review. The SEC provides written comments back to the company, along with requests for more information or suggested changes in the prospectus. The IPO team then provides the SEC with the follow-on information required. The company prints a preliminary prospectus which contains the anticipated initial offering price range (preliminary because the SEC has not given its final approval of the registration statement), and embarks on a two to three week “road show”. After the road show, the company obtains the final approval from SEC and agrees on an effective date (date the registration statement is declared effective by the SEC) for the IPO. Following is a detailed timeline of the process: 34

Total timeline 180 days

90 days
Senior management meets with several investment banking firms to determine the level of interest in an IPO for the company. Management provides initial material about the company.

Draft a registration statement and prospectus (part of the registration statement). Legal counsel directs drafting process. Extensive due diligence investigation of the company made by the underwriters and lawyers. Once company management, underwriters, lawyers, auditors, and directors agree on the language of the registration statement, the company files it with the SEC.

30 days
SEC provides written comments to the company and requests more information and changes to the prospectus.

30 days
Registration Statement is registered with the U.S. SEC.

Letter of intent signed: Nonbinding agreement between the underwriter and the company setting the key characteristics of the IPO, such as size of the deal, anticipated price range, compensation, restrictions of sales by company insiders, timing, etc.

7 to 10 days
Company, underwriters, lawyers and accountants provide additional information required by the SEC.

14 to 21 days
Company prints preliminary prospectus ("red herring"). Management of the company start a "road show" (presentations to brokers and institutional investors).

"Effective date" 3 days
"Effective date", date registration statement is declared effective by the SEC. Night before "effective date", underwriter and company set actual offering price and sign binding agreement (purchase of securities from underwriter).

Closing of IPO occurs 3 days after the effective date.

Aftermarket support: Once trading begins, typically the lead underwriter provides research data on the company to the financial community. In addition, in case the stock price falls below the offering price, they must have the financial resources to buy stock until the stock's price rises.
3. ACADEMICS’ VIEWS ON VALUATION

Although there are many interesting aspects of the IPO process, the focus of this thesis is on the valuation and pricing of IPOs. Early on in our research, we read the claim that valuation and pricing are related but deal with different issues. Valuation is estimating the value of the company based on comparables and factors like profit margins and operating history, while the main emphasis with pricing is to determine how much the market will bear. According to this view, one would determine the fundamental value of the company, and then factor in special market conditions to ultimately determine the price that investors will pay. The most common method for valuing firms which are going public is the use of comparable firm multiples. Although the use of comparable multiples is the most common method for valuation, the underwriter’s also factor in an analysis of the company’s historical and projected financial performance, the overall conditions of the markets at the time of the IPO, and the company’s future prospects. For a traditional company with a history of positive earnings and cash flows, the use of earnings or cash flow multiples is straightforward.

However, if the company does not have positive earnings, such as many of the internet firms which went public in the late 1990s, the valuation obviously cannot be based on earnings multiples. In these cases, the firm’s valuation departs from conventional wisdom, and negative cash flows are priced because they are viewed as investments. For example, R&D is an expense, but in a startup it is generally set as an investment in future earnings.

---

Academics have found a marginally significant correlation between R&D and stock price for internet firms IPOs, while it is insignificant for non-Internet firms.\textsuperscript{38} IPOs of internet firms also receive higher multiples of positive cash flows and sales than non-internet firms.\textsuperscript{39}

3.1 \hspace{1em} Multiples

Since multiples are the most common method of valuation, it’s worthwhile to have a brief review. Some multiples used for comparing companies are the following:

a) Price-to-Earnings (P/E)

b) Price-to-Ebitda (Ebitda is defined as Earnings before interest, depreciation, taxes, and amortization).

c) Price-to-Book Value (P/BV)

d) Price-to-Sales

e) Industry specific, such as Price-to-Eyeballs (for dot com industry)


\textsuperscript{39} Ibid, p. 345.
Example:

Firm Z is planning to go public with $10 of projected earnings. Its benchmarks are three public firms with the following forward P/E ratios:

<table>
<thead>
<tr>
<th>Name of company</th>
<th>P/E ratio (forward)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm A</td>
<td>10</td>
</tr>
<tr>
<td>Firm B</td>
<td>15</td>
</tr>
<tr>
<td>Firm C</td>
<td>12</td>
</tr>
<tr>
<td>Average</td>
<td>12.3</td>
</tr>
</tbody>
</table>

Figure 3.1

The price of the stock might be calculated as follows (assuming that there are a total of 15 shares of stock for the company).

\[
\frac{\text{Earnings} \times \text{P/E ratio}}{\text{Number of shares}} = \frac{($10 \times 12.3)}{15 \text{ shares}} = $8.2 \text{ per share}
\]

If the Price-to-Ebitda ratio is to be used, the result of multiplying the company’s Ebitda times the Price-to-Ebitda ratio will yield the enterprise value, which comprises the value of the equity, the value of the debt and any cash which the company has. Therefore net debt (debt minus cash) should be subtracted from the enterprise value to get equity value.

Often, several multiples will be used in the valuation process to obtain a range of possible equity valuations. In addition, according to Kim and Ritter (1999) valuing IPOs on a
basis of the price-to-earnings, price-to-sales, enterprise value-to-sales, and enterprise value-to-operating cash flow ratios is not very accurate if historical numbers rather than forecasts are used. The reason is that among publicly traded firms in the same industry, ratios display a great variation. Many idiosyncratic factors are not captured by industry multiples unless adjustments in growth and profitability are made. Using earning forecasts improves the valuation accuracy significantly.  

3.2 Discounted cash flows

Another fairly common method for valuing a company is by using the Enterprise Discounted Cash Flow Model (DCF). DCF is used in combination with multiples. The DCF values the equity of a company as the value of a company’s operations (the enterprise value that is available to all investors) less the value of debt and other investor claims that are superior to common equity (such as preferred stock). Projected free cash flows (FCF) are discounted to obtain their value today, at the firm’s weighted average cost of capital (WACC). FCF are defined as follows:

---

Revenue

- Cost of Goods Sold

- Selling, General & Administrative Expenses

+ Depreciation (if subtracted in COGS and SG&A)

Earnings Before Interests Taxes and Depreciation and Amortization

- Capital Expenditures

- Change in Working Capital

- Taxes on Earnings Before Interest and Taxes (EBIT)

Free Cash Flow (FCF)

The weighted average cost of capital (WACC) is the discount rate applied to the free cash flows, and it should reflect the opportunity cost to all the capital providers weighted by their relative contribution to the company’s total capital. Appendix 9.1 includes a detailed formula for the calculation of the weighted average cost of capital.
4. ACADEMICS’ VIEWS ON PRICING

This section reviews academic theories for understanding their view on pricing. As previously stated, valuing a company in preparation for an IPO is not much different than valuing a company in anticipation of an acquisition. The valuation techniques are the same as those taught in business school; discounted cash flow analysis, multiples of earnings, cash, and revenues relative to comparable companies in the market.

After the fundamental valuation, the next key step is to set the price, an interactive process between management and underwriters. For setting the initial offer price, we expected to hear that once the fundamental value of the company was calculated, the price for the IPO was determined by taking into account the market demand factors. For example, in the easy situation where the company going public was preceded by three others which were very similar, a comparable multiples analysis, combined with investor indications during the bookbuilding process would lead to a fairly accurate estimate of what value the company would trade at. If the comparables were very similar, it’s likely that they would also be used by underwriters and investors to determine the company’s value. Since the companies are all similar, any adjustment to the multiples for different growth rates, etc. would be small, resulting in a fairly consistent valuation.

The last key factor to be considered in tuning the offer price would be the aggregate demand, determined in the bookbuilding process. If the demand was great, the offer price could be increased. Conversely, if demand was low, the offer price could be reduced. However, as we stated earlier, the long term average underpricing has been
about 16%.42 We believed that if the issuers really cared about reducing the level of underpricing, they would demand pricing performance within a range, and the underwriters would produce that level (within reason). Since the level of underpricing in hot markets is significantly higher than in cool markets (see Figure 4.1), there is also more ‘money left on the table’ (see Figure 4.2), and we hypothesized that there are reasons other than a typical risk premium, for underestimating the price.

