THE MARKETING OF SEASONED EQUITY OFFERINGS

By

XIAOHUI GAO

A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

2008

To my dad, Dechen Gao, and my mom, Jiahui Shen

ACKNOWLEDGMENTS

I would like to sincerely thank Jay Ritter (my supervisory committee chair) for his guidance, encouragement, and help. I would also like to thank Jonathan H. Hamilton, Joel Houston, and Mahen Nimalendran, for their invaluable advice. I would like to thank seminar participants at the Helsinki School of Economics, Norwegian School of Management (BI), Singapore Management University, University of Florida, and University of Hong Kong for helpful comments. Finally, I greatly appreciate all the support that I received from my current and former colleagues, Tom Barkley, Alice Bonaime, and Jennifer Itzkowitz.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Abstract of Dissertation Presented to the Graduate School
of the University of Florida in Partial Fulfillment of the
Requirements for the Degree of Doctor of Philosophy

THE MARKETING OF SEASONED EQUITY OFFERINGS

By

Xiaohui Gao

August 2008

Chair: Jay R. Ritter
Major: Business Administration

Accelerated seasoned equity offerings (SEOs), which include bought deals and accelerated bookbuilt offers, have increased dramatically in the U.S. and globally recently. Accelerated offers are cheaper than traditional fully marketed offers in terms of direct issue costs. To explain why some issuing firms choose a fully marketed offer instead of an accelerated offer, we develop a model in which marketing flattens the issuer's demand curve. Empirical analysis shows that the pre-issue elasticity of the issuing firm's demand curve and the relative offer size are important determinants of the offer method. In our analysis, the elasticity of demand at the time of issuance is endogenous.

CHAPTER 1
INTRODUCTION

Seasoned equity offerings (SEOs), also known as follow-on offerings, can be categorized into three major types by their offer methods: fully marketed offers, accelerated offers, and rights offers.[1] The academic literature on the issue method for SEOs has focused on rights versus underwritten (bookbuilt) offers, although rights offers are virtually nonexistent in the U.S.[2] In contrast, there is no theoretical or empirical treatment of the choice between accelerated offers and traditional bookbuilt offers, also known as fully marketed offers.

Fully marketed SEOs are issued in much the same way as bookbuilt initial public offerings (IPOs). Firms wishing to raise cash issue primary shares and current shareholders wishing to sell existing shares issue secondary shares, and a prospectus is printed. The issuer negotiates with one or more investment banks to market the offer and then set the price. The lead underwriter or underwriters conduct a due diligence investigation and "certify" the quality of the company. As part of the marketing effort to develop interest in the offer, the bookrunner usually conducts a road show. In a typical road show, the issuer's management meets with selected institutional investors, analysts, and securities sales personnel over a two week period. At the same time, the bookrunner assesses investors' demand and builds an order book, which is used to help determine the offer price. A syndicate of underwriters, led by the bookrunner, then distributes the shares, although for some of the underwriters, their only involvement may be in providing subsequent research coverage, or even less.

---

[1] Throughout this paper, the following terms: fully marketed, fully underwritten, regular, firm commitment, bookbuilt, and conventional offers, are used interchangeably unless noted otherwise.

[2] Previous studies on rights offers versus bookbuilt offers include Smith (1977), Heinkel and Schwartz (1986), Eckbo and Masulis (1992), Bohen, Eckbo, and Michalsen (1997), and Eckbo and Oyvind (2004).

Accelerated offers include bought deals and accelerated bookbuilt offers. They are usually shelf registered offers.[3] These accelerated deals, especially accelerated bookbuilt offers, have become common during the last decade. Bortolotti, Megginson, and Smart (2007) provide an excellent review of the history and development of accelerated offers.[4] Bought deals started in the mid-1980s. With a bought deal, the issuing firm announces the amount of stock it wishes to sell and investment banks bid for these shares, usually by submitting bids shortly after the market's close. The bank that offers the highest net price wins the deal. The winning bank then re-sells the shares on the open market or to its investors, usually within 24 hours. Because of this timing, bought deals are also known as overnight deals. Bought deals are essentially auctions to underwriters followed by open market sales.

Accelerated bookbuilt offers emerged in the late 1990s.[5] During the last decade, accelerated offers have gained market share quickly both in the US and around the world. In 2004, more than a third of issues in the rest of the world were accelerated SEOs, according to Table 2 in Bortolotti, Megginson, and Smart (2007). Unlike bought deals, in accelerated bookbuilt offers, banks do not initially purchase the whole issue from the issuing company. They submit proposals, usually specifying a gross spread but not necessarily an offer price, for the right to underwrite the sale of the shares. The winning bank then usually forms a small underwriting syndicate and begins marketing the shares to institutional investors. The offer price is then negotiated between the issuing firm and the bank. The bookbuilding procedure is

[3] Some previous studies exclude shelf registered offers (Altinkilic and Hansen, 2003, 2006) and some pool shelf and non-shelf offers together (Corwin, 2003).

[4] Bortolotti, Megginson, and Smart's (2007) terminology of bought deals is slightly different from ours. They refer to bought deals in Canada as bought deals and bought deals in the US as block trades. We define US block trades as bought deals.

[5] Dealogic's ECM Analytics Database identifies the first accelerated bookbuilt offer in 1997, which is consistent with the first usage of the term 'accelerated book-building' in July 1997 (Warn (1997)).

"accelerated" in the sense that no road show is conducted and the underwriting procedure is typically completed within 48 hours.[6]

Before the late 1990s, the US equity market was dominated by fully marketed SEOs. In contrast, many Asian, European, and Australian SEOs used rights offers. In a rights offer, current shareholders are given short-term warrants to purchase newly issued shares on a pro rata basis at a discount relative to the current market price of the stock.

The major difference between a fully marketed offer and an accelerated offer, aside from the speed of completing the deal, is the extent of the underwriter's marketing of the issue. We develop a model of the role of marketing in seasoned equity offerings to explain the issuing firm's choice between a fully marketed offer and an accelerated offer. In the model, marketing flattens the demand curve of the issuer's stock. The underwriter's marketing effort, i.e. a road show, can change the issuing firm's stock demand elasticity.

To the best of our knowledge, this is the first time this marketing paradigm has been used in the finance literature. The bookbuilding literature has focused on the acquisition of information by underwriters about the state of the demand, e.g., Benveniste and Spindt (1989). In contrast, we posit that an important feature of traditional bookbuilding is the marketing of the issue. While many studies have assumed that a negatively sloped demand curve exists, these papers have assumed that the elasticity of demand is exogenous. This paper not only explicitly adopts a supply and demand framework to analyze SEOs, but posits that the demand curve that an issuing firm faces is affected by the choice of issue methods. In other words, the short-run demand curve that an issuing firm faces is an endogenous choice variable.

[6] This is confirmed in our sample where 96% of accelerated offers, including bought deals and accelerated bookbuilt offers, are completed within two days.

The marketing effort can change the elasticity and helps the issuer to achieve a higher offer price and post-issue market price. The benefits of marketing are larger if the demand curve is more inelastic or if the relative offer size is higher. Therefore, our model predicts that an issuing firm is more likely to pay the higher fees and choose the fully marketed offer method if it faces an inelastic demand curve prior to the offer. The fully marketed offer method is also preferred if the relative offer size is large.

Our empirical results support the model's predictions. We use two measures to proxy for the demand elasticity. The first measure is an order flow inverse demand elasticity, the ratio of the average daily absolute returns to the average daily turnover. The second measure is the arbitrage risk measure used in Wurgler and Zhuravskaya (2002), the variance of market model residual returns. We document that the pre-issue elasticity of the issuing firm's demand curve is an important determinant of the offer method. The relative offer size is also an important determinant. For example, of the 211 SEOs conducted in 2007, 91% of firms issuing more than 15% of their equity (72 out of 79) use fully marketed offers, whereas only 27% of firms issuing less than 10% (13 out of 49) do so. We also find that a smaller fraction of primary shares and less analyst coverage all increase the probability of using a fully marketed offer, which indicates that firms with high information asymmetry favor fully marketed offers.

Our model is not mutually exclusive from previous studies on information asymmetry and information production. The downward-sloping demand curve can arise from asymmetric information, differences of opinion among investors (Miller 1977), or how many investors are paying attention to the stock. If the issuing firm faces high information asymmetry, it has a relatively inelastic demand curve and it can benefit from fully marketing the offer. During the underwriting process, the book-runner produces information about the market demand for the

SEO and then sets the offer price. More syndicate members, including co-managers and non-managing underwriters, can reach out to more investors and provide more information about market interest in the offer, which adds to the marketing efforts.

Corwin and Schultz (2005) examine the role of syndicate members in IPOs and find strong evidence of information production. Huang and Zhang (2008) find that more managing underwriters, including bookrunners and co-managers, result in a smaller offer price discount, defined as the percentage price change from the previous market price to the offer price. They attribute this to the managing underwriters' pre- and post-issue marketing efforts. Consistent with these two studies, we find that fully marketed offers tend to have more co-managers and larger syndicate groups compared to accelerated offers. In our sample, 66% of the accelerated SEOs do not hire a co-manager. In contrast, only 6.1% of the fully marketed offers do not have a co-manager.

Our study supports the argument that demand curve elasticity has a significant impact on corporate financial decisions. Hodrick (1999) studies tender offer choice in share repurchases and finds that firms that choose Dutch auctions instead of the fixed price tender offers tend to face more elastic demand curves. Baker, Coval, and Stein (2007) argue that for acquiring firms that face downward-sloping demand curves, investor's inertial behavior (i.e. the tendency to react passively) mitigates the negative merger announcement effect and increases the benefit of a stock-for-stock merger.

The rest of the paper is organized as follows: In section 2, we review the related literature on marketing and stock demand elasticities. Section 3 develops a model of the role of marketing in seasoned equity offerings. Section 4 discusses the sample construction and presents univariate

patterns. Section 5 estimates two demand elasticity proxies and analyzes the determinants of offer method with a binomial logistic model. Section 6 concludes.

CHAPTER 2
RELATED LITERATURE

Marketing

Figure 2-1 illustrates and compares the SEO process associated with the three offer methods: bought deals, accelerated bookbuilt, and fully marketed SEOs.

Aside from the speed of issue, the major difference between a fully marketed SEO and an accelerated SEO is the marketing effort by the underwriter. In a fully marketed offer, a preliminary prospectus is distributed and lead underwriters together with the issuing firm's executives hold a traditional road show. They visit large institutional investors to create interest and build the demand schedule of the offer. During the road shows, institutional investors acquire more information regarding the issue. The road show process usually lasts for two weeks, so investors have plenty of time to investigate and make their investment decisions.

In a bought deal, in contrast, the winning bank buys all the shares and re-sells them immediately, usually overnight. In an accelerated bookbuilt SEO, the winning bank assembles at most a small underwriting syndicate and usually sells the whole issue within 48 hours. Therefore, there is little marketing effort involved in an accelerated underwriting and investors have little time to evaluate the offer.

Marketing has several effects. Marketing increases the number of investors paying attention to a given stock. Both theoretical and empirical research shows that attention plays an important role in investor's trading behavior and the stock market price. In Merton (1987), investors have a positive demand for only those stocks with which they are familiar. Busse and Green (2002) report that trading volume for Nasdaq-listed stocks increased by an average of 300,000 shares in the four minutes after an analyst mentioned a stock favorably on CNBC's Midday Call segment. Barber and Odean (2008) test and confirm the hypothesis that individual

investors are net buyers of attention-grabbing stocks, described as those that are in the news, or have high trading volume, have extreme one-day returns. In addition, Yuan (2008) finds that high attention also influences both the aggregate market price level and the trading behavior of institutional investors.

To formalize the impact of marketing on prices, we follow the model in Dixit and Norman (1978). In their model marketing changes consumer tastes and flattens aggregate demand curves. In Shapiro's (1980) model, advertising flattens each individual's demand curve.[1] But our focus is different from theirs. These economic theories focus on the equilibrium level of advertising while we focus on the decision of whether or not to market the offer in the context of the demand for the shares of a company that is issuing stock. One could interpret our analysis as modeling the discrete decision as to advertise or not advertise.

We also make a distinction between short-run and long-run demand curves. We assume that in the very long run, the price of the stock is determined by its cash flow fundamentals and the discount rate that investors apply, which in turn may be affected by liquidity characteristics. The long-run stock demand curve is essentially perfectly elastic. In the short-run, however, this is not the case. The short-run demand curve is assumed to be negatively sloped. We assume that the short-run demand elasticity is determined by how many investors are paying attention to the stock, and how heterogeneous are their expectations.