One possible reason could be that the management and underwriters believed that the fundamental value of the company was somewhat lower than what the market would bear and eventually the market hype would wear off and the stock would trade down or perform poorly. Also, if they believed the stock would eventually trade down, both underwriters and issuers might be concerned about investor lawsuits, which would tend to make them conservative in their initial pricing decision.

---

Note: IPOs with an offer price below $5.00 per share, unit offers, REITs, closed-end funds, banks and S&Ls, ADR’s and IPOs not listed on CRSP within six months of issuing have been excluded. Average first-day return is measured from the offer price to the first closing price.

Figure 4.1, Number of IPOs and level of underpricing\(^{43}\)

Note: Money left on the table is calculated as the number of shares issued times the change from the offer price to the first-day closing price.

Figure 4.2, ‘Money left on the table’ (1980-2003)\(^{44}\)

---


In addition, we theorized that since many IPOs are for small percentages of the company value (31% on average from 1992 to 2003, see Figure 4.3)\(^{45}\), and since management is typically prevented from cashing out options and stock for some lockup time period, they have incentive for underpricing to create goodwill, publicity, and more importantly momentum. In the best situation, this positive momentum would last throughout the lockup period and allow a secondary offering of a larger value, and allow management to cash out some of their holdings.

![Graph of Public Float (%)](image)

**Note:** Float is defined as the number of shares divided by the number of post-issue shares to be outstanding. Both the numerator and denominator exclude any over allotment option, and the offering size includes both primary and secondary shares.

**Figure 4.3, IPO float\(^{46}\)**

---


4.1 Hypotheses for why IPOs are underpriced

Jay R. Ritter, Cordell Professor of Finance at the University of Florida, appears from our literature review to be the most prolific academic studying IPOs and, as is already evident, we have relied upon his work. He has done an excellent job in gathering data and summarizing many of the common theories as to why significant initial returns (underpricing) exist. A summary of these hypotheses follows. For more complete information, we recommend reading his work (http://bear.cba.ufl.edu/ritter/).

Winners Curse – The winners curse implies that if you are bidding for something and win, then you obviously bid higher than the competition. You either knew more than the competition and better understood the true value, or you knew less than the competition and bid too much, hence suffering the winners curse. In an IPO there are essentially a fixed number of shares available at a fixed price. Because of this problem, potential investors have to assume there are others that know more than they do, so they will only submit orders if they are confident that on average, IPOs are underpriced sufficiently to compensate them for this risk.47 As the Motley Fool says, “If you’re able to get your hands on some IPO shares, it probably means that nobody else wants them, and you shouldn’t either!”48 This is especially true for retail investors that are not allocated IPO shares but have to purchase them in the aftermarket.

Market feedback hypothesis – Underpricing is used to induce potential investors to truthfully reveal their valuations during the bookbuilding stage. To induce truth telling

by investors with good information, the expected profit of the truth tellers must be higher than that of those who won’t tell the truth. The more favorable the feedback provided to the banker by the investors, the more underpricing seems to occur. The underpricing provides incentive for the potential investors to offer positive pricing information. (After all, there is no need for investors to tell the underwriters that they would be willing to pay more for a particular offering.) There is a strong correlation with increased underpricing when the offer price was revised upwards from the initial filing range. The initial file range is the stock price (range) filed in the SEC and disclosed in the preliminary prospectus.

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Number of IPOs</th>
<th>Percentage of IPOs with Offer Price Relative to the File Range</th>
<th>Mean- First-day Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Below</td>
<td>Within</td>
</tr>
<tr>
<td>1980-1989</td>
<td>1971</td>
<td>27.6%</td>
<td>59.9%</td>
</tr>
<tr>
<td>1990-1994</td>
<td>1632</td>
<td>26.1%</td>
<td>54.2%</td>
</tr>
<tr>
<td>1995-1998</td>
<td>1752</td>
<td>25.0%</td>
<td>49.1%</td>
</tr>
<tr>
<td>1999-2000</td>
<td>803</td>
<td>18.1%</td>
<td>36.8%</td>
</tr>
<tr>
<td>2001</td>
<td>80</td>
<td>25.0%</td>
<td>60.0%</td>
</tr>
<tr>
<td>1980-2001</td>
<td>6238</td>
<td>25.2%</td>
<td>52.3%</td>
</tr>
</tbody>
</table>


Figure 4.3

**Bandwagon** – The bandwagon effect is sort of a corollary to the winners curse. If potential investors see that there is little demand for a particular stock, they may not want to buy fearing the winner’s curse situation. Therefore, the issuers may want to underprice

---
initially to generate lots of enthusiasm and create a bandwagon whereby many investors want to buy in, regardless of their initial thoughts on the stock.\textsuperscript{50}

**Banker monopsony power** – This hypothesis says that bankers take advantage of their superior knowledge of market conditions to underprice offerings, which permits them to expend less marketing effort and ingratiate themselves with buy-side clients (the authors had a little trouble believing that this was true, which further led to our decision to talk to the bankers).\textsuperscript{51} This theory says that 1) managers do not like underpricing but can’t control it, and 2) underpricing is a gift to the investors whom the investment bankers decide to allocate the shares to.

**Lawsuit Avoidance** – The Securities Act of 1933 makes all participants in the offer who sign the prospectus liable for any material omissions. One way of reducing the frequency and severity of future lawsuits is to underprice.\textsuperscript{52} Lawsuits will tend to be filed by investors who are unhappy because they lost money when the stock price fell. The more significant the level of underpricing that occurs, the lower the probability that investors will lose money, and hence, the number of lawsuits should be reduced. According to Ritter, underpricing would be a costly method of reducing the probability of future lawsuits, and countries such as Finland where class action securities lawsuits are unknown have just as much underpricing as in the U.S.\textsuperscript{53}

\textsuperscript{51} Ibid, p. 9.
\textsuperscript{53} Ibid, p. 9.
Signaling – Underpriced issues leave a ‘good taste’ with investors, allowing the firms and insiders to sell future offerings at a higher price than would otherwise be the case. However, data casts doubt on this theory because follow-on offerings and IPO initial return correlations are not present.\(^54\)

Ownership Dispersion- Firms intentionally underprice the offering to generate excess demand and have widely dispersed shareholders so that any single investor can’t challenge management. The larger numbers of owners will also increase liquidity of the stock.\(^55\)

Issuers don’t seem to get upset about leaving money on the table. This could be due to what’s known as the partial adjustment phenomenon. Data indicates that the highest initial returns occur on those stocks where the price was revised upwards from the filing price.\(^56\) It could be that the issuers may already be happy because the price and proceeds have already increased relative to their expectations. A successful IPO also provides the company with significant marketing benefits with customers and investors.

Hot Issues Market – Cycles exist in both the volume and average initial returns of IPOs. High initial returns tend to be followed by rising IPO volume. These periods of high

\(^{56}\) Ibid, p. 10.
initial returns and rising volume are known as ‘hot issue’ markets. These hot markets then tend to be followed by periods of lower initial returns.

**Advertising** - Another possible motivation for underpricing is advertising and marketing benefits. A significant amount of “free” publicity can be derived from going public and underpricing at the same time of the IPO. E. Demers and K. Lewellen (2003) found that media mentions in the month of the IPO are positively associated with the level of underpricing for both internet and non-internet companies.

In the preceding pages, the academics’ views on valuation and pricing were summarized. The views highlighted were those which we found to be most prevalent in the literature which we studied. As previously state, these views are generated by the academics studying the results of the IPO in terms of pricing. We undertook to talk to bankers and company management to determine their views on the IPO valuation and pricing process.

---

5. BANKERS' VIEWS ON VALUATION

This section reviews the banker’s thoughts on valuation. Based on the conversations with them, we concluded that they use similar methodologies when valuing a company. All of them use trading multiples and DCF models. According to one source, trading multiples provide the easiest method to reach consensus among the underwriters and management on the value of the company. Another source stated that 75% of companies use comparable forward price-to-earnings multiples to price the offering when going public because “it is the best valuation method”. Value is commonly determined as a multiple of the forward metric (typically earnings).