The underwriter's marketing effort helps to flatten the short-run demand curve, which is reflected in a higher stock price after the issue. This marketing effort does not come for free,

[1] Comanor and Wilson (1967) argue that the demand curve may become more inelastic with advertising. In their analysis, advertising creates product differentiation and market power, both of which increase entry barriers. Their framework is less relevant to our study, since investors own stocks primarily for the cash flows that are generated (i.e. in the language of bidding theory, stocks are common value goods rather than private value goods.)

however. The issuing firm needs to balance the gain from a higher stock price with the extra underwriting expenses associated with greater marketing effort.

Downward Sloping Demand Curves

In a classical efficient market framework, demand curves for stocks are horizontal. At any point in time, market prices reflect all available information. Therefore, a shock in the demand or supply should not move the stock price if it does not change the expectation of the underlying value. Empirical evidence from many sources, however, suggests that demand curves for common stocks are actually downward sloping.

Previous studies reveal that both short-run and long-run demand curves are not perfectly elastic. Scholes (1972) uses 'price pressure' to describe the downward sloping short-run demand curves that he documents. He studies block sales and secondary offerings and documents a price decline in such distributions of securities. However, Scholes interprets his findings as indicating that information effects are the main cause of the price changes. Current studies most often attribute the short-run effect on price to market liquidity constraints. Keim and Madhavan (1996) document significant temporary price impacts from large block trades.

A number of studies that look at price changes when stocks are added to or deleted from an index distinguish between short-run and long-run demand curves. Index additions and deletions represent a clean test of demand curve slopes because in most cases they are per se informationless. Shleifer (1986), Harris and Gurel (1986), Dhillon and Johnson (1991), Lynch and Mendenhall (1997), and Wurgler and Zhuravskaya (2002) all document positive abnormal returns when stocks are added to the Standard and Poor's 500 Index, with the positive abnormal returns only partly reversed in subsequent trading. Furthermore, these studies show that the magnitude of the announcement effects has increased over time, paralleling the growth in the assets of funds that are indexed to the S&P 500. Lynch and Mendenhall (1997) find evidence of

both temporary and permanent return components, which supports the notion of different short-run and long-run elasticities. Wurgler and Zhuravskaya (2002) document that stocks without close substitutes experience a larger price jump when added to the S&P 500 Index, implying less elastic short-run demand curves for these stocks. Morck and Yang (2002) find that the valuation premium associated with being in the S&P 500 Index has increased substantially over time and grows in step with the growth of indexing. They argue that indexing demand for these stocks results in a higher price because the long-run supply curve is positively sloped. A positively sloped supply curve for buyers is analogous to a negatively sloped demand curve for sellers.

Similar results are reported for the stocks that are added to or deleted from other indices. Madhavan (2003) and Biktimirov, Cowan, and Jordan (2004) report that stocks added to or deleted from the Russell 2000 in its annual reconstitution experience significant returns. Liu (2000) finds positive price changes when stocks are added to the Nikkei 500 Index with no significant post-event reversals. In addition, Kaul, Mehrotra, and Morck (2000) examine stock price changes in response to the re-weighting of the Toronto Stock Exchange 300 Index in 1996, finding strong support for downward sloping demand curves for common stocks.

Greenwood (2005) studies the redefinition of the Nikkei 225 index in April 2000. He finds that not only do additions and deletions experience significant price changes, but securities that are not directly affected by the substitution of securities also experience abnormal returns due to their correlation with securities undergoing changes in demand. Furthermore, he shows that the short-run effects are partly reversed over the following 20 weeks, implying a more elastic long-run demand curve than in the short run.

Although the studies examining index changes universally find price effects, they rarely estimate the elasticity because the change in quantity demanded by index funds and other

portfolio managers that are benchmarked to the index is difficult to quantify. When shares are issued by the company, however, it is possible to estimate an elasticity. Kandel, Sarig, and Wohl (1999) analyze the full demand schedules of 27 Israeli IPO auctions and estimate that the average elasticity is -37, indicating that a 37% increase in shares issued is associated with a 1% fall in price.

Seasoned equity offerings result in an increase in the supply of shares to the public. In the U.S., but not all countries, the announcements are associated with stock price falls. The fall has been interpreted in the literature as due to a combination of information (Myers and Majluf, 1984) and supply effects. Loderer, Cooney, and Van Drunen (1991) study the announcement effect of seasoned offerings by regulated firms. Their event study is a direct test on price elasticity of common stocks because regulated firms are less likely to suffer from information asymmetry. Their results support finite price elasticities.

Share repurchases represent a decrease in the supply of shares to the public. A positively sloped supply curve for buyers is analogous to a negatively sloped demand curve for sellers. Bagwell (1992) documents that firms face upward-sloping supply curves when they repurchase shares in a Dutch auction. Hodrick (1999) confirms the existence of an inelastic demand curve and concludes that the expected stock elasticity is an important determinant of the tender offer choice. She measures the inverse elasticity as the price premium above the market price before the announcement divided by the fraction of shares tendered. She finds an average inverse elasticity of 1.27 for Dutch auction firms and 0.99 for fixed price tender offer firms. Her study is similar to ours in that she focuses on differences in elasticities determining corporate choices. Unlike our analysis, however, she takes the elasticity as exogenous.

Studies on initial public offerings (IPO) also support downward-sloping demand curves. Braun and Larrain (2008) find that IPOs in emerging markets have negative impacts on the prices of stocks that highly covary with the IPOs, particularly for large IPOs and in less internationally integrated markets. They conclude that shocks to asset supply have a significant impact on asset prices.

Field and Hanka (2001) examine returns around IPO lockup expirations. Because the date of the lockup expiration is known well in advance, in an efficient market, there should be no abnormal returns. However, they find a statistically significant three-day abnormal return of -1.5. Many VC-backed funds distribute shares to limited partners at the lockup expiration date, and many of the limited partners immediately sell their shares. VC backing, therefore, may be a proxy for the magnitude of the increase in the flow supply at the time of the lockup expiration. If this is the case, then VC-backed IPOs should have larger price effects if demand curves are negatively sloped. Consistent with this prediction, Bradley, Jordan, Roten, and Yi (2001) and Brav and Gompers (2003) find a larger price drop at the lockup expiration for VC- backed IPOs.

In the market microstructure literature, the depth of the limit order book determines the short-run elasticity of demand. Larger sell orders get executed at progressively lower prices because investors assume that larger sell orders are more likely to be motivated by negative information (O'Hara, 1995). Trades that are not motivated by private information, however, face a larger price impact the larger the trade. In equilibrium, the short-run elasticity reflects the market's expectations of the mix of informed and uninformed trades.

To summarize, there is widespread evidence that both the short-run and long-run demand curves for stocks are negatively sloped and. Only Bagwell (1992) and Hodrick (1999), however, link the stock demand elasticity to corporate financial decisions.

SEOs and Marketing

The vast majority of academic studies on the announcement effects associated with SEOs have focused on information releases either explicitly or implicitly. One of the few exceptions is Huang and Zhang (2008), who posit that the use of multiple managing underwriters is motivated by marketing considerations. Huang and Zhang (2008) report that if one more managing underwriter is hired, the offer price discount is reduced by 0.26%. They argue that the smaller price discount results from the additional managing underwriter's marketing efforts, which reduce the price pressure and the downside price risk. Huang and Zhang (2008) focus on the gross spread and offer price discount to examine the impact of hiring additional mangers on direct and indirect issue costs. Our study has a different focus. We examine the issuing firm's pre-issue demand elasticity and analyze the determinants of the offer method.

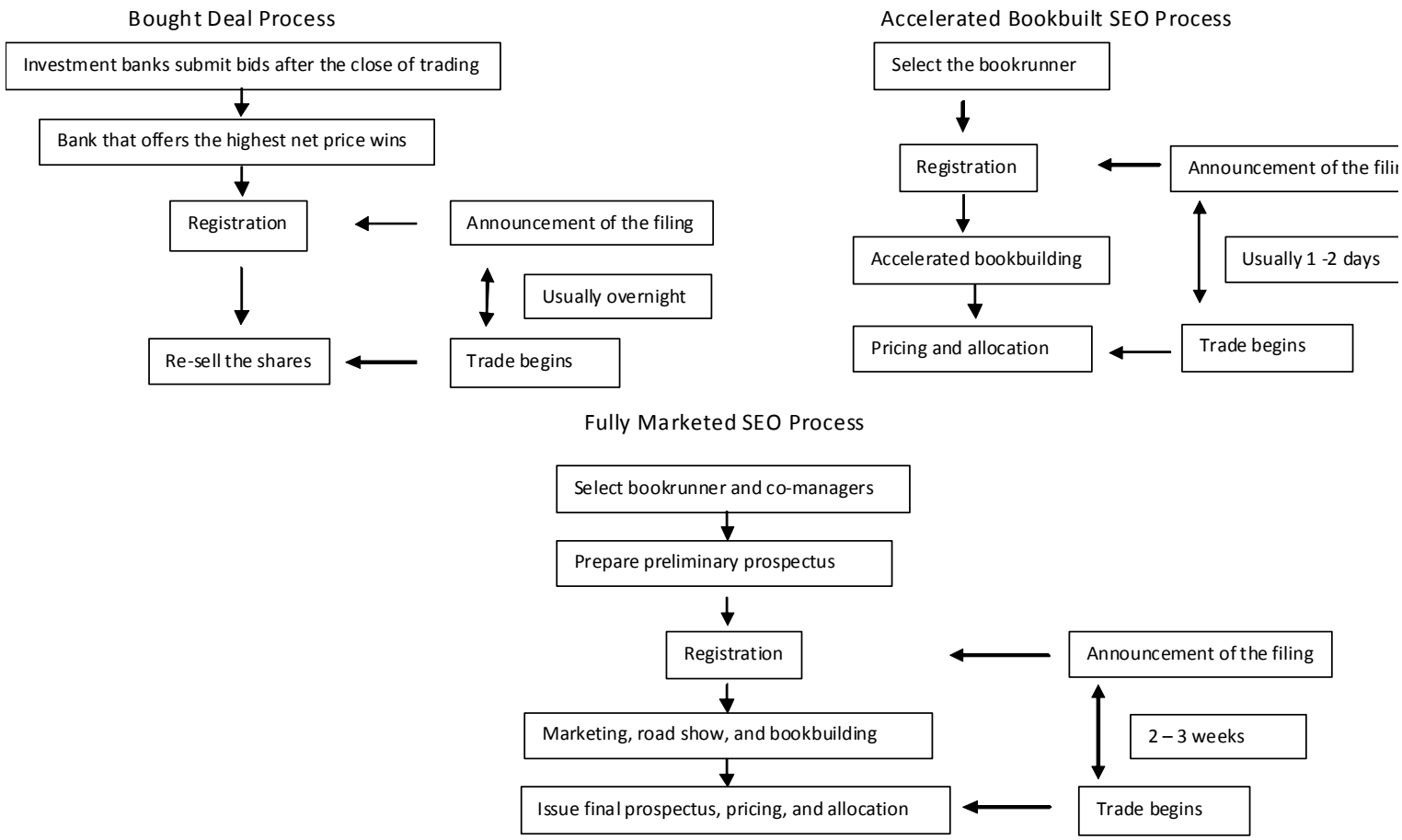

Figure 2-1. Description of the SEO Process Associated with the Three Offering Methods

CHAPTER 3
A MODEL OF THE MARKETING OF SEOS

The Model

In this section, we develop a model to study the economics of the underwriter's marketing effort.

Our model starts with a downward-sloping demand curve. A downward-sloping demand curve can arise from asymmetric information, differences of opinions among investors as to the value of the firm, and short-sale constraints. In Wurgler and Zhuravskaya's (2002) model, the demand curve's slope is more negative when (i) the stock does not have close substitutes (more arbitrage risk), (ii) the risk aversion of arbitrageurs is high, (iii) the heterogeneity of non-arbitrageurs' beliefs is high, and (iv) the number of arbitrageurs is small. Here, we focus on the issuer's short-term demand curve around the seasoned offering.