Prior to the mid 90’s, a company needed four things to go public: growth in revenues, profits, a track record, and a dedicated use of proceeds. Valuation was focused on trading multiples although a DCF model was looked at for confirmation. In this timeframe, the market was rather conservative. In August of 1995, Netscape changed it all. With its IPO, Netscape started the high tech bubble. Founded in April 1994, Netscape had little revenue (~$16.6M for the six months ending June 30, 1995) and limited cash (~ $8.9M) when it went public. The offering price was $28 per share and the first day closing price was $58.25 per share! Investors began to believe that there were quick fortunes to be made in IPOs. Mutual fund portfolio returns started to increase substantially, and this caused more people to put money into the funds. Investors who used to be content with a 10% to 15% annual return now demanded 50% yearly returns. The successful institutions had

---

significant levels of cash and since they needed to keep their returns up, they needed to invest this cash in high yield assets such as IPOs.

Investment bankers were under pressure to get to the companies first and bring them public. The situation got to the point where startup companies that had just received initial funding one week earlier were expecting to go public with a $1 billion valuation. During the IPO bubble, bankers initially looked for net income to use as the basis for valuation. As more and more companies without any positive net income began to go public, the bankers began to look towards revenue, then revenue growth for the valuation metric, and soon profitability didn’t matter anymore. These metrics then passed to things like ‘clicks’ and ‘eyeballs’ for valuation metrics to support the so called ‘vapor’ valuations of internet stocks. What mattered the most were the growth potential and the quality of money behind the company (backing by venture capitalists is known as smart money). The demand for IPOs and high returns intensified until the bubble burst in March 2000. A banker we interviewed suggested that during the bubble, bankers were doing their job by not market pricing the stocks, but sticking more towards fundamental value, since they needed to provide quality offerings to the market.

Today, the rules of the game are similar to those at the beginning of the 1990’s. Companies that are going public need to show four quarters of positive net income, or positive net income excluding non-cash charges and growth. As a rule of thumb, a 25% proven annual growth in profit is expected.
Regarding the trading multiples, all the bankers we interviewed use Ebitda and earnings. Some use a derivative of these multiples such as Ebitda less capex, and cash net income. One banker mentioned using book value multiples, but another pointed out that he believed that book value is not relevant in valuation.

Companies that recently went public with similar businesses provide the best comparables. Company specific strengths and weaknesses should be compared with those of the public comparable companies. It is nice to have about 6 to 7 comparable companies to get a good valuation. Predictability of cash flows should be comparable among companies as well as productivity measures such as sales growth, margins and return on invested capital. Market factors such as fragmentation, opportunity for consolidation, and number and size of players should be taken into account when selecting the companies to be used in the comparables valuation.

Regarding the DCF method of valuing the company, according to one banker, investors will look to the DCF model as part of financial due diligence and fundamental analysis. Another banker pointed out that for the valuation of telecommunication companies (which do not typically have a history of positive earnings) the bank uses a DCF model. For a more traditional company with earnings, a DCF is not needed. For these traditional companies they simply use an earnings based multiples model. This may sound counter intuitive in that when the company has predictable earnings the DCF model is easier to build and will be fairly accurate. However, if the earnings are predictable, the bankers point out that you don’t need to work through the entire DCF, you can focus on the
drivers to earnings and use earnings multiples to predict price. For the companies without earnings, building the DCF model necessitates understanding all of the operational drivers of the business and forces consensus as to growth rates and profitability. The value of the DCF is in the process of building the model.

One banker explained the bank’s valuation process in detail. There are three groups involved in the process within the underwriting firm: the investment bankers, the research group, and the equity capital markets (ECM) group. The research group and the investment bankers generate independent valuation models. The research team always uses a DCF, and then checks multiples to support the DCF. Investment bankers tend to use a DCF and trading multiples of comparable companies such as P/E. Since the ECM group is in tune with the market, they typically start with the investment banker model and adjust it to reflect specific industry and company risks.

One underwriter relied upon a value based analysis such as Economic Value Added (EVA®) to complement the valuation. EVA® provides insight into cash economics through return on invested capital. It also enables value driver assumptions to be translated into stock prices.

\[ \text{EVA}^\circledast = \text{Net Operating Profit after taxes (NOPAT)} - (\text{Capital} \times \text{Cost of capital}) \]

As an example, one banker said they will create a DCF model projecting forward three to five years depending on the availability of data and the confidence in projections. They

\[ ^{61} \text{Stern & Stewart Co.; available from http://www.sternstewart.com/evaabout/whatis.php; Internet; accessed 29 March 2004.} \]
typically use a nominal inflation rate or an exit multiple taken from comparables to project into perpetuity and discount the cashflows at the WACC. The 10 year T-bond rate is used as the risk free rate in the calculation of the WACC.

However, the emphasis is placed on multiples of comparable companies. Using a P/E multiple is a must when there is a history of positive earnings. The price-to-earnings growth rate ratio (PEG) is often used to normalize for different growth rates. Price-to-Ebitda multiples have been used extensively in the past, but are being relied upon less and less. The financial sector relies upon price-to-book value ratios. Each investor tends to rely upon certain metrics which they weight according to their beliefs. Other ratios and the DCF are used more as a check on the valuation.
6. BANKERS’ VIEWS ON PRICING

While calculating the fundamental value is a rather scientific process, determining the initial price of the stock can be more of an art. DCF models and multiples provide a fundamental valuation of the company, that is, what financial theory says the future value of cash flows is worth today. The current value of the company, however, is what the investors are willing to pay. To price the offering, the investor requirements must be considered, and indications of their demand for the offering are obtained in the bookbuilding process. The information obtained in this process must be balanced with the goals of management and the underwriters, and the ultimate offering price reflects a balance between these demands and the desire to properly position the company during the IPO. This section summarizes the bankers’ view on pricing based on the interviews we had with them.

6.1 Investors’ requirements

Essentially, the bankers interviewed all talked about the large institutional investors driving the demand, and hence setting the ultimate price of the IPO offering. Most (70% to 90%) of the shares allocated are directed to the institutional investors because they will provide long term stability and continued demand for the shares. The institutions each conduct their own valuation based on their research and information they obtain from the road show. For many companies, the roadshow is an opportunity to show off management; are they experienced, do they have a significant track record of achieving results, and can they express a clear vision as to where they are going and how they plan to grow the company profitably? The management must be able to inspire confidence in
the company on the part of the large institutional investors. The roadshow is where the demand for the offering gets built, hopefully, even to the point of hype (as one banker said, “this is where we try to create hype and sizzle”).

Although the underwriters are hoping to stimulate demand, fundamentally, their job is to be transparent with the company so that the investors fully understand the investment thesis. This transparency is a frequent theme which arose with most of the bankers interviewed. This could be the result of backlash from recent litigation, but based on the discussions we had, we felt that the processes were in place to fully ensure this transparency. In fact, one of our early hypotheses was that bankers and management would try to be conservative when pricing IPOs, especially during hot markets, because of fear of future investor lawsuits. However, none of the bankers interviewed expressed any concern over future litigation. They seem to believe and trust that if they do their job well and make the company transparent to the investors, then lawsuits are not a significant concern. The general feeling was that by conducting an efficient due diligence process and identifying all the risks in the prospectus, the risk of investor lawsuits was minimal.

We asked this question to a lawyer who has worked IPOs for many years. He indicated that when a lawsuit is filed, it usually includes the company and the underwriters as defendants. However, if the suit is due to a significant falloff in stock price (such as when the dot com bubble burst), the company may not have any ability to pay. The underwriters are fairly secure as long as they conducted adequate due diligence, and
made sure that all issues found were included in the prospectus. In addition, company
officers usually have insurance, and he said that in his experience, most suits are settled
for less than the amount of the insurance coverage. Nevertheless, according to Brealey
and Myers, underwriters face the danger of lawsuits since they may be blamed for over
hyping the issue. For example, in December 1999 the software company Va Linux went
public at $30 a share and next-day trading opened at $299 a share, but then the stock
price began to drop to under $2 in less than one year. Va linux investors sued the
underwriters, complaining that the prospectus was “materially false”. After the collapse
of the “new economy” stocks in 2000, investors in almost one in three recent high-tech
IPOs sued the underwriters! 62

6.2 Building the order book

The roadshow and bookbuilding process is key to a successful IPO. This process is
where the potential institutional investors get to talk to management and try to fully
understand they company. They use the information obtained during and after the
meeting to update their valuation models, and to ultimately determine how much stock
they would like to purchase and at what price. This process is where the ultimate pricing
of the offering gets determined. The book consists of indications of demand – investor x
would be willing to purchase 100,000 shares of stock at a price of $13, for example. This
investor may also indicate a demand of 50,000 shares if the stock is priced at $14. By
assembling the book of potential orders, the bankers can try to determine the sensitivity
of demand to price.

62 Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance (New York,
The final pricing decision will be based on many factors such as; who the investors will be, are they expected to hold the stock long term or will they tend to flip it quickly, what’s the total demand, how soon before the company will need to go back to the equity market to raise more capital, what is the initial return expected (required?) by the institutional investors, and what are the implications of a poor stock price trend after offering. What the underwriter would ultimately like to be able to do is to present the management with several scenarios, identifying the investor base (and their associated characteristics) at various offer prices. They can then discuss the relative merits of specific investors – long term vs. flippers and desire for additional stock, for example. The total amount of demand is revealing. If the book is only two times oversubscribed, the IPO is considered to be very shaky and there is a good probability that the price won’t hold after going public. If, however, the book is 10 to 15 times oversubscribed, the demand is solid enough to discuss increasing the offer price relative to the prospectus, or at least pricing at the high end of the range.

One of the key concerns about increasing the price above the range stated in the prospectus is the lack of information on the demand sensitivity to price. All of the information obtained in the bookbuilding process applies to a small price range that was listed in the prospectus. Extrapolating this sensitivity to higher prices can be a very risky task. Demand can fall off precipitously as the price is increased. This high level of risk to increasing price, combined with the fact that for most companies going through the IPO process, a positive stock market reaction is highly desirable, must be weighed against the potential loss of proceeds to the company due to underpricing. Determining
the demand sensitivity to price can at some point be viewed as game theory. In addition, overpricing can be costly to the underwriters both in terms of supporting the stock in the aftermarket and in reputation (which affects future business).

During the week of February 7, 2004 ten companies went public, the highest volume since July 2000. TRW Automotive offered 24M shares at $28 per share (the bottom of the marketed range). The Friday before the offering, Goldman Sach’s auto analyst downgraded the entire sector. TRW broke offering price from the start and closed the day at $26.05, down 7%. The same week, GTx (biotech) went public at $14.50, toward the high end of the range. GTx plunged to close at $12.89 (11% bellow offer price). “Nobody likes odd hat sizes”, said one buy side source. “It can be an indication that they’re splitting the difference between the book and their client’s demands”. These two examples demonstrate just how delicate this pricing process can be.63

The institutional investors know that they won’t get all the stock they ask for (and if they did, they would probably be worried about the winners curse). Therefore, if they want 100,000 shares at a certain price, they will have to request more. The amount they end up requesting will depend on what they perceive the ultimate value and demand of the stock to be. If the bookbuilding process is successful in generating a lot of excitement and hype, and the investor believes that the offering is going to be significantly over subscribed, they may have to bid for 200,000 shares in an effort to get close to the 100,000 they are really after.

The bankers’ goal is to only provide the investors with about 80% of the shares that are really desired. In this manner, they hope that the investors will try to buy the other 20% when the stock starts trading, thus creating an aftermarket for the stock. The aftermarket can be a significant problem. For a typical IPO that issues 30% of the stock initially, any trades in the open market can significantly affect the price. IPOs are not very liquid so if there is an increase in demand in the aftermarket, the price of the stock can increase significantly. Likewise, if there is lack of demand in the aftermarket, the price can fall quickly. One of the reasons that 20% of the stock is allocated to the individual investor (retail), is because of the retail investors’ tendencies to turn the stock fairly quickly, creating shares available for trading in the aftermarket.

We keep talking about long term investor demand, and we are viewing the institutions as the investors. It is important to keep in mind though, that the institutional investors such as the large mutual fund companies are trying to satisfy the demands of their customers. In a simplistic fashion, this will help clarify some of what occurred during the internet IPO bubble. The markets were increasing at an extraordinary pace. Mutual funds that had once produced 15% return per year (and had been viewed as great funds), now needed to produce significantly higher returns. And if they did, the money kept coming into the funds. It kept getting harder and harder for the large successful funds to find new investments that would provide the returns demanded by the consumers. When these mutual funds were sitting on lots of cash, they had a very high demand for IPOs that would provide significant returns – quickly. Thus, they began to require higher and
higher levels of initial performance (underpricing) to satisfy the expectations of their customers.

There is also a belief that the individual (retail) investors tend to drive up the stock’s price significantly. Some individuals believe that investing in IPOs is like getting free money. They want to jump in as quickly as possible without regard for the fundamentals. To help alleviate this problem, the National Association of Securities Dealers (NASD) has proposed eliminating market orders for shares in an IPO company for one trading day after the offering. This would restrict many individuals from buying into the stock for at least one day unless they use a limit order which caps the price at which the stock can be bought. This proposal is intended to limit the frothy first day gains many IPOs experienced during the high tech bubble in the late 1990s.  

In the time period post bubble bursting, the required returns on the mutual funds were down significantly as was the new cash available for the funds to invest. In this time period, the estimated underpricing required by investors is also fairly high. Demand isn’t there, so the potential opportunity must be increased to entice them to invest. This situation is similar to countries needing to increase their interest rate to attract foreign investment. The investors are balancing risk and reward. The alternative to investing in the IPO is to invest in companies which are already public. All things being equal (and this is the issue with using comparable company analysis), it is less risky to invest in a company which is already public. They have a track record, they have audited financials,

---

they have liquidity in the stock, and they have undergone public and creditor scrutiny. No matter how much information is provided by the bankers and management during a roadshow, there are still a significant number of unknowns. These unknowns all represent risk, risk that needs to be compensated for.

The typical level of underpricing is 16%, however, there can be significant deviations from this average (see Figure 6.1). This level of underpricing is a function of the type of company, and hence type of risks, which are present. In addition, it can be representative of who the company has chosen as the lead underwriter. In the time period between January 2002 through February 2004, 155 IPOs were looked at to determine the level of underpricing, and who the lead underwriter was. Figure 6.2 shows the average initial price increase for each of the major underwriters during this time period. One of the underwriters that we spoke to said they actually used a similar chart with company management when they were trying to be selected for the offering. In general, the company management was not that interested in the data, and in some cases, the underwriter felt that being on the low side of the curve even hurt them.

<table>
<thead>
<tr>
<th>Time period</th>
<th>Number of IPOs</th>
<th>Percentage Tech Stocks</th>
<th>Average First-day Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-1989</td>
<td>1982</td>
<td>26%</td>
<td>7.4%</td>
</tr>
<tr>
<td>1990-1994</td>
<td>1632</td>
<td>23%</td>
<td>11.2%</td>
</tr>
<tr>
<td>1995-1998</td>
<td>1752</td>
<td>37%</td>
<td>18.1%</td>
</tr>
<tr>
<td>1999-2000</td>
<td>803</td>
<td>72%</td>
<td>65.0%</td>
</tr>
<tr>
<td>2001</td>
<td>80</td>
<td>29%</td>
<td>14.0%</td>
</tr>
<tr>
<td>1980-2001</td>
<td>6249</td>
<td>34.5%</td>
<td>18.8%</td>
</tr>
</tbody>
</table>


Figure 6.1
Average Initial Stock Price Increase – Day 1
Jan 2002 - Present

Figure 6.2, Average Initial Price Increase by Underwriter

In a period of flat demand, or with companies which represent high risk, the required discount is high. During the hot markets, the discount levels tend to drop, unless the market gets superheated as described above with mutual fund flows, then discounting goes even higher. Figure 6.3 show that the number of IPOs follows the level of underpricing. If stocks show a large initial pop, the number of IPOs tends to increase. Conversely, if the initial pop decreases, the number of IPOs falls off. This relationship can clearly be seen looking at the data in the April 2003 timeframe. Prior to this time, there was very low level of activity in the IPO market and the average underpricing was 6.8%. In May of 2003, a couple of companies went public and the initial increase was 16%, and a couple months later, the level was 25%. During this timeframe, there were
probably a lot of companies which wanted to go public but felt that the market timing wasn’t right. When they saw the initial price increases rising, more and more companies quickly went public, increasing to a high of 23 in December of 2003.