Figure 3-1 illustrates the model. Suppose that there is a group of N investors with homogeneous beliefs about the issuing firm's fundamental value. Each investor has a downward sloping demand curve $X(p)$. Then the aggregate short-run demand curve, the solid line in Figure 3-1, is $NX(p)$. Before the offer, the market equilibrium price is P_1, which is jointly determined by the aggregate demand curve and the supply of shares. P_1 also represents the price that the stock will converge to in the long-run as the demand curve rotates from the steep short-run relation to the more elastic long-run relation. The offering represents an increase in supply (from X_1 to X_2 in Figure 3-1). If there is no marketing, the short-run demand curve remains the same throughout the offering and as a result of the movement along the demand curve, the stock price drops from P_1 to P_2.

If the issuing firm decides to market the offering, the marketing efforts will attract new investors into the issue, as modeled in a product market context by Dixit and Norman (1978) and

Shapiro (1980). For simplicity, we assume that new investors with the same demand curve become aware of the issue and decide to participate. The new aggregate demand curve is *(M+N)X(p)*, represented by the dashed line in Figure 3-1. The new demand curve is now flatter than the old curve *NX(p)*. Therefore, the new post-issue stock price will be higher due to the flatter demand curve. Our model is also similar to the one in Merton (1987). In Merton's model, a larger investor base increases the equilibrium price. But Merton does not explicitly model the demand curve in his study.

The new demand curve results in the issuer facing a different elasticity of demand and a higher offer price P^*. With the increase in the offer price from P_2 to P^*, the shaded rectangular area represents the issuer's gross gain from marketing. For a given supply increase, the gain from marketing will be larger the more inelastic is the pre-offer demand curve. If this gain is sufficiently large and exceeds the direct cost saving from switching to an accelerated offer, the issuing firm would prefer the fully marketed offer.

Also, note that the size of the shaded rectangle will be larger when there is a larger supply increase. A larger relative offer size represents a larger move along the short-run demand curve, which implies a larger price drop if the demand curve remains the same. If the issue significantly increases the public float and will suffer from greater price pressure, a fully marketed offer is preferred.

Model Predictions and Testable Hypotheses

Given that the costs of conducting a road show are largely fixed costs, our model predicts that the benefits of a fully marketed offer exceed the costs if:

- The ex ante demand curve of the issuing firm's stock is relatively inelastic, and
- The issuing firm is offering a large number of shares relative to the shares outstanding prior to the offer

The two predictions yield two testable hypotheses:

- The issuing firm's ex ante demand elasticity is an important determinant of the offer method.
- The relative offer size is an important determinant of the offer method.

We want to point out that our empirical study does not attempt to estimate the dollar value of the gain from marketing because it is difficult to find the post-issue price with marketing, P^*, and the post-issue market price without marketing, P_2. For a fully marketed offer, the ex ante demand curve is unobservable so it is hard for us to estimate the counterfactual price P_2 had there been no marketing. To find P^* is also a challenge. On the day of the SEO announcement, market efficiency suggests that investors should anticipate any price pressure effects associated with the increase in supply and the market price should adjust accordingly at the announcement rather than waiting for the issue day. At the same time, the market price should also incorporate the information released by the announcement. Therefore, the observed closing price on the announcement day is the combination of the information effect and the anticipated price pressure effect. To find P^* requires isolating the information effect from the price pressure effect, which is hard to implement empirically. Furthermore, the observed announcement day closing price may still deviate from the expected post-issue price due to transaction costs and arbitrage limitations, as well as uncertainty about whether the deal will be completed.

In our model, the demand curve should become more elastic after the offer due to the marketing effort. However, to empirically compare the pre-issue and post-issue demand elasticities is difficult. Our estimated proxies for elasticity correlate with other firm and market characteristics, which cannot be held constant after the offer. In our empirical analysis, we find that fully marketed offers experience the largest increase in demand elasticity. But an alternative explanation is that a larger market capitalization after the offer may has improved the liquidity.

Extension of the Model

Two assumptions in this model can be relaxed to make it more general.

First, investors can have heterogeneous beliefs. Even if the new investors are less optimistic than current shareholders, their participation will still flatten the demand curve, as pointed out in Shapiro (1980). In fact, Bagwell (1992) and Kandel, Sarig, and Wohl (1999) have demonstrated that investors have heterogeneous beliefs, or at least heterogeneous reservation prices due to differential tax status.

Second, the marketing of SEO can shift the demand curve even if it does not change the elasticity. The announcement of the SEO may convey information to the market. Myers and Majluf (1984) show that under certain conditions, the market interprets the announcement of a seasoned offer as a negative signal that the issuing firm is overvalued. The demand curve is shifted downward in parallel and results in the price drop upon the announcement of the offer. After the announcement, the underwriter's marketing efforts may reduce the information asymmetry so the demand curve will be flattened and shifted upward in parallel. In our empirical study, we do not attempt to disentangle the information asymmetry and the price pressure. However, we predict that if a firm faces high information asymmetry prior to the issue, it may benefit more from fully marketing the offer.

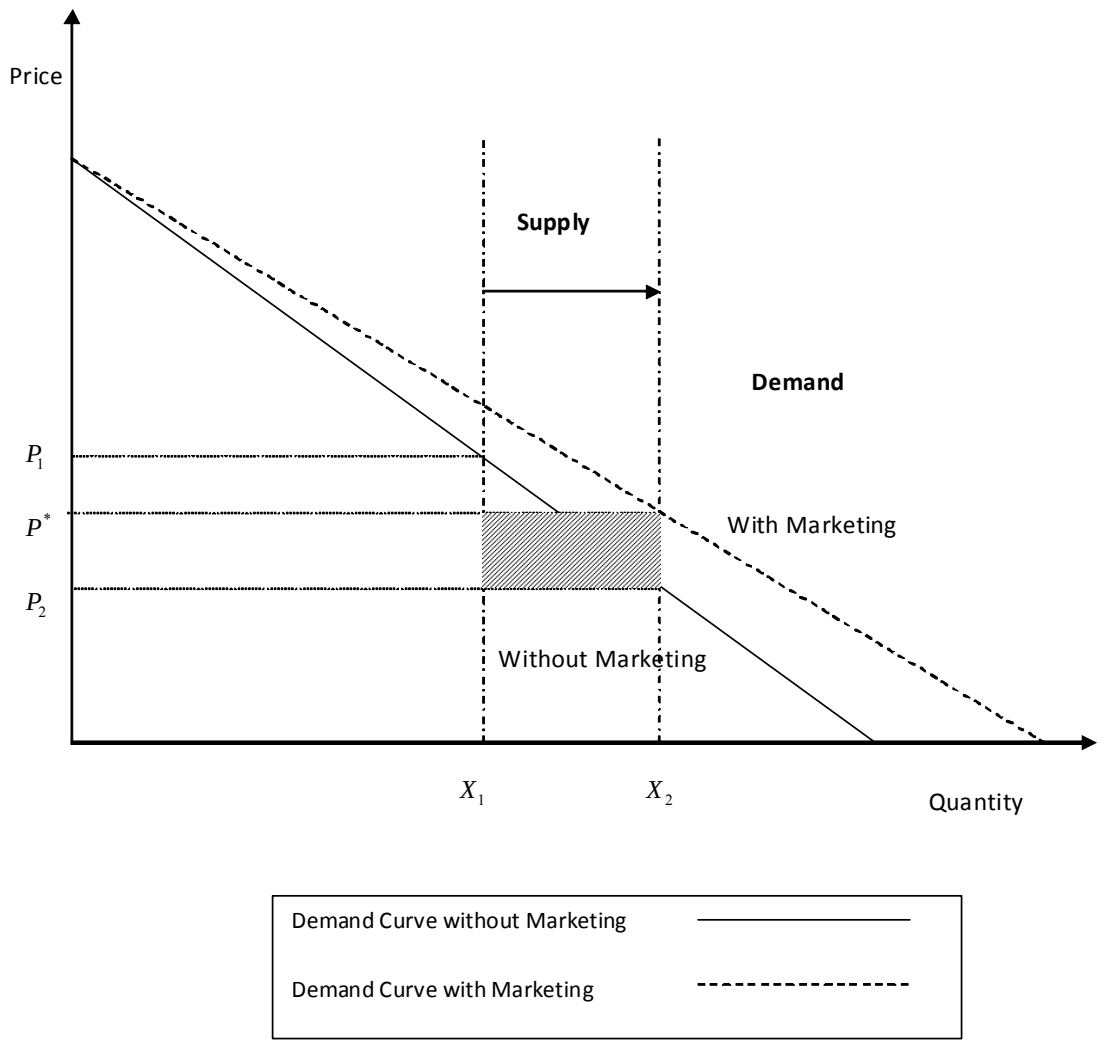

Figure 3-1. Comparison of Demand Curves with and without Marketing.

Note: The solid line is the issuing firm's demand curve before the offer. The dashed line represents the issuing firm's demand curve if the offer is fully marketed. It becomes more elastic than the ex ante demand curve because marketing flattens the demand curve. Therefore, the post-issue price is higher at instead of if there is no marketing. The shaded rectangular area represents the issuer's gross gain from marketing the offer.

CHAPTER 4
SAMPLE AND DESCRIPTIVE STATISTICS

Sample Selection

We select all US common stock seasoned equity offerings in the Dealogic Equity Capital Markets (ECM) Analytics Database between January 1st, 1996 and December 31st, 2007. To identify the offer method, we mainly rely on Dealogic's classification, supplemented by the length of time between the filing day and the trade day. In Appendix A, we compare Dealogic's classification with the Thomson Financial Securities Data Company's (SDC) new issues database's classification of the offer method and discuss some details regarding the accuracy of the classification of the offer method. We find that Dealogic's classifications are much more accurate.

We apply the following data restrictions:

1) The issuer must be a US-based public company. (ADRs and ADSs are excluded).
2) The issuer's stock must be listed on the NYSE, AMEX, or NASDAQ.
3) Offers on a best efforts basis are excluded.[1]
4) Non SEC registered offers and offers under SEC Rule 144A are excluded.[2]
5) Private placements, rights offers, and unit offers are excluded.[3]
6) SEOs of closed-end funds and REITs are excluded.[4]

---

[1] We excluded 1,213 offers issued on a best efforts basis. The majority of these best efforts are private placements, usually by small firms. Dealogic does not report the final proceeds or fees for these deals and the prospectuses usually only list the maximum proceeds and placement agent fees.

[2] 630 non SEC registered offers and one SEC registered Rule 144A offer are excluded. SEC Rule 144A applies to private sales of securities to qualified institutional investors.

[3] Dealogic-identified private placements include Private Investment in Public Equity (PIPEs), PIPOs and 'registered direct' offers. The best efforts screening catches most PIPEs and after that, 1 PIPO, 1 rights offer and 223 unit offerings are excluded.

[4] 879 closed-end funds and REITs are excluded.

7) Pure secondary offerings are excluded.[5]

8) The issuing firm must be present on the University of Chicago Center for Research in Security Prices (CRSP) database on the last trading day prior to the offer and the first trading day after the issue.

9) Accelerated offers that are identified as non-shelf offers are excluded.[6]

Pure secondary SEOs are offerings in which all of the shares are being sold by existing shareholders. We exclude pure secondary offerings because they are similar to large sales (block trades) in the open market. Our empirical results are robust to including these pure secondary SEOs, and tables are available upon request.

Offer Methods

Our sample includes 3,615 US SEOs during January 1st, 1996 to December 31st, 2007.[7] In Appendix B, we list a few recent large accelerated and fully marketed sample SEOs with some offer details. Table 4-1 reports the number of offers with each offer method by year. The number of SEOs fluctuates over the twelve year sample period, although the fluctuation in volume from year to year is much smaller than for IPOs. The number of bought deals and accelerated bookbuilt offers has increased substantially since 2000. In 1996, there was only 1 bought deal and there were no accelerated bookbuilt offers. In 2007, there were 27 bought deals

[5] 846 pure secondary offerings, in which all of the shares are being sold by existing shareholders, are excluded. Among the 846 pure secondary offerings, 262 are bought deals, 46 are accelerated bookbuilt offers, and 538 are fully marketed offers.

[6] Generally speaking, only companies that are eligible for shelf registrations are eligible for accelerated SEO offers. There are exceptions and possible data mistakes. For example, the offer by First Republic Bank on August 15th, 2005, is exempted from registration under Section 3(a)(2) of the Securities Act of 1933. MBNA filed a shelf registration on March 29th, 1999 and conduct a bought deal on August 14th, 2000. But Dealogic reports this as a non-shelf takedown. Most of these deals are small offers with less than $100 million in proceeds so we exclude all 35 non-shelf accelerated offers.