![IPOs, Number and Underpricing](image)

**Figure 6.3, Number of IPOs vs Level of Underpricing**

It’s hard for us to disagree with the need for some level of ‘underpricing’ as a reward for the initial investors taking on the additional risk of acquiring shares of a company in an IPO. The question then becomes what level is acceptable?

Pricing an IPO is part science and part art. The science aspect is the fundamental valuation using discounted cash flows, comparables, multiples and conducting some level
of due diligence on the company. The art aspect is knowledge about the different investors – do they tend to flip the stock, are they very sensitive to price changes, how much stock do they really want, will they try to pick up more on the open market, etc. Knowing the institutional investors can be a great asset to a banker pricing a deal just as it is in an acquisition transaction. In an acquisition, the banker needs to know which companies price high initially to gain exclusivity and then intend to walk the price down during due diligence, and which companies try to enter realistic bids from the start. As one banker put it, ‘at this point it becomes pure game theory’.

In addition, understanding what is going on in the market and how it will affect the specific IPO is also an art. The IPO market tends to heat up after the stock market has demonstrated an increase. High P/E ratios will tend to drive the IPO market as will other valuation aspects. Many companies that want to go public will wait until the market shows evidence of heating up. If the company is financially able, they will wait until market valuations increase and the institutional demand for IPOs increases before they go public. From the company’s perspective this makes good sense – you want to sell stock when the market is high, not low. From an investor perspective, they know that the company is going public at a time when they feel they can get the most for their equity. This is another good reason as to why some level of underpricing is targeted.

6.3 Underwriter goals

When the bankers were asked what their goals were during the IPO process, they were fairly consistent in talking about building relationships, positioning the company properly,
achieving a stable investor base, and having the stock provide an initial pop with stability afterwards. Most of the bankers felt that maximizing proceeds, although significant, was not a primary concern of the management at many companies. This statement is consistent with academic studies, ‘Clearly from most issuers’ points of view, excessive underpricing is not optimal since proceeds ‘left on the table’ are a cost and not available for the issuer to use. However, some positive amount of underpricing appears to have positive benefits’.”\(^{65}\)

Fostering good relationships was the goal discussed the most. These relationships are between company management and both the underwriters and banks, as well as with the institutional investors. Many of the companies going public will eventually need further capital, which they will obtain either from issuing additional equity or issuing debt. Investment banks make more money from these follow-on transactions than they do in the initial public offering. In fact, several underwriters said that the typical 7% fee charged for the IPO process is often at the breakeven point for them due to the extensive amount of work required on the part of the bank. They have to conduct due diligence, create the documents, work the roadshow and bookbuilding process, and be prepared to support the stock in the aftermarket. A seasoned offering typically costs less than the initial offering (5% of proceeds), but there is much less work for the bank to do; the documents are essentially written, and the roadshow, if there is one, is abbreviated.

---

A more significant company/investment bank relationship is for future merger and acquisition activity. Merger and acquisition transactions are typically very profitable for the bank. By fostering a relationship with management during the IPO, bankers can act as financial advisors and sometimes provide funding for future M&A activity. These M&A transactions can be very lucrative. One bank which did not have a sizable IPO business conducted a study which showed a high relationship between the banks which underwrote IPOs being selected by the companies for their future M&A transactions. This correlation was strong enough that the bank began to emphasize and grow their IPO business.

The relationship with the institutional investors is perhaps more important than that of the investment bank to the issuing company. After a typical initial public offering, the stock is very volatile because of the relatively small number of shares outstanding and small number of significant holders. If one of the institutions decides to sell the stock, the mere process of selling the stock can apply significant downward pressure on the stock price. Conversely, if an institution demands more stock, it could result in a price increase. Some of these institutions are so large and so significant that they alone can effectively price an offering, and afterwards, affect the price performance.

It should be noted that although the relationship between the issuing company and the sell side research analysts in the bank appear to be so important, we did not talk to anyone working in the sell side at the banks. None of the bankers in the equity capital markets or investment banking had much to say relative to the sell side relationship other than brief
comments on the extensive amount of rules limiting the communication and contact between the two sides. This could be a possible future area of discussion.

6.4 Positioning properly

Properly positioning the company is the 2nd most important objective of the bankers, after building the relationships. Positioning encompasses several factors, some tangible, some not. For example, if the company has some clear competitors that are already public, the underwriters want the IPO to result in a valuation which makes sense relative to the other public competitors. If the value is much lower, there may simply be a perceived problem with the company due to poor communication, but others will look at the stock warily and most likely invest in the competition. This poor first impression can result in a depressed stock price for a long time until operating results consistently prove otherwise. Likewise, if the stock’s valuation is very high relative to its peers, mid to long term stock price performance will tend to suffer (unless business fundamentals exceed those of the public competition), again resulting in negative sentiment sometime in the future.

If the IPO experiences an initial drop in price, this poor performance can leave a bad first impression among the investor community. These negative sentiments can make it difficult for seasoned or secondary offerings until the company’s performance justifies a higher stock price and more optimism. In addition, poor initial performance can result in a stock price slide. As the larger institutional holders decide to sell, the price will drop even further due to the high volatility associated with just having a small amount of shares outstanding. There is also the cost of communications and marketing which are
incurred when a poor impression is made. The company management will end up spending considerable time with the investor community explaining the operations and future potential of the company. With newly public companies, management usually needs to focus on achieving the business plan, and spending too much time with investors can be a diversion. Communications people and management will spend time and money trying to improve the reputation of the firm.

Positioning can also be very important if the company undergoing the IPO is the first of its peer group to go public. Being first makes the valuation and pricing process much more difficult because of the lack of good comparables, but it can also provide first mover advantage to the company. An IPO with a good initial pop can generate a load of positive publicity for the company, publicity that they could not have afforded otherwise. Consider New York-based TheStreet.com, which went public May 12, 1999, on which day its stock opened at $19 and soared to $60 at close. A search of the Dow Jones Interactive database of 6,000 newswires, newspapers, magazines and trade journals reveals that for the previous six months, TheStreet.com was mentioned an average of 39 times a week. For the seven-day period beginning May 11, it was mentioned 228 times. A similar situation occurred with theglobe.com. It went public on November 13, 1998, and closed up 606 percent. Six months before, from June 12-19, 1998, it had received exactly two spots in the Dow Jones Interactive database. The week of its offering, that number mushroomed to 371 mentions. This level of publicity can help the first companies that go public to become the benchmark in their particular industry, making
follow-on IPO’s much more difficult, and signaling to competitors that you are a successful, formidable competitor that will be difficult to beat.

6.5 Stable investor base

As part of the bookbuilding/pricing process discussed earlier, the underwriters put together their estimates of who they believe the investors will be depending on the price of the offering. Together, the bankers and management review these lists so that management can determine what types of investors they prefer the stock to be held by initially. This is mostly guess work on their part because they don’t really know how long a particular investor will hold the stock, but it can influence the pricing decision. The company would often prefer to have an investor base that was viewed as stable, and preferably one where the investors would like to purchase even more stock than they are allocated. This would create the initial pop, and longer term momentum that the company can build upon and capitalize on with further offerings.

As our discussions with bankers progressed, we began to wonder whether company management would provide views consistent with those of the underwriters, so we began to assemble a database of fairly local companies which went public within the last ten years. After compiling the list, we reviewed the executive biographies to determine who was at the company in a position where they would have been involved in the IPO process. Then, we began calling people to try to arrange interviews.
7. COMPANY MANAGEMENT INTERVIEWS

We conducted six interviews of management that went through the IPO process. The companies represented were from the following sectors: one from financial, two from technology, two from services, and one from health care. We talked to four CFOs, one Vice President and one President. Timing of the IPOs ranged from the mid 1990s to late 2003.

We became eager to talk to some management of companies that went public to find out directly why they went public, and what was important to them at the time. We developed a list of nine questions (see Appendix 9.2), which we followed fairly closely. With both of us working in the corporate world, we recognized the constraints on management’s time and tried to keep the conversations as simple as possible. Four of the discussions were on the telephone; two were face to face interviews. Following is a summary of the results from those conversations. When we talked to the underwriters, the topic was fairly new to us so that even though we had a rough script (Appendix 9.3) the conversations tended to drift, especially when we heard new and interesting comments. We would get off track pursuing comments of interest.

7.1 Why did the company go public?

Of the six companies we talked to, one went public to provide shareholders liquidity, three required capital for expansion, and two wanted to restructure their debt financing. The secondary reasons included nurturing the investor base, compensation for
management, providing capital for a lower cost, ‘cleaning up’ the balance sheet, customer recognition, and the ability to attract and retain good people.

One company went public to provide their shareholders a chance to realize some value. A lot of management in this firm shared in the equity and until the company went public, they couldn’t realize the value of their investment. Going public provided management with a liquid investment so they could cash out if desired. This company was profitable and had no need for additional capital, but many of the internal management came from small acquisitions. These managers held stock as partial payment during their buyout and with the parent company going public; they were eventually able to realize the proceeds from their buyout.

A few of the companies cited access to capital, and the desire to clean up the capital structure as the primary reasons for going public. In a way, this is similar to the last company in that there were multiple venture capital investments and the structure was starting to get complicated (and costly), and the IPO resulted in the ability for the venture capitalists to cash out. Therefore, realizing value for the shareholders and providing liquidity are consistent reasons.

One company had a long history of profitability, but felt that they needed the equity to use as currency for acquisitions. This company was acquiring key technologies as a method of growing and, to be able to provide more products to their customers. Their public competition was able to use equity as acquisition currency while this company
would need to issue debt, thereby putting themselves at a disadvantage. They had begun to lose out on certain acquisitions to competitors that had easier access to capital so they decided to go public. They also felt that the equity would be useful in attracting top talent to the company, and that there is a certain recognition the company receives when they are public. This recognition applies comes from potential employees, investors and even customers and tends to make the public company a little more credible as an entity than the private company.

The benefits of value and liquidity also apply to management. The management of startups have usually worked hard, especially in the mid 1990’s when the company needed to show at least six quarters of continuous profitability to go public. Management held a significant number of stock options; it was a method of attracting and retaining good employees when the cash flow was all required to grow the business. Personal gain was a secondary, but important factor in the decision to go public. Many individuals went to work for small companies in anticipation of them going public and being able to realize significant personal wealth.

7.2 Why did the company go public when they did?

The market was always the driver as to when the company went public. In the mid 1990s, the market was heating up so as soon as one company had a significant enough history of profitability, they went public. Another company which was not high tech, was also looking to go public in the mid 1990s, however, there was no investor demand until early 1999. In another case in 2003, capital wasn’t needed, but the market was open enough to
provide the desired liquidity, and the business was growing fast enough so that positive performance could be sustained. It also seemed like a good time to begin to build long term relationships with the investment community. One of the high tech companies which went public in 2003, went public as soon as the market allowed. They wanted access to capital and would have gone public sooner if they thought that the market would have supported them. Another ‘jumped’ to go public when valuations for public companies in their sector went ‘sky high’. The last company decided to go public because they thought the company valuation would be higher than if they stayed private.

All of these reasons support the observation that as the market heats up, more companies go public. Those that need capital will issue as soon as they can, and the others are opportunistic – the market is accepting, so let’s take advantage of it. As one CFO put it, “When the ducks quack, feed them!”

7.3 How did you choose the investment bankers?

Investment bankers are chosen primarily for three reasons; their reputation as a top tier bank, their reputation within the specific industry, and the reputation of their sell side research analysts.

The top tier bank helps give the IPO credibility and most importantly, gives management confidence in being able to attract the stable institutional investors. Just having the name of one of the large respected underwriters associated with your offering helps with sending the message to the industry that you have a quality offering. Moreover, each
investment bank can bring a somewhat different set of institutional investors that they have good relations with. The larger banks also inspire confidence among company management that they know how to get a deal done.

The industry specific bank helped bring unique valuation knowledge as well as industry specific investors. They provided a signal that the offering was serious and significant within that particular industry segment, and brought the respect necessary to attract industry knowledgeable investors.

The reputation of the sell side analysts was very important even though the Chinese Wall existed and they were operating independently from the underwriters. Management typically wanted to broaden the sell side coverage as much as possible and believed that the more banks were involved in the IPO, the more coverage would be obtained. The quality and respect of these analysts also gave management a comfortable feeling that the bankers and underwriters also had a deep understanding of the business.

On the flip side, the quickest way to eliminate a bank from the beauty pageant was if they brought one of your significant competitor’s public. Two of the companies dropped a bank in the middle of the process because of the underwriter’s involvement with significant competitors. While knowledge of the industry is a major asset, no one wanted to be in a position where the same underwriter had done due diligence on themselves and a key competitor. This makes sense as it could put the underwriter into situations of potential conflict which are best avoided by all parties.
Personality clashes are another way of eliminating underwriters quickly. Certain people just relate to each other better than other people. During the beauty pageant, management gets to know the underwriters and investment bankers. Being comfortable with the underwriters is more important than liking the investment bankers, however, if anyone on the underwriting team comes across as too arrogant, it’s likely that they will be dropped. Conversely, some managers struck an immediate rapport with their counterparts, and these relationships helped throughout the process. In fact, at one company when the company conducted a seasoned offering, they selected the underwriter based on the relationship they had with a certain banker, who was at a different bank than during the initial offering.

Three of the companies selected underwriters partially based on the objective of building long term relationships. One company knew they were going to be active in acquisitions so they were looking for investment bankers that fit well with their internal culture. They even made a subjective assessment of how well the bankers meshed with company culture. Another knew they would need additional financing and possible future acquisitions. If, however, the company did not anticipate the need for investment bankers in future acquisitions, they tended to not care at all about building relationships with the bankers.

We want to note that there is a disconnect between management and bankers in regard to the fees charged for underwriting. The typical underwriting fee is 6-7%. A couple of the company CFOs believed that the underwriters really don’t make much money on the IPO
with this fee. The fee is not significant relative to the amount of effort the banks put into the process. This thought is consistent with statements from the underwriters that IPOs are in general a breakeven proposition. They make their money on seasoned offerings, merger and acquisition transactions, and other banking related activities.

However, a couple of the companies thought the banks’ fees were very high compared to the amount of work that was done. Management felt that they had to do most of the work, and the bankers were just there to guide them. One CFO felt that the bankers only put together slides, and it was the inhouse managers and lawyers that did all the work. This appears to be a case where the banks need to either do more to help the company, or communicate more so that management understands the value they are adding.

7.4 How was the company value initially determined?
Multiples based on comparable public companies are the most prevalent method of determining the value of the company pre-IPO. The multiples are always adjusted based on growth rates, profitability differences, or other driving factors in the industry. If the company has any significant history of positive earnings, then earnings multiples are predominantly used. The financial company relied almost exclusively upon earnings multiples since it had a good track record. One high tech company with a positive earnings history used earnings, sales, and cash flow, all adjusted for growth rate differences with the comparables. The other technology company, also with a track record of positive earnings, used DCF and comparables such as price-to-sales to adjust for cyclicality. In the health care company where there are no current earnings, they
project out three to four years and estimate earnings, and use those projected earnings in the multiples. In the case of the service companies, both with a long track record, they used DCF and multiples of earnings, cash flow and Ebitda.

When there haven’t been any recent company IPOs to provide good comparables, they have to rely on comparing the IPO to companies which have been public for several years, and trying to apply discounts to those multiples so that they reflect the perceived higher risk associated with the IPO. In all of the companies except one, the initial values generated by the banks were fairly similar to the company’s internal valuation. The one exception was the high tech company which went public in the mid 1990s. The market was in the process of heating up, and the bankers all came in with valuations which were somewhat higher than the internal valuations.