[7] Our sample is smaller than Bortolotti, Megginson, and Smart's (2007) because we exclude ADRs, private placements, and pure secondary offerings.

and 46 accelerated bookbuilt offers. Bought deals and accelerated bookbuilt offers also have gained market share in terms of proceeds raised over time.[8] In 2007, these accelerated offers account for 25% of the total proceeds raised in seasoned equity offerings.

The offer proceeds fluctuate with the overall market valuation. In our sample, an average SEO raises $94 million in 1996, $276 million in 2000, and $182 million in 2007. Therefore, we adjust the nominal proceeds via scaling by the nominal year-end value of Standard & Poor 500 Index level. The normalized proceeds, expressed in terms of 1996 valuations, are given by

$$\text{Nominal Proceeds} \times \frac{\text{S\&P 500 Index}_{1996}}{\text{S\&P 500 Index}_{\text{SEO Year}}}.$$

In unreported results, using two-digit standard industry classification (SIC) codes, 68 industries are represented, with 75% by industrial firms (2,460 out of 3,281) and 25% by regulated and financial firms.[9] For bought deals and accelerated bookbuilt offers, around 60% (340 out of 569) are industrial firms. For fully marketed offers, 78% of issuers (2,120 out of 2,712) are industrial firms. Over the sample period, the industry representation in each year exhibits no particular pattern.

During our twelve-year sample period, 1,573 firms conduct only one follow-on offering and 660 firms conduct more than one SEO. Among the 660 repeated SEO issuers, 24 conduct more than 5 offers with the most frequent issuers being financial firms.[10] We identify 265 SEOs where the offer method is different from the most recent SEO by the same issuer. Among the 58 SEOs that switched from an accelerated offer to a fully marketed offer, 48 have a larger relative

[8] The total proceeds include the exercised overallotment value. Unlike the SDC New Issues Database, Dealogic reliably reports the exercised amount.

[9] Utility and other historically regulated firms, including transportation and telecom, have two-digit SIC codes between 40 and 49. Financial firms have SIC codes between 60 and 69. All other firms are industrial firms.

[10] Two firms, Allied Capital and American Capital Strategies (ACAS), did more than 10 offers. ACAS, which invests in buyouts, had 26 SEOs in 1999-2007.

offer size compared to the previous accelerated offer and the average increase in relative offer size is 7.1%. Among the 207 SEOs that switched from a fully marketed offer to an accelerated offer, 172 have a smaller relative offer size and the average decrease is 16.9%. Among all the multiple issuers, the average time between two issues is 34 months.

The mean number of years from the issuing firm's IPO to the SEO is 10 years with a median of 5 years. Firms conducting accelerated SEOs are usually more seasoned than those conducting fully marketed offers, with medians of 10 years and 4 years respectively. More NYSE-listed companies (27%) do accelerated offers compared to NASDAQ-listed companies (12%). This is hardly surprising because large firms are more likely to do an accelerated offer, as we will see in Section 4.4.

Shelf-takedown Offers

The deregulated streamlined shelf registration process allows issuing firms to file a single all-encompassing registration statement once every two years rather than filing individual registration statements for every security offering. Once its shelf registration statement is approved by the SEC, a firm can issue securities without further disclosure requirements or regulatory delays. In practice, even for bought and accelerated bookbuilt deals, firms normally issue a prospectus.

Shelf registration eligibility may lead to a potential selection bias in our analysis on the determinants of the offer method. An issuer needs to file a shelf registration prior to conducting an accelerated SEO. This requires the issuer to have at least $75 million in market capitalization.[11] Therefore, some small firms choose a fully marketed offer because they are not eligible for shelf registration and therefore cannot conduct an accelerated offer. These firms also

[11] There are other requirements other than the market capitalization requirement. For details, see Bethel and Krigman (2006).

tend to have inelastic demand curves. Including these small firms biases us towards finding a positive relationship between inelastic demand curves and conducting fully marketed offers. To avoid this bias, we restrict our sample to companies with a $75 million market capitalization prior to the offer. This reduces our sample size from 3,615 SEOs to 3,281 SEOs for our empirical analysis.

Table 4-2 compares shelf-takedown and non-shelf takedown offers within each offer method. Over the twelve-year sample period, there are 1,335 shelf-takedown SEOs. 766 of those shelf-takedown SEOs are fully marketed. 293 shelf-takedowns are bought deals and 276 are accelerated bookbuilt offers. All of the 1,946 non-shelf takedown offers are fully marketed.

Shelf-registered issuers do not seem to have any dominating preference between accelerated offers and fully marketed offers. Almost sixty percent of the shelf-takedown SEOs are fully marketed offers. Autore, Hutton, and Kovacs (2008) also conclude that neither method dominates among shelf issuing firms. Therefore, we do not consider the issuer's endogenous decision on shelf registration as an explanatory variable in our empirical tests.

Offer Characteristics

Table 4-3 compares offer characteristics among the three offer methods. The first column lists results for the entire sample of SEOs, while the second, third, and fourth columns compare among bought deals, accelerated bookbuilt SEOs, and fully marketed SEOs. For each offer characteristic variable, Table 4-3 reports mean and median values. The last column reports the p-values from the Kruskal-Wallis (KW) test on the means and the Chi-squared test on the

medians to test for a distribution difference among the three subsamples with different offer methods. Our analysis focuses on mean values but results based upon medians are similar.[12]

After normalizing the market capitalization and proceeds by the nominal S&P 500 Index level with 1996 being the base year, the average issuing firm in our sample has a market capitalization of $1.2 billion before the offer and raises $113 million in proceeds.[13] On average, the issuer is increasing the shares outstanding by 22.54%, as measured by the relative offer size, which is defined as the ratio of the offered shares to the total shares outstanding prior to the issue. The average percentage increase is much larger than the average proceeds as a percentage of the average pre-issue market capitalization because larger companies typically issue a much smaller fraction of shares than smaller companies do. Primary shares, which are shares offered by the issuing firm, are on average 85% of the total number of shares offered, with most SEOs having 100% of the issue coming from the company rather than existing shareholders.

As revealed in columns 2, 3, and 4 in Table 4-3, bought deals, accelerated bookbuilt offers, and fully marketed offers differ substantially from each other. Test statistics indicate that the difference in most of the offer characteristics is statistically significant between the three groups. Furthermore, there is usually a monotonic relation in each mean offer characteristic among the three groups with accelerated bookbuilt offers in between. This indicates that accelerated bookbuilding may be an alternative method for marginal issuers in the bought deals and fully marketed deals groups.

---

[12] We use the non-parametric t-test (Kruskal-Wallis test) to test for difference in means among the three groups and the non-parametric median Chi-squared test (Brown-Wood test) on medians. The Kruskal-Wallis (KW) test allows more than two groups and does not require the dependent variables to be normally distributed.

[13] The market capitalization is calculated on the last trading day before the announcement of the offer and is adjusted by the annual nominal S&P 500 Index level in the same fashion as the adjustment on the deal proceeds. For firms with dual class shares, the market cap is restricted to the publicly traded shares reported on the CRSP tapes.

Accelerated bookbuilt SEOs tend to be chosen by larger firms and bought deals are chosen by the largest firms. Compared to an average issuer of a fully marketed offer, the average accelerated bookbuilt issuer is three times larger and the average bought deal issuer is almost four times larger.

The offer proceeds, however, show only modest differences across offer methods. As a result, the relative offer size for fully marketed deals is on average much larger. Figure 4-1 is a scatter diagram of the relation between the issuing firm's market capitalization prior to the offer and the relative offer size across offer methods for SEOs in 2007.[14] Among the 211 SEOs in 2007, 91% of firms issuing more than 15% of their equity (72 out of 79) use fully marketed offers, whereas only 27% of firms issuing less than 10% (13 out of 49) do so.

Figure 4-1 shows that firms choosing fully marketed offers tend to be small firms selling a relatively large amount of shares. The larger relative offer size for fully marketed deals is consistent with our model prediction: Firms that may suffer from a larger price decline due to a larger move along the pre-issue demand curve prefer to fully market the offer because the marketing effort flattens the demand curve and helps to achieve a higher offer price. The smaller market capitalization for fully marketed deals is also consistent with our model's prediction: Small firms tend to have less elastic demand curves because of lower institutional ownership, and thus receive greater benefits from marketing.

Accelerated bookbuilt offers tend to hire slightly more bookrunners. In our sample, however, almost 90% of all SEOs have a single bookrunner and the higher incidence of multiple bookrunners for accelerated bookbuilt SEOs may partly reflect the higher frequency of these deals in the later half of our sample period, when multiple bookrunners were more common. We

[14] Other years show the same pattern. Only one year's data is used to avoid obscuring the pattern by plotting too many points.

rank bookrunners' reputation using the Carter-Manaster ranking obtained from Jay Ritter's website. The highest Carter-Manaster ranking is 9 and the lower the ranking is, the less prestigious the bookrunner is. If there are multiple bookrunners, we use the maximum ranking among the bookrunners. The mean bookrunner ranking is 8.25 and the median is 9, so most SEOs are underwritten by high reputation banks. Bought deals have slightly more prestigious bookrunners but the difference is not significant.

Bought deals and accelerated bookbuilt offers, as suggested by the offer method, have a very short underwriting process.[15] Not surprisingly, Table 4-3 shows that accelerated offers have a significantly shorter underwriting period. On average, bought deals and accelerated bookbuilt SEOs are offered within one day of the filing. In contrast, fully marketed offers spend 31 days on average to complete after the filing, although there is considerable dispersion.[16] A longer underwriting process requires more resources and input from both the issuer and the lead manager, which also explains why fully marketed offers are the most expensive. During our sample period, there is a monotonic downtrend in the median time between the announcement and completed fully marketed deals. In 1996, the median time is 31 days and it decreases to 9 days in 2007.

[15] We dropped 10 accelerated SEOs that spend more than 3 days from the filing to the offer. Inclusion of these 10 deals has little impact on our analysis results. Five bought deals spend more than 100 days from the filing to the offer. For example, Rowan Companies filed the registration on Oct 13th, 1999 and completed the offer on Feb 16th, 2000 so there are 126 days between the filing and the offer. This bought deal has one underwriter, Lehman Brothers.

[16] Note that the average is affected by several extreme cases. 14 fully marketed offers spend more than 180 days. The longest case is the offer by Carmike Cinemas Inc in 2004. This offer is announced on Jun 7th, 2002 with an expected pricing date of August 5th, 2002, revised on July 17th, 2002, revised on Nov 18th, 2003, revised on Dec 16th, 2003, and revised on Jan 14th, 2004, and eventually took place on Jan 29th, 2004. So there are 601 days between the announcement and the offer.

Fully marketed offers pay the highest gross spreads, 5.10% on average. Bought deals pay 2.28% and accelerated bookbuilt offers pay 4.23% on average. These results are comparable to those reported in previous studies, including Bortolotti, Megginson, and Smart (2007).

The difference in gross spread among the three offer methods is significant and important. In a bought deal, the underwriter commits to purchase all of the shares for resale to the secondary market. There is no book-building nor road show involved. The underwriter of a bought deal faces greater uncertainty about the price at which the shares can be resold because in general the market has not had a prior opportunity to react to the offer announcement. In an accelerated bookbuilt offer, the lead manager collects price/quantity pairs from institutional investors and underwriters, and then sets the price of the shares in agreement with the issuer using the order book. In fully marketed offers, the lead manager conducts a road show while building the order book so the bookbuilding process is longer. In accelerated bookbuilt offers and fully marketed offers, the offer price is not set until after the market knows about the issue and has reset the stock price, so the underwriter does not assume as much price risk as in bought deals. The risk is smaller in fully marketed offers because the market has more time to value the deal and the underwriter has more time to build the order book.

The evidence in Table 4-3 suggests that a higher gross spread is associated with bookbuilding and expensive marketing efforts, even though the underwriter is exposed to more resale price risk on bought deals. Unreported multivariate analysis confirms that after controlling for various offer and firm characteristics, fully marketed offers pay an average 3% higher gross spread than accelerated SEOs. Despite the lower gross spread, an accelerated SEO can still be very lucrative for the underwriter. Take an average accelerated deal with $200

million in proceeds for example, a 2% gross spread represents $4 million in revenue for just a few days work.

In Table 4-3, we also report the pre-offer stock return, announcement effect, price discount, and underpricing. The pre-offer stock return is the buy-and-hold stock return (BHR) estimated over the 250 trading days before the announcement. The announcement effect is the cumulative market-adjusted return (CMAR) estimated over the two-day window $\sum_{t=-1}^{0}\left(r_{i,t}-r_{m,t}\right)$, ending with the announcement date (day 0).[17] On average, our sample offers experience a significant run-up of 107% and -1.72% cumulative market adjusted return around the announcement of the offer. If we expand the CMAR to a three-day window, [-1,1], the average return is -2.1%, which is comparable to the numbers presented in previous studies.[18] Our results remain qualitatively the same if we use the three-day window.

The pre-offer stock run-up and announcement effects vary among the three groups. Fully marketed offers experience the largest pre-offer BHR, an average of 118%. Bought deals and accelerated bookbuilt offers experience smaller stock price increase, 72% and 45% respectively. But note that accelerated issuers tend to be big firms so they are less likely to have a huge price run-up.

Bought deals suffer the least amount of negative market reaction, an average of -1.49%. Fully marketed offers experience an average of -1.66% and accelerated bookbuilt offers experience an average of -2.55%. But note that bought deals and accelerated bookbuilt offers are

[17] Dealogic reports the number of days from the announcement to the offer. We checked several offers and find that if the announcement is made after the market closes and the offer takes place on the next day, Dealogic reports 0 between the announcement date and the offer date. So the announcement day should be the actual day that the stock price reacts to the announcement. Therefore, unlike some previous studies on the announcement effect, we exclude the return on the day after the announcement.

[18] Interested readers can also refer to Table 5 in Ritter (2003) and Table 13 in Eckbo, Masulis, and Norli (2007), which summarize the announcement effects from different studies.

often announced and underwritten on the same day. So the CMAR includes both the announcement effect and price pressure caused by an inelastic demand curve. Fully marketed deals do tend to have a larger relative size.

Denoting the closing price on the previous trading day of the offer by MP_{t-1}, the offer price by OP, and the closing price on the offer day by MP_t, the discount is the percentage price change from the closing price on the previous trading day of the offer to the offer price, $\left(\frac{OP - MP_{t-1}}{MP_{t-1}}\right) \times 100\%$. Underpricing is the percentage price change from the offer price to the closing price on the offer day, $\left(\frac{MP_t - OP}{OP}\right) \times 100\%$. The absolute value of the discount and underpricing are similar in magnitude on average. The average SEO in our sample is sold at a 2.76% price discount and experiences 3.12% underpricing on the offer day. This is generally consistent with the numbers reported in Altinkilic and Hansen (2003), Corwin (2003), and Mola and Loughran (2004). Both the discount and underpricing levels remain stable during the sample period.

These averages, however, hide important differences across offer methods. On average, bought deals have the largest price discount of -3.96% and the smallest underpricing of 1.09%. this large difference suggests that the price discount for bought deals is capturing the negative announcement effect. Accelerated bookbuilt offers experience an average discount of -2.43% and underpricing of 2.1%. If an accelerated offer is priced and offered within 24 hours after the announcement of the offer, the two-day announcement effect, [-1,0], can be decomposed into the

return on the last trading day before the offer, the discount, and the underpricing.[19] Fully marketed offers experience an average discount of -2.66% and the largest underpricing of 3.44%.

As we explained in Section 3.3, we do not attempt to empirically estimate the gain from marketing. Neither the price discount nor the underpricing is a good measure of the gain from marketing. Bought deals and accelerated bookbuilt offers may be unknown to the market in advance. So the observed price discount may incorporate both the discount and an announcement effect.[20]

The last two rows in Table 4-3 examine the number of analysts who are following the issuer's stock and the stock's average bid-ask spread. An analyst is included if he or she posts at least one recommendation within 12 months prior to the offer. The analyst recommendations are obtained from the Institutional Brokers' Estimate System (IBES) database. During the year before each SEO, the average number of analysts that follow an SEO is 5, which is comparable to that reported in Huang and Zhang (2008).[21] Accelerated issuers, who tend to be larger companies, receive significantly more analyst coverage, with an average of 7 to 9 analysts following the stock while fully marketed issuers only have 4 analysts on average. If an issuing firm receives little analyst coverage prior to the offer, it may decide to do a road show to reach more investors and promote the stock.

---

[19] 244 of the 293 bought deals and 137 of the 276 accelerated offers are offered within 24 hours after the announcement. It is interesting to notice that on average, bought deals experience a positive return of 1.6% on the previous day while accelerated bookbuilt offers experience a negative return of -2.6%. One potential explanation is that issuers may wait for a 'good' day, i.e. with positive stock return, to conduct a bought deal. For accelerated bookbuilt offers, there may be some information leakage prior to the announcement of the offer.

[20] In unreported results, we first estimate the announcement effect with the offer and firm characteristics for an accelerated offer if the accelerated offer is announced and offered within 24 hours. Then we subtract the predicted announcement effect from the realized price discount. After this adjustment, bought deals still have the largest discount of -3.93%. The R-squared is around 0.04.

[21] Huang and Zhang (2008) look at the number of recommendations issued prior to an SEO. We find comparable numbers for SEOs in our sample, e.g. on average, there are 7 recommendations issued within 12 months prior to an SEO.

The bid-ask spread is the average daily bid-ask spread, scaled by the closing stock price on that day, over the 250 trading days prior to the announcement of the SEO. Accelerated issuers tend to have a smaller proportional bid-ask spread, an average of 0.64%, compared to fully marketed offers with an average of 1.55%. However, the bid-ask spread exhibits a sharp declining trend in the sample period, from an average of 2.69% in 1996 to an average of 0.31% in 2007. This coincides with the increase in accelerated SEOs during our sample period and may lead to spurious results between the bid-ask spread and the SEO method selection. Therefore, we detrend the bid-ask spread in our multivariate regression in Section 5.

The univariate results show that accelerated SEOs tend to be large firms and the relative offer sizes are smaller than fully marketed offers. Next, we proxy for the issuer's pre-offer demand elasticity and examine the offer method choice in a multivariate setting in Section 5.

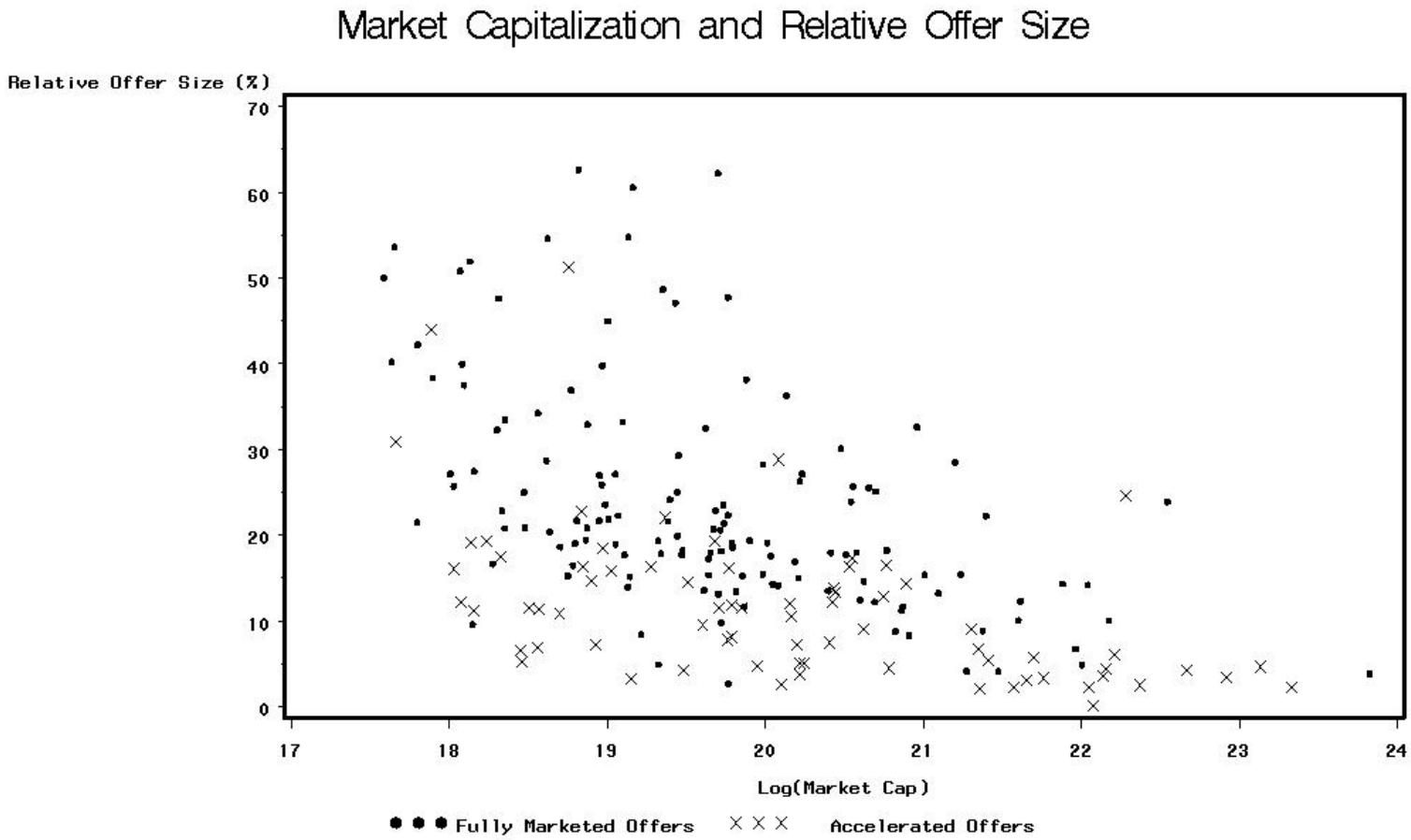

Figure 4-1. Scatter Diagram Relating Relative Offer Size to Log(Market Capitalization).

The sample consists of 211 SEOs in 2007. The S&P 500 Index level adjusted market capitalization ranges from $40 million, , to $22 billion, . The relative offer size is the number of shares offered divided by the number of shares outstanding prior to the offer and is measured in percentages. The farest lower right dot represents Schering-Plough Corp's fully marketed SEO in August, 2007. It had an actual market cap of $42 billion prior to the offer and a relative offer size of 3.86%.

Table 4-1. Number of SEOs and Aggregate Proceeds by Year and Offer Method.

The sample includes 3,615 seasoned equity offerings in Dealogic's ECM Analytics Database during 1996 to 2007. The issuer must be a US-based company listed on NASDAQ, the American Stock Exchange (AMEX), or the New York Stock Exchange (NYSE). ADRs and ADSs, private placements, rights offers, best efforts, non SEC registered offers, Rule 144A offers, units, closed-end funds, REITs, and pure secondary offerings are excluded. Non-shelf registered bought deals and accelerated bookbuilt offers are also excluded. The issuing firm must be present on the University of Chicago Center for Research in Security Prices (CRSP) database on the first trading day after the issue. Total proceeds is the total amount of dollars (in billions) raised globally including exercised overallotment shares in all tranches. Total proceeds are adjusted by the annual nominal S&P 500 Index level, normalized by the ratio between the 1996 S&P 500 index level and the SEO year's S&P 500 index level.

	Sample SEOs		Bought Deals		Accelerated Bookbuilt SEOs		Fully Marketed SEOs	
Year	Number	Total Proceeds ($ billion)	Number	Total Proceeds ($ billion)	Number	Total Proceeds ($ billion)	Number	Total Proceeds ($ billion)
1996	487	45.80	1	0.06	0	0.00	486	45.74
1997	418	33.34	2	0.45	8	1.40	408	31.49
1998	285	25.91	8	1.40	2	0.03	275	24.44
1999	321	33.00	20	2.54	2	0.32	299	30.14
2000	323	49.60	29	3.21	2	0.07	292	46.32
2001	244	32.51	35	6.34	18	1.47	191	24.71
2002	229	38.06	25	5.48	41	10.36	163	22.22
2003	267	28.47	36	6.09	42	5.15	189	17.10
2004	303	28.52	36	4.52	51	6.58	216	17.35
2005	249	22.73	32	3.91	29	3.17	188	15.65
2006	255	19.91	43	3.73	38	6.58	174	12.40
2007	234	21.44	27	1.99	46	3.17	161	15.05

Table 4-2. Shelf Takedown SEOs versus Non-shelf Takedown SEOs, 1996 to 2007

The sample includes 3,281 seasoned equity offerings in Dealogic's ECM Analytics Database during 1996 to 2007. Table II lists the number of shelf takedown and non-shelf takedown offers that are bought deals, accelerated offers, and fully marketed offers. We exclude 35 non-shelf takedown offers that are identified by Dealogic as bought deals or accelerated bookbuilt offers.