7.5 Did the pricing change based upon the bookbuilding process?

There is no doubt in people’s mind as to who sets the price – it’s the large institutional investors. Since approximately 80% of the stock is allocated to the large investors, their input is naturally the most significant in determining price. It’s the job of the underwriters to guess, based on how over subscribed the book is, what the demand sensitivity to price is. They need to factor in effects such as the herd mentality, and various signaling which may be taking place, to determine what the real overall demand is, and then determine the pricing and allocation of shares.
Most of the companies priced somewhere within the initial range. They all recognized (or believed) that pricing too high was not a good idea, and that the demand, especially above the range, was unknown and could unravel rather quickly. The multiples of oversubscription ranged from a low of 2.5x (in a cold market) to over 10x in the hot market. Pricing for those that were 2.5 to 5x oversubscribed was in the middle of the range. For those about 10x oversubscribed, pricing was at the high end of the upwardly revised range.

Management is responsible for setting the final price, but most often, they relied upon the levels suggested by the bankers. One said that the bookbuilding process was kept rather close to the vest of the underwriters, others said that communication was open throughout the process. Either way, it all seemed to come together at the last minute. Using the data from the book to set the price usually meant deciding to price in the middle of the range or at the high end. No one exceeded the range specified. Fundamentally, “you don’t really know what’s going to happen if you price above the range.” “It’s death to break the range – it’s very difficult to recover. It can become a blight on the name and reputation of the company.” This same reasoning also applies to the underwriters’ reputation.

7.6   Was the offering priced with an anticipated initial pop?

We received a mixed set of answers to this question. One company stated that yes, they deliberately underpriced the stock so that they could get the, “feel good pop.” This manager fundamentally believed that some level of underpricing is warranted because of
the higher risk associated with the IPO, and that an initial pop would create a good first impression among the investor base, which would be helpful in the long run. Conversely, they felt that a bad first impression would also stick with them for a long time.

Two of the other companies expected some level of underpricing but said that it was not explicitly priced into the offering. Everyone wants happy investors who help to create a good healthy secondary market. Giving up 15% in the initial offering is not an issue. One manager expected that it would happen, and although they accepted it, they seemed somewhat cynical about it. They felt that this process was, “a game, the banks are taking care of their real customers, the institutions.”

Another believed that they did try to factor in a small level of underpricing. They wanted to make sure that the investors had a positive experience, but did not want things to go crazy. Again, they wanted to enjoy a good reputation in the eyes of the investors and promote a high level of confidence. Management’s goal has always been to ‘under promise and over deliver’. Credibility takes a long time to build but it can be lost quickly, and if so, it can be very hard to restore.

One CFO we talked to said there was to be no explicit underpricing. The company wanted to maximize its proceeds from the offering. In fact, they were happy to try to squeeze as much out of the banks as possible since they saw no value in a long term relationship with the underwriters or the investment bankers. This management did not want to price unreasonably high, but they did not intend to leave much ‘money on the
table'. This company went public in the mid 1990s in a hot market, but the stock was priced without any initial increase. Management achieved their goals. No money was 'left on the table'. The stock stayed steady (with a little short term support from the underwriters), and then increased as the company’s earnings were released over the next several quarters.

Since none of the companies we talked to had an outrageous initial pop, (average 10%), we posed a hypothetical question to the management. "Would an initial pop of 50% or greater (which means leaving a lot of 'money on the table'), have been an issue with them?" At first, nobody said that this level of underpricing would have really bothered them. The initial offering is relatively small 30% on average. If the stock increased dramatically and held, then they would be able to follow the IPO with a seasoned offer for several times the amount initially offered, shortly thereafter. A sustained increase in the stock was always viewed as a good thing.

As one CFO thought a little more, he said that a 50% level of underpricing would not have been right under their situation. They had a significant operating history and the valuation shouldn’t have been that difficult to cause such a large miss. He then said that the entire process isn’t a true free market. The larger institutional investors have the power and set the price, but then again, in the best situation everyone wins.

One company said that if the stock traded up that much, all the investors would be happy and there would be a good secondary market for trading in the company’s stock.
Therefore, he wouldn’t be upset with 50% underpricing. Another shared this sentiment in that he said he would be somewhat ‘annoyed’ that they missed the valuation by that much (it means that the underwriters didn’t understand the company or the market that well), but at the same time he would have been delighted that the stock was performing so well. The last response we received was an expectation that they would have been a little disappointed, but he was confident that they had done the best job possible and that ultimately you can’t predict what will happen.

<table>
<thead>
<tr>
<th></th>
<th>Initial Pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company 1</td>
<td>38%</td>
</tr>
<tr>
<td>Company 2</td>
<td>14%</td>
</tr>
<tr>
<td>Company 3</td>
<td>11%</td>
</tr>
<tr>
<td>Company 4</td>
<td>0%</td>
</tr>
<tr>
<td>Company 5</td>
<td>0%</td>
</tr>
<tr>
<td>Company 6</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>10%</strong></td>
</tr>
</tbody>
</table>

Figure 7.1

7.6 **What are the determinants of a successful IPO?**

Success was rather easily and consistently defined.

1. Did the deal get done (a.k.a. did the company get their money)?
2. Did the financing let the company achieve their goals?
3. Did you acquire the desired investor base?

4. Did the stock price hold or increase?

5. Did the company receive quality research coverage?

7.7 Do you view your IPO as successful?

"Sure, without a doubt. The process was well done and we achieved results."

"Yes, the price held, then blew out! We had a good secondary market and good research coverage."

"Yes, we were the first IPO that broke space."

"Extremely successful! All the goals were achieved."

"Yes, the stock moved well and the investors got their liquidity."
8. CONCLUSIONS

We found significant value in our discussions with the bankers and company management, and the ability the interviews provided to compare points of view among them and with the current academic research in IPO pricing. There are many consistencies among the groups, but also some differences.

As you would expect, management and academics are extremely consistent as to the reasons of why companies go public, however, as discussed earlier the, primary motivation for going public differed from company to company based on their individual circumstances. Management mentioned one of the following reasons for going public at least once, but in aggregate, these reasons are all consistent with those stated in the academic research.

1) To raise capital for growth;
2) To obtain liquidity for management (without capping the upside) and existing shareholders (could be as an exit strategy for some existing owners);
3) To create a currency for future acquisitions;
4) As a method of attracting and retaining good employees;
5) To enhance the reputation of the company and provide more credibility with customers, suppliers, and third parties;
6) It can be the least expensive form of capital for a private company.

When interviewing the bankers, we didn’t directly ask them why they thought companies went public, but the subject was covered in several discussions. One banker’s comments
confirmed those of the academics and management. He described the IPO as a transformational event in the company’s evolution, providing a new level of credibility and prestige from being public. The company has a lot of new minority shareholders, it enters into a new regulatory environment, it provides the capital to fund the business, and it offers liquidity to existing shareholders. The company is able to offer a new employee compensation plan (stock related) to help attract and retain the best employees and the company stock provides a new acquisition currency. In general, the academics, bankers, and management all agree on the reasons why a company goes public.

Academic research talks about IPO market cycles and hot markets. The market was the driver for the IPO timing for all the companies we talked to. What we found to be significant was the importance of the specific sub-markets. For example, during the dot com craze, the market was considered very hot but during that time, one of the more conventional companies that we talked to had a very difficult time garnering enough interest by the investor community to go public. These same sub-market cycles existed for high technology, biotechnology and financial services companies.

The valuation and pricing of IPOs is a very interesting topic. While the fundamental methods of valuation are consistent between academics, bankers and management, the process of settling on a final offering price varies. It makes sense that the fundamental valuation calculations are the same since they are the concepts taught in all the finance courses and are the methods employed in a variety of settings such as mergers and acquisitions.
Relative to the fundamental valuation, academics, management and bankers all agree that the most common method for valuing a company going public is the use of comparable company multiples. Although multiples are the most frequently relied upon valuation method, in most cases a DCF model which incorporates an analysis of the company’s historical and projected performance is also reviewed.

Comparables multiples have the benefit of incorporating recent market perceptions into the valuation. Most of the management we talked to mentioned that they used earnings, sales, and cash flow multiples to determine the companies’ value. The specific multiples used depended on the particular industry they were in, but the preference was to use multiples of earnings. Bankers pointed out that currently the most common multiples are earnings, cash net income, Ebitda, Ebitda minus capex, and book value. During the IPO bubble they also looked at revenue multiples. Broude (1997)\textsuperscript{66} points out that most companies are valued applying earnings, sales or similar multiples.

The pricing aspect of the IPO process is where some differences exist, some subtle, some not so subtle. After conducting the literature review and reading the academic research, we had the impression that the fundamental analysis would determine the true value of the company, and then this value would be discounted by some percentage to determine the offering price. In actuality, the fundamental analysis, modified to account for company and market differences, forms the basis of the valuation used to set the initial price range in the prospectus. This preliminary valuation is then adjusted to factor in what

the underwriters assume the actual demand will be based on information obtained in the bookbuilding process. Unfortunately, this bookbuilding information inherently contains some levels of underpricing desired by the investors (all of whom have different risk tolerances and expected returns). Both investors and underwriters know that the book doesn’t represent true demand, and both sides are applying game theory concepts to the process. The underwriters and management then set the offer price to provide some target level of assumed underpricing that they are both comfortable with. It’s not until after the offering becomes public that some of the behavioral hypotheses can be used to try to explain the results.

Following is a summary of our opinions on the applicability of the various hypotheses posed by the academics based on our information and perceptions of the process.

A) Winners Curse – The only way to verify whether the winners curse is prevalent in the pricing process is to talk to the investors about how they determine the demand stock that they provide to the underwriters during the bookbuilding process. They can tell whether they explicitly factor this concept in or not, bankers and management cannot. We think that while this hypothesis may provide a rationale explanation for people’s behavior, we doubt it is explicitly considered when the demand is defined. There was no indication from either bankers or management that they considered it.

B) Market feedback – This is one situation where good statistical evidence exists to support the hypothesis. Based on our discussions, we offer an alternative which is also
consistent with the results. The indications of demand obtained in the bookbuilding process are just that – indications. They are not the true demand levels. When you combine this fact with the extremely negative consequences of overpricing, it is only natural to try to err on the conservative side when increasing the price.

C) Bandwagon – It was evident in all our conversations that one of the goals of the management and bankers undergoing the IPO process is to generate as much enthusiasm for the stock as possible and to create a bandwagon effect.

D) Banker monopsony power – There was a hint of skepticism by one company about the bankers possibly underpricing to foster their relationships with some of the institutional buyers, but otherwise the companies felt that the underwriters were open with them during the whole bookbuilding process and this was not a factor.

E) Lawsuit Avoidance – Lawsuits relative to pricing were not an issue at all with the underwriters. The process builds in a certain level of security for them, as long as they conduct thorough due diligence and include the risks in the prospectus. Although not explicitly asked of the managers, the subject of lawsuit avoidance never came up, so we doubt it is a significant pricing issue with the companies either.

F) Signaling – Signaling is similar to the bandwagon effect in that both underwriters and company management view them both as desirable and attainable. Again, signaling is not
explicitly considered as a reason to underprice, but it may be an implicit factor in accepting that underpricing will occur.

G) Ownership Dispersion - Most of the companies that we talked to were well overbooked so trying to increase the number of owners wasn’t a major consideration. This issue seems to be more of an allocation issue, which we did not address.

H) Hot Issues Market – The data in Figure 6.3 indicates that the levels of underpricing ‘required’ by the investors is indeed a function of the IPO market cycles. IPO volume follows the levels of underpricing. Although the long term average level of underpricing is 16%, the underpricing cycles with the IPO volume.

I) Advertising- Since going public is a very important event in a company’s life, it is clear that management is looking forward to a successful IPO. Therefore management is not willing to risk its reputation with negative media coverage by overpricing its IPO. Consequently some level of underpricing is accepted by the issuer.

One of the differences between feedback from the underwriters and the company management is over why the company chooses specific bankers. The bankers view the process as one of long term relationships. They believe that the companies will want to be able to use the bankers for follow-on offerings, M&A transactions, etc. This may be wishful thinking on their part since the other transactions are much more profitable for the banks than underwriting. The importance of this relationship is highly dependent on
the company’s future needs. Other than the company that anticipated significant future acquisitions where they would need some banking help, most of them did not care too much about the relationship with the bankers. The relationships they did seek were with the sell side analysts and with the institutional investors. They chose a premier bank to lend credibility to the offering, a specialized bank that better understood the industry, and others that had good research analysts.

Another disconnect was over the underwriting fees. Underwriters unanimously stated that the fee was just about at break-even for them, while a few of the company managers felt that the fees were excessive for the amount of work that was done.

It used to be the situation that when a company had venture capital funding behind it, the bankers and investors had a certain level of confidence in the company. However, after the bubble burst, it appears as though this so called ‘smart money’ doesn’t mean much now. It can actually be negative if they are financially oriented. If they are more strategic investors, it is still a positive sign.

In summary, all of the major banks that we talked to tried to factor in levels of underpricing when determining the final offering price of an IPO. The target levels were usually 10-15% depending on the market environment, investor demands and management desires. Both underwriters and companies accept underpricing as a cost of doing business (although one company made a conscious effort to minimize the underpricing). The positive benefits of having an initial pop and stable or increasing
stock price, combined with the huge downside associated with overpricing, make some level of underpricing acceptable, even desirable. The money raised in an IPO is just one factor in a long and somewhat complicated set of relationships. ‘Money left on the table’ in the IPO must be balanced with the long term goodwill, credibility with investors, and future offerings.

Having said this, we believe that depending on market conditions, it is possible to reduce the amount of underpricing. This is especially true when the offering is highly oversubscribed. This reduction may also be as simple as a careful selection of the lead underwriter based on their underpricing history or their apparent understanding of the investor’s behavior (based upon their experiences, reputation, etc.). But, until company management is willing to take more of a chance and push the valuation (and underwrites) harder, they will be susceptible to the levels of underpricing ‘demanded’ by the large institutional investors.
9. APPENDICES

9.1 Weighted Average Cost of Capital Calculation

The formula of WACC is the following:

\[ \text{WACC: } r_D(1-T_c)D/V + r_E(E/V) \]

Where:

\( r_D = \) Expected return of debt
\( r_E = \) Expected return of debt
\( T_c = \) Marginal rate of corporate tax
\( D = \) Market value of Debt
\( E = \) Market value of Equity
9.2 Management Discussions

1. What are the reasons you went public?

2. Why did you go public when you did?

3. What factors led you to choose the Investment Bankers?

4. How was the company value determined initially?
   a) DCF
   b) Multiples (which)

5. Did pricing change (up or down) based on the book?

6. Was the offering priced with an anticipated initial pop?

7. What's your view on underpricing?

8. What are the determinants of a successful IPO?

9. Do you view your IPO as successful?
9.3 Points for Banker Discussions

1. What are the primary reasons companies go public?
   a. Traditional – more for financing?
   b. High tech – management wealth, VC exit, capital?

2. Valuation Methods (DCF, comparable multiples, etc…) for high tech and traditional companies.
   a. Different methods emphasized for different industries?
   b. Types of sensitivity analyses?
   c. Historic accounting issues?
   d. Who determines final value?

3. Valuation to Price
   a. What drives the pricing decision? (academic hypotheses)
      i. Management desires?
      ii. Follow-on research reports?
      iii. The ‘Winners Curse’?
      iv. Inducement to prospective buyers to reveal price estimates?
      v. The “Bandwagon” effect?
      vi. Asymmetric information?
      vii. Lawsuit avoidance?
      viii. Signaling?
      ix. Ownership dispersion?
x. Owner apathy?

xi. Underwriter risk reduction?

xii. Long term value sustainability?

xiii. Seasoned offerings less expensive?

xiv. Other?

xv. 'Roadshow' process

b. What are bankers’ views on all the academic studies relating to underpricing?

c. What are managements’ goals for the IPO?

d. Is there a difference when the IPO has VC or Private Equity backing?
10. BIBLIOGRAPHY


89


an ipo primer. Frontline:dot con: what were they thinking?: an ipo primer|PBS. http://www.pbs.org/wgbh/pages/frontline/shows/dotcon/thinking/primer.html.