	All SEOs	Bought Deals	Accelerated Bookbuilt SEOs	Fully Marketed SEOs
Shelf-takedowns	1,335	293	276	766
Non-shelf Offers	1,946	0	0	1,946

Table 4-3. Mean and Median Offer Characteristics of SEOs, 1996 to 2007

The sample is restricted to 3,281 issuing firms that have more than $75 million market capitalization before the offer. Table III lists means (medians in brackets) of offer characteristics. Market capitalization is the total market capitalization of equity on the last day prior to the announcement of the offer. Proceeds is the total amount of dollars (in millions) raised globally including exercised overallotment shares in all tranches. Normalized market capitalization and proceeds are adjusted by the annual nominal S&P 500 Index level, normalized by the ratio between the 1996 S&P 500 index level and the SEO year's S&P 500 index level. Relative offer size equals offered shares divided by total shares outstanding prior to the issue. Fraction of primary shares equals primary (new) shares divided by total number of shares offered. Number of bookrunners is the number of bookrunners on the issue. Bookrunner reputation is the bookrunner's Carter-Manaster ranking obtained from Jay Ritter's webpage. If there are multiple bookrunners, we use the maximum ranking among all the bookrunners. Number of days from filing to offer is the number of days between the filing date and the offer date. Gross spread is the disclosed gross fee paid as percentage of the offer price. Pre-offer return is the buy-and-hold stock return during the 250 trading days, [-250, -1], ending with the announcement date (trading day 0). Announcement effect is the cumulative market-adjusted return during the two-day window, [-1,0], ending with the announcement date . Discount is the percentage decrease from the closing price day before the offer to the offer price. Underpricing is the percentage increase from the offer price to the closing price on the offer day. The number of analysts following the issuer's stock is obtained from the I/B/E/S database. We include analysts who post a recommendation within 12 months before the offer. Bid-ask spread (%) is the average daily bid ask spread, scaled by the stock price, over 250 trading days prior to the announcement date. The test for the difference in means among the three groups is the non-parametric t-test (Kruskal-Wallis test), which allows more than two groups and does not require the dependent variables to be normally distributed. The test for the medians is the non-parametric median Chi-squared test (Brown-Mood test). P-values from the KW and the median Chi-squared statistics are reported in the last column.

	All SEOs	Bought Deals	Accelerated Bookbuilt SEOs	Fully Marketed SEOs	P-values from KW/Median Statistics
Number	3,281	293	276	2,712	
Nominal Market Capitalization ($M)	1,886	4,552	4,272	1,356	0.00
	[550]	[1,627]	[1,067]	[463]	[0.00]
Normalized Market Capitalization ($M)	1,182	2,772	2,718	854	0.00
	[360]	[961]	[674]	[315]	[0.00]
Nominal Proceeds ($M)	176	219	208	168	0.00
	[97]	[129]	[88]	[95]	[0.00]
Normalized Proceeds ($M)	113	136	134	108	0.00
	[64]	[81]	[54]	[64]	[0.18]
Relative Offer Size (%)	22.54	9.36	11.37	25.10	0.00
	[18.98]	[7.53]	[9.87]	[21.48]	[0.00]
Fraction of Primary Shares (%)	85.00	98.83	98.58	82.12	0.00
	[100]	[100]	[100]	[100]	[0.00]

Table 4-3. (continued)

	All SEOs	Bought Deals	Accelerated Bookbuilt SEOs	Fully Marketed SEOs	P-values from KW/Median Statistics
Number of Bookrunners	1.19	1.06	1.49	1.17	0.00
	[1]	[1]	[1]	[1]	[0.00]
Bookrunner Reputation	8.25	8.36	7.98	8.27	0.08
	[9]	[9]	[9]	[9]	[0.56]
Number of Days from Filing to Offer	26	0	1	31	0.00
	[21]	[0]	[1]	[25]	[0.00]
Gross Spread (%)	4.82	2.28	4.23	5.10	0.00
	[5.00]	[1.70]	[4.20]	[5.15]	[0.00]
Pre-Offer Return (%)	107.70	72.34	45.21	117.89	0.00
	[57.45]	[26.45]	[20.75]	[65.66]	[0.00]
Announcement Effect (%)	-1.72	-1.49	-2.55	-1.66	0.00
	[-1.53]	[-1.48]	[-1.99]	[-1.48]	[0.00]
Discount (%)	-2.76	-3.96	-2.43	-2.66	0.00
	[-1.93]	[-3.47]	[-0.90]	[-1.89]	[0.00]
Underpricing (%)	3.12	1.09	2.10	3.44	0.00
	[1.51]	[0.24]	[0.94]	[1.87]	[0.00]
Number of Analysts	5	9	7	4	0.00
	[4]	[7]	[6]	[4]	[0.00]
Bid-ask Spread (%)	1.39	0.68	0.59	1.55	0.00
	[1.00]	[0.35]	[0.40]	[1.26]	[0.00]

CHAPTER 5
PRICE ELASTICITY PROXIES AND DETERMINANTS OF OFFER METHOD

Price Elasticity Proxy Estimate

The definition of elasticity of demand is the percentage change in quantity demanded corresponding to a percentage change in price, formally, $\frac{\left(\Delta q / q\right)}{\left(\Delta p / p\right)}$. In general, we cannot precisely construct the demand and supply schedules for individual stocks and directly measure the price elasticity. Due to data limitations that prevent us from identifying supply shifts along a given demand curve or vice versa, we adopt two measures to proxy for the elasticity of demand for the issuing firm's stock before the offer.

The first measure of price elasticity is an average daily order flow inverse price elasticity measure, A_1. The daily order flow inverse price elasticity on day T is defined as the ratio between the absolute value of the stock's raw return and its turnover, with turnover defined as the trading volume divided by the number of shares outstanding. This is called an inverse elasticity because for an elasticity, quantity is in the numerator rather than the denominator.[1] If the stock is listed on NASDAQ, we divide the trading volume in half to control for the double counting on NASDAQ relative to the AMEX and NYSE. A_1 is the average daily inverse elasticity over the 250 trading day window, [-250,-1], prior to the announcement date:[2]

$$A_1 = \frac{1}{250}\sum_{t=1}^{250}\left(\frac{\left|\text{Stock Raw Return}_t\right|}{\text{Number of Shares Traded}_t \big/ \text{Number of Shares Outstanding}_t}\right)$$

[1] We put the stock return in the numerator to avoid zeroes in the denominator.

[2] If the company went public within 250 trading days prior to the SEO, we start with the first date available on CRSP.

If a stock has a -2% return on a day when 0.5% of its shares outstanding are traded, it would have an inverse elasticity of 4 on that day. A_1 is the average daily inverse elasticity over the 250 trading days before the announcement.[3]

A_1 is not a precise measure of an individual stock's demand elasticity because the trading volume includes both buyer-initiated and seller-initiated trades. However, Kalay, Sade, and Wohl (2004)'s study on all orders that are placed at the Tel Aviv Stock Exchange (TASE) empirically documents a positive relationship between the flow demand for the stock and its daily turnover. Therefore, using the total volume instead of just buyer-initiated volume in the denominator of A_1 still produces a proxy for the demand elasticity. Our estimated A_1 is negatively correlated with the demand elasticity since the price change is in the numerator, which is why it is termed an inverse price elasticity. A large A_1 reflects a large change in price if there is a big demand or supply shock, which implies an inelastic demand curve.

The second measure of price elasticity is an arbitrage risk measure, A_2, as used in Wurgler and Zhuravskaya (2002).[4] A_2 is the residual variance of a market model OLS regression over the 250 trading days prior to the announcement date:

$$\left(R_{i,t} - R_{ft}\right) = \alpha + \beta \times \left(R_{M,t} - R_{ft}\right) + \varepsilon_t \quad t = 1, 2, ..., 250$$

In Wurgler and Zhuravskaya (2002)'s model, the demand elasticity for a stock is determined by the arbitrage risk. Arbitrageurs keep the demand curves flat if the asset has perfect substitutes and the arbitrage risk is zero. On the other hand, if the asset does not have

[3] For the 15 fully marketed offers where there are more than 180 calendar days from the announcement to the offer, we estimate A_1 and A_2 over the 250 trading days ending 180 calendar days prior to the offer so that the estimation window is not too distant from the offer date. This treatment has no impact on our results.

[4] Wurgler and Zhuravskaya (2002) use two arbitrage risk measures. The other arbitrage risk measure is the residual variance of a zero-net-investment portfolio with three substitute stocks. The three stocks are matched on industry and as closely as possible on market capitalization and book-to-market ratio. The two measures are highly correlated (.97) and all our results remain qualitatively unchanged with the other arbitrage risk measure.

perfect substitutes, the demand curve is downward sloping because the arbitrage risk is nonzero and arbitrageurs are risk averse. The larger the arbitrage risk, A_2, the more inelastic the demand curve is. Their empirical analysis documents a positive relation between arbitrage risk and returns on the announcement day of S&P 500 additions, which suggests that stocks with greater arbitrage risk have less elastic demand.

Our estimated order flow inverse demand elasticity and arbitrage risk measures are qualitative proxies for the individual stock's demand elasticity. Both measures are negatively related to the issuing firm's stock demand elasticity prior to the offer with a high value indicating inelastic demand. We are interested in the cross-sectional difference in A_1 and A_2 among the issuing firms.

Panel A and B in Table 5-1 reports means, medians, and standard deviations of the two measures in the two panels. Our estimates of A_2 are comparable to what Wurgler and Zhuravskaya (2002) report. Comparing columns 2, 3, and 4 in Panel A and Panel B, we find the same pattern for both measures. On average, fully marketed SEOs have inverse elasticity and arbitrage risk at least twice as high as for bought deals and accelerated bookbuilt offers. This shows that fully marketed offers are dominated by issuers with relatively inelastic pre-announcement demand curves. The univariate results are consistent with our model's prediction: if the demand curve is more inelastic, the issuing firm is more likely to choose a fully marketed offer because the benefits of marketing are larger. Marketing can flatten the demand curve and achieve a higher post-issue price.

The inverse demand elasticity, A_1, has a highly skewed distribution, ranging from 0.03 to 1000. For A_1, roughly 1% of the sample takes an extreme value because the annualized turnover of the stock is less than 5%. For example, Centennial Communications Corp's average daily

turnover is 0.02%, corresponding to an annual turnover of 5%, before its SEO on November 3rd, 2003. This small turnover rate generates an A_1 of 840, almost 100 times the unconditional median of 9.02. Consequently, we use a natural log transformation of A_1 and A_2 in our empirical work. The last three rows in Panels A and B report the log transformed values of A_1 and A_2, $Ln(A_1)$ and $Ln(A_2)$. As expected, the log transformation significantly reduces the skewness in A_1. The log transformation has a smaller impact on the level of A_2.

As a robustness check, we substitute the stock's raw return in by its market adjusted return using the CRSP value-weighted market index. The results remain the same. Our results are also robust to the specification of the time window. We estimate and over one-month, three-month, and six-month windows prior to the announcement date and all estimates are qualitatively similar across the different windows.

Determinants of Offer Method

Next, we examine the determinants of the choice of offer method in a multivariate framework.

Our univariate analysis shows that the choice of offer method is related to firm and offer characteristics. In the multivariate analysis, we include six firm and offer characteristic variables as the explanatory variables. The four firm characteristics are our two proxies for the elasticity of the short-run demand curve (the estimated inverse elasticity or the estimated arbitrage risk); the market capitalization before the announcement; the average bid-ask spread, scaled by the stock price, over the 250 trading days prior to the announcement; and the number of analyst recommendations within 12 months before the offer, obtained from the I/B/E/S database. We

apply a natural log transformation on all of these variables, which have skewed distributions.[5] To control for the strong declining trend in bid-ask spread, we detrend the log transformed bid-ask spread by subtracting the mean value of this variable from SEOs in the same calendar year, $\text{Detrended Ln}\left(\frac{\text{bid-ask spread}}{\text{price}}\right) = \text{Ln}\left(\frac{\text{bid-ask spread}}{\text{price}}\right) - \text{year t average value}$. The two offer characteristics variables are offer size and fraction of the offer that is primary shares.

Table 5-2 reports the pairwise Pearson correlation coefficients among the two demand elasticity proxies, the issuing firm's Ln(market capitalization) prior to the announcement, Ln(total proceeds), the relative offer size, the fraction of primary shares, the detrended Ln(bid-ask spread), and Ln(1+the number of analysts who cover the stock prior to the SEO). The two elasticity proxies are moderately correlated (0.23) with each other. Both proxies are strongly correlated with the issuing firm's market capitalization, the bid-ask spread, and the number of analysts, indicating that small firms and firms with relatively high information asymmetry have relatively inelastic demand curves. The relative offer size is highly negatively correlated (-0.47) with firm size because of the tendency of large firms to not raise enormous amounts of money. We do not include the offer proceeds in our regression because the relative offer size is the ratio of the offer proceeds and the market capitalization.[6]

We use a binomial logistic model to investigate the determinants of the SEO offer method. The dependent variable, offer method, is a dichotomous variable for which accelerated offers, including bought deals and accelerated bookbuilt offers, equal 1, and fully marketed offers equal

[5] If we use the raw values of A_1, the regression coefficient is still negative but becomes insignificant. In unreported results, we winsorized A_1 at the 1% and 99% level or at the 2% and 98% level, and our empirical results remain qualitatively the same as with the log transformation. If we use the raw values of A_2, or the raw values of the number of analyst recommendations, the results remain qualitatively the same.

[6] Our results are qualitatively unchanged if we include the proceeds.

0. The reference group is fully marketed offers. The binomial logistic model is estimated as follows:

$$\Pr\left(\text{Method=Accelerated Deal}\right) = \frac{1}{1+e^{-u}}$$

$$\begin{aligned} \text{where} \quad u = {} & \gamma_0 + \gamma_1 \times \text{Elasticity Proxy} + \gamma_2 \times \text{Ln(Market Cap)} + \gamma_3 \times \text{Relative Size} \\ & + \gamma_4 \times \text{Primary Fraction} + \gamma_5 \times \text{Ln(1+Number of Analysts)} \\ & + \gamma_6 \times \text{Ln}\left(\text{Bid-ask Spread}\right) + \varepsilon \end{aligned}$$

Table 5-3 presents the binomial logistic regression results. The results are very similarly if we include only one elasticity proxy, $Ln(A_1)$, order flow inverse demand elasticity, or $Ln(A_2)$, residual variance. As predicted, the coefficients on the two demand elasticity measures are negative, and they are statistically significant at the 1% level. Larger order flow inverse elasticity or arbitrage risk indicates a more inelastic demand curve, and this inelasticity encourages issuers to choose a fully marketed offer instead of an accelerated offer.

The relative offer size has a significantly negative impact on the probability of an accelerated offer. As our model predicts, ceteris paribus, a large relative offer size increases the gain from marketing so the issuing firm is more likely to choose a fully marketed offer. The likelihood-based pseudo R-square is 28%, which indicate that the model fits well and can explain at least 28% of the total variance. The model correctly predicts almost 90% of the sample offer method. It should be noted, however, that 86% of the offers are fully marketed.

The binomial logistic model calculates the log ratio between probabilities from the reference group to the alternative group, so the coefficients are hard to interpret. In Table 5-3, we report two marginal probabilities, calculated at the sample means and medians, associated with each independent variable. The marginal probability at means is the average change in the probability given a one unit change in the independent variable at the sample mean level. For example, holding all the independent variables at their mean values, a one unit increase in $Ln(A_1)$

or $Ln(A_2)$ decreases the probability of an accelerated offer by 2.56% and 0.79% respectively. The marginal probability at medians is calculated in a similar way at the sample median level.

Error! Not a valid link. We start with a firm at the bottom 25th percentile of the order flow inverse demand elasticity, which has a value of $Ln(A_1)$ equal to 1.43. This firm has a more elastic demand curve than 75 percent of the sample. We hold the residual variance $Ln(A_2)$, the market capitalization, and the relative size at the 25th percentile and the primary fraction, the bid-ask spread, and the number of analysts at the 75th percentile. If we increase $Ln(A_1)$ by one standard deviation (1.24), the probability of an accelerated offer decreases from 66.9% to 45.4%, a marginal probability of 17%. Similarly, a one standard deviation increase in $Ln(A_2)$ (1.04) decreases the probability of an accelerated offer from 66.9% to 61.7%, a marginal probability of 5.0%. For these values of the explanatory variables, the relative offer size has an even larger impact on the offer method choice. For the same values of the variables, a one standard deviation increase (18.84%) in relative offer size decreases the probability of an accelerated offer from 66.9% to 11.7%.

The multivariate regression results support our first and second hypotheses. Both the pre-issue demand elasticity and the relative offer size are important determinants of the offer method. Firms facing a more inelastic demand curve are more likely to fully market the offer. A larger relative offer size increases the probability of a fully marketed offer.

The results in Table 5-3 reveal other important determinants of the offer method. A larger firm size decrease the probability of an accelerated offer. This is a rather counterintuitive result. It is probably because the firm size is in the denominator of the relative offer size. And this is also consistent with the pattern in Figure 4-1. Holding the relative size constant, larger firms seem to prefer a fully marketed offer. A smaller fraction of primary shares and fewer analysts

covering the stock lower the probability of an accelerated offer. The analyst coverage can be viewed as a proxy for information asymmetry and the elasticity of demand. The smaller fraction of primary shares is associated with a highly probability of overvalued stock, e.g. Lee (1997), which is also related to the information asymmetry. Therefore, an issuing firm with high information asymmetry is more likely to choose a fully marketed offer. The detrended log bid-ask spread is positively correlated with the likelihood of an accelerated offer in the first model. This is a surprising result, since we would expect that stocks with a high bid-ask spread would be more likely to use a fully marketed offer.

One issue is whether the relative offer size is determined jointly with the choice of the offer method, or whether this fraction is predetermined. For a fully marketed offer, if the stock price drops too much after the announcement, or there is little demand for the issue, the issuing firm may reduce the offer size or cancel the offer. On the other hand, it sometimes increases the offer size if the demand is strong. For an accelerated offer, the underwriter has little time to assess investors' demand but may still increase or decrease the offer size according to the demand information collected in a very short time period. Around 75% of the bought deals (220 out of 293) and 44% of the accelerated bookbuilt offers (122 out of 276) reduce the deal value and 36% of the fully marketed offers (975 out of 2,712) reduce the deal size.

For our empirical analysis, the question is whether this potential endogeneity problem biases our results. To examine this, we also try another measure of the relative offer size. It is defined as the ratio between the initial deal size, announced at the filing, and the issuing firm's market capitalization prior to the announcement. Our results remain virtually identical, so this potential endogeneity problem does not affect our conclusions.

In each of the first five years of our 1996-2007 sample period, less than 10% of SEOs are an accelerated offer, where as in each of the last seven years, at least 20% of SEOs do so. Thus, we rerun the binomial regression for the sub-period 2001 to 2007 and present the results in the second regression of Table 5-3. The sub-period results are stronger in the later sample period as most of the marginal effects are larger. $Ln(A_2)$ becomes insignificant due to a higher correlation (0.37) with $Ln(A_1)$. If we exclude $Ln(A_1)$ from the regression, $Ln(A_2)$ becomes significant and the rest of the coefficients remain unchanged. The bid-ask spread also becomes insignificant in the later sample period.

Does Speed Rather than Marketing Determine the Issue Method?

Finally, we discuss an alternative explanation on the choice between accelerated and fully marketed offers. The choice of an accelerated offer may indicate the issuing firm's preference for speed in the raising of equity capital. Firms usually conduct SEOs after a substantial price run-up, as we have seen in Table 4-3. If the issuing firm thinks that the high stock price may not be sustained during a fully marketed SEO process, it might prefer an accelerated offer to raise the money quickly. To test this alternative hypothesis, we use two proxies to measure the issuing firm's preference for speed. The first measure is the BHR, the buy-and-hold stock return during the 250 trading days (one year) prior to the SEO announcement. The second measure is the stock return variance during the same time period. Under the alternative hypothesis, firms that have experienced an enormous price appreciation would have a stronger incentive to issue quickly. If the stock price is volatile, the issuing firm might prefer an accelerated offer to avoid a possible sharp decline in the stock price.

Table 5-4 presents the regression results of a binomial model similar to that in Table 5-3. The alternative hypothesis is not supported by the results. The BHR and the return variance are both negatively correlated with the probability of doing an accelerated offer. This may result

from the fact that smaller firms tend to have higher returns and larger variance regression results while they also tend to choose fully marketed offers. We want to point out that the unlogged stock return variance is very highly correlated (0.99) with our second elasticity proxy, A_2, the residual variance. In addition, during our sample period, there is a monotonic downtrend in the median time between the announcement and completed fully marketed deals. In 1996, the median time is 31 days and it decreases to only 9 days in 2007. Therefore, the speed advantage of an accelerated deal may have become less important in recent years.

Table 5-1. Summary Statistics for Demand Elasticity Proxies

The sample includes 3,279 seasoned equity offerings during 1996 to 2007. Two offers are dropped because their stock price information is unavailable on the University of Chicago Center for Research in Security Prices (CRSP) database over the 250 trading day window [-250, -1] before the announcement date. The average daily order flow inverse demand elasticity, A1, is defined as the daily raw return divided by the daily turnover, averaged over 250 trading days before the announcement date. The turnover is the trading volume divided by the number of shares outstanding. Nasdaq-listed stocks' trading volumes are divided by two to eliminate double counting. The arbitrage risk measure, A2, is constructed similar to that in Wurgler and Zhuravskaya (2002). A2 is the residual variance, expressed as a squared percentage of a market model OLS regression estimated over 250 trading days before the announcement date. We report means, medians, and standard deviations of the raw values and natural log transformed values of A1 and A2. In the last column, the KW test and median test p-values for the means and the medians are the same as in Table III.

Panel A: Order Flow Inverse Demand Elasticity A1					
	All SEOs	Bought Deals	Accelerated Bookbuilt SEOs	Fully Marketed SEOs	P-values from KW/Median Statistics
Number	3,279	293	276	2,710	
Raw Value Mean	28.22	10.01	10.17	32.03	0.00
Raw Value Median	8.52	3.70	4.03	10.17	0.00
Raw Value STD	93.08	56.67	27.22	99.89	
Ln Value Mean	2.31	1.39	1.59	2.48	0.00
Ln Value Median	2.14	1.31	1.39	2.32	0.00
Ln Value STD	1.26	0.86	1.00	1.26	
Panel B: Arbitrage Risk Measure A2 (%^2)					
	All SEOs	Bought Deals	Accelerated Bookbuilt SEOs	Fully Marketed SEOs	P-values from KW/Median Statistics
Number	3,279	293	276	2,710	
Raw Value Mean	16.92	11.19	10.72	18.17	0.00
Raw Value Median	10.56	6.85	4.99	11.64	0.00
Raw Value STD	20.81	13.96	15.35	21.68	
Ln Value Mean	2.31	1.82	1.71	2.42	0.00
LnValue Median	2.36	1.92	1.61	2.45	0.00
Ln Value STD	1.06	1.14	1.15	1.00	

Table 5-2. Correlation among Demand Elasticity Proxies and Firm and Offer Characteristics

Table 5-2 reports pairwise Pearson correlation coefficients (p-values in parentheses) among the two demand elasticity measures, Ln(A1) and Ln(A2), and other firm and offer characteristics. We apply log transformation on the market cap, proceeds, bid-ask spread, and number of analysts to control for extreme values in these variables. We detrend the log bid-ask spreads by subtracting the sample average log bid-ask spread within the same calendar year.

	Ln(A1)	Ln(A2)	Ln(MV)	Ln(Proceeds)	Relative Size	Primary Fraction	Detrended Ln(Bid-ask Spread)	Ln(1 + Number of Analysts)
Ln(A1)	1.00	0.23	-0.52	-0.39	0.26	-0.14	-0.04	-0.04
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.04)	(0.00)
Ln(A2)		1.00	-0.24	-0.15	0.09	-0.16	-0.03	-0.14
			(0.00)	(0.00)	(0.00)	(0.00)	(0.05)	(0.00)
Ln(MV)			1.00	0.77	-0.47	0.06	0.12	0.59
				(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ln(Proceeds)				1.00	0.01	-0.11	0.11	0.46
					(0.57)	(0.00)	(0.00)	(0.00)
Relative Size					1.00	-0.15	-0.02	-0.28
						(0.00)	(0.20)	(0.00)
Primary Fraction						1.00	0.07	0.07
							(0.00)	(0.00)
Detrended Ln(Bid-ask Spread)							1.00	0.10
								(0.00)

Table 5-3. Determinants of Offering Methods for SEOs, 1996 to 2007

Table 5-3 presents the results from the binomial logistic regressions for the full sample period and the sub-period of 2001 to 2007. The dependent variable, offering method, is a dichotomous variable for which accelerated deals, including bought deals and accelerated bookbuilt offers, equal 1, and fully marketed offers equal 0. All the independent variables are defined the same as in Tables III and V. The marginal effects, in percentages, are calculated at the sample means and medians, and are reported to the right of the estimates. The chi-squared statistics are reported in parentheses below. *, **, and *** indicate significance at the 10, 5, and 1 percent levels, respectively. The R-square is the likelihood-based pseudo r-square measure.

	Full Period: 1996 To 2007 Dependent Variable $\Pr(Accelerated\ Deal = 1)$			Sub-period: 2001 To 2007 Dependent Variable $\Pr(Accelerated\ Deal = 1)$		
	Estimate	Marginal Effect at Means(%)	Marginal Effect at Medians (%)	Estimate	Marginal Effect at Means (%)	Marginal Effect at Medians (%)
Ln(A1)	-0.70 ***	-2.56	-8.55	-0.51 ***	-6.14	-11.33
	(80.27)			(29.40)		
Ln(A2)	-0.22 ***	-0.79	-2.65	-0.03	-0.34	-0.63
	(15.99)			(0.17)		
Ln(MV)	-0.42 ***	-1.51	-5.06	-0.34 ***	-4.05	-7.46
	(36.74)			(16.60)		
Relative size (%)	-0.14 ***	-0.53	-1.76	-0.15 ***	-1.75	-3.23
	(215.73)			(164.60)		
Fraction of Primary Shares (%)	0.05 ***	0.18	0.59	0.04 ***	0.45	0.84
	(50.32)			(33.69)		
Ln(1 + Analysts)	0.59 ***	2.14	7.16	0.46 ***	5.47	10.09
	(30.54)			(13.06)		
Detrended Ln(Bid-ask Spread)	0.38 ***	1.39	4.64	0.18	2.10	3.87
	(13.77)			(2.02)		
Number of SEOs		3,275			1,655	
R-square		0.28			0.32	

Table 5-4. Offering Methods and Pre-offer Stock Price

Table 5-4 presents the results from a binomial logistic regression similar to the one in Table VI. To test the preference of speed alternative hypothesis, we include the BHR, the buy-and-hold stock return and the return variance during the 250 trading days prior to the SEO announcement. The rest of the variables are defined the same as in Tables VI. The marginal effects, in percentages, are calculated at sample means and medians and are reported to the right of the estimates. The chi-squared statistics are reported in parentheses below. *, **, and *** indicate significance at the 10, 5, and 1 percent levels, respectively. The R-square is the likelihood-based pseudo r-square measure.

	Dependent Variable		
	$\Pr(Accelerated\ Deal = 1)$		
	Estimate	Marginal Effect at Means (%)	Marginal Effect at Medians (%)
Pre-offer stock return	-0.16 ***	-0.58	-2.03
	(9.60)		
Ln(Return Variance)	-0.12 **	-0.43	-1.50
	(3.74)		
Ln(A1)	-0.70 ***	-2.54	-8.95
	(80.78)		
Ln(MV)	-0.37 ***	-1.34	-4.74
	(28.78)		
Relative size (%)	-0.14 ***	-0.52	-1.85
	(215.19)		
Fraction of Primary Shares (%)	0.05 ***	0.17	0.61
	(50.67)		
Ln(1 + Analysts)	0.52 ***	1.88	6.65
	(23.12)		
Detrended Ln(Bid-ask Spread)	0.37	1.33	4.70
	(12.90)		
Number of SEOs		3,275	
R-square		0.28	

CHAPTER 6
CONCLUSION

The recent rise in accelerated SEOs in the U.S. offers us a chance to study the determinants and economics associated with alternative offer methods. We study three major SEO offer methods: bought deals, accelerated bookbuilt offers, and fully marketed offers.

The main difference between an accelerated offer, including bought deals and accelerated bookbuilt offers, and a fully marketed offer is that there is no marketing for an accelerated offer. Therefore, we focus on the role of marketing in SEOs.

We first develop a model of the issuing firm's stock demand and supply curves. The issuance represents an increase in the supply. With a downward sloping demand curve, the stock price decreases due to this increase in supply. Marketing flattens the demand curve and helps to achieve a higher price after the offer. Therefore, the elasticity of demand curve is endogenous and is affected by the chosen offer method. The model predicts that a fully marketed SEO has greater benefits to the issuing firm when it ex ante faces a highly inelastic demand curve and when the relative issue size is large.

Our empirical analysis supports the model predictions. We use two measures, the order flow inverse demand elasticity A_1 and the arbitrage risk measure A_2, to proxy for the demand elasticity. Regression results show that the ex ante elasticity of the issuing firm's demand curve and the relative offer size are important determinants of the offer method. For an issuing firm that is average in other ways, if it has an above average relative issue size of 30% of the pre-issue shares outstanding and ex ante has a relatively inelastic demand curve, with an $Ln(A_1)$ value of 4.06 (the 90th percentile of the order flow inverse demand elasticity), the probability of using an accelerated offer is 0.4%. If the issuer has a relative offer size of 10% and is in the 10th percentile of the order flow inverse demand elasticity (with an $Ln(A_1)$ value of 0.84), the

probability of using an accelerated offer is 51.6 %. The fraction of primary shares and the amount of analyst coverage also have significant impacts on the choice of the SEO offer method, suggesting that firms with high information asymmetry tend to choose fully marketed offers.

APPENDIX A
CLASSIFICATION OF SEO OFFER METHOD

Our main database is the Dealogic Equity Capital Markets (ECM) database. Dealogic identifies three major SEO offer methods: accelerated bookbuilt, bought deal, and fully marketed offers. The Thomson Financial Securities Data Company's (SDC) new issues database is more commonly used in academic studies. As pointed out in Bortolotti, Megginson, and Smart (2007), SDC's method of the classifying offering technique is sometimes confusing because it gives multiple designations to the same offer. For example, some offers are classified as "block trade/negotiated sale", "accelerated bookbuilt/firm commitment", "firm commitment/auction". Dealogic gives a single designation to each offer, so we think its classification is less ambiguous.

Compared to SDC, Dealogic is more accurate with the filing date and is more consistent with its classification of the offer method. We investigate 519 US seasoned equity offerings during Jan 1st, 2004 to Dec 31st, 2005 listed by both Dealogic and SDC. We first hand-checked 35 random offers' filing dates in Dealogic with Factiva and all of them are correct. Dealogic's classification of the offer method is mostly consistent with the time length from filing to offering. Accelerated bookbuilt offers and bought deals are almost always completed within 3 calendar days from filing with the SEC. Fully marketed offers take a longer time, ranging from 3 calendar days to more than 150 calendar days. All 68 accelerated bookbuilt offers are completed within 3 calendar days from filing with the SEC. Among the 119 bought deals, only 2 offers have a time span longer than 3 calendar days. One is the offer by Trinity Industries Inc, filed on Dec 1st, 2004, which began trading on Dec 9th, 2004. The Dealogic filing date is consistent with what we find in Factiva. This is a pure secondary offer so it is not included in our study. The other is by Monster Worldwide Inc, offered on Jan 5th, 2004. Monster Worldwide filed several S-3/As during the three months prior to the offer and the last one is filed

on Jan 1st, 2004. Among the 331 fully marketed deals, four offers have a time span exceeding 150 calendar days. Two of these four offers' filing dates are consistent with Factiva. Dealogic is apparently wrong with one offer's filing date and it is reclassified as a bought deal. Another offer has an amended file date 10 days before the offer so it is still classified as a fully marketed deal. Therefore, we feel comfortable to rely mainly on the length of time from filing to the offering, supplemented by Dealogic's classification of the offer method.

Next, we focus on discrepancies between SDC's classification and Dealogic's classification of the offer method. Among the 519 offers, 416 issues' offer methods are classified consistently and 103 are inconsistent. Among the 103 inconsistent offers, 86 offers have consistent offering dates and 17 offers have inconsistent offering dates. If the offering date is consistent, we find that Dealogic's offer method classification is more accurate because all accelerated offers are completed within 3 days and all fully marketed offers take more than 3 days to complete. For the 17 offers for which the offering dates are inconsistent, Dealogic's offering dates are correct for 14 out of the 17, where SDC is correct for only 3 of these cases.

Overall, we conclude that Dealogic is a more reliable database for our study.

APPENDIX B
EXAMPLES OF ACCELERATED AND FULLY MARKETED SEOS

Google announced its first SEO on August 15th, 2005 and conducted the offer a month later, on September 14th. This is a fully marketed offer. Google offered 14,159,265 shares at $295 per share, raising $4.3 billion. Morgan Stanley and CSFB are the bookrunners. On March 29th, 2006, Google announced its second SEO and conducted the offer through accelerated bookbuilding two days later, on March 31st. It offered 5.3 million shares at $389.75, raising 42.1 billion. Goldman Sachs is the sole bookrunner.

Sallie Mae announced its plan to raise $2.5 billion through an accelerated bookbuilt SEO after the stock market closes on Dec 26th, 2007. It had an urgent need for capital because it was facing a potential $1 billion loss on its equity forward contracts and a possible downgrade on its debt outstanding by Moody's. The equity forward contracts could force Sallie Mae to purchase 44,039,890 shares at $45 per share while the stock price was around $20. Citibank could demand immediate payment because the stock price had fallen well below the repurchase price. After negotiation, Citibank allowed Sallie Mae to postpone the repurchase for two months and, together with UBS, underwrote the SEO. Sallie Mae completed the offer on Dec 27th, 2007, less than 24 hours after the offer announcement. It raised $2 billion by selling 101,781,170 common shares and another $1 billion by selling preferred stock.

Consolidated Edison conducted two bought deals during 2006 to 2007, raising $447 million and $559 million respectively. The first one was solely underwritten by Citibank and was offered on Sept 21st, 2006. Consolidated Edison first filed a preliminary prospectus with the SEC on Sept 20th, 2006. Early in the morning on Sept 21st, it filed a prospectus supplement without specifying the offer price. The offer price was disclosed in a following supplement filed late in the afternoon on Sept 22nd, 2006. The second bought deal was underwritten by

JPMorgan, announced on May 10th, 2007 and offered within one day, on May 11th. The filing procedure was similar to the first bought deal. Consolidated Edison did not disclose the offer price until late in the afternoon on Monday, May 14th. Unfortunately, we cannot find any news report on either deal.

Nasdaq Stock Market Inc conducted two fully marketed SEOs in 2006, raising $639 million and $691 million respectively. The first SEO was announced on Jan 30th, 2006 and offered 10 days later, on Feb 9th. Of the 13 million shares offered, almost half were sold by existing shareholders. The second SEO was announced on April 21st, 2006 and offered 7 days later, on April 27th.

LIST OF REFERENCES

Altinkilic, Oya, and Robert S. Hansen, 2003, "Discounting and Underpricing in Seasoned Equity Offers," *Journal of Financial Economics* 69, 285-324.

Altinkilic, Oya, and Robert S. Hansen, 2006, "The Puzzling Wealth Loss around Equity Offerings: Is it Merely Price Pressure or Is There More Information?" Working paper, University of Pittsburgh.

Asquith, Paul, and David W. Mullins, 1986, "Equity Issues and Offering Dilution", *Journal of Financial Economics* 15, 61 – 89.

Autore, Don, Raman Kumar, and Kilip Shome, 2008, "The Revival of Shelf-registered Corporate Equity Offerings," Forthcoming, *Journal of Corporate Finance*.

Bagwell, Laurie S., 1992, "Dutch Auction Repurchases: An Analysis of Shareholder Heterogeneity", *Journal of Finance* 47, 71 – 105.

Baker, Malcolm, Joshua Coval, and Jeremy C. Stein, 2007, "Corporate Financing Decisions When Investors Take the Path of Least Resistance," *Journal of Financial Economics* 84, 266 – 298.

Barber, Brad M., and Terrance Odean, 2008, "All that Glitters: The Effect of Attention and News on the Buying Behavior of Individual and Institutional Investors," *Review of Financial Studies* 21, 785 - 818.

Benveniste, Lawrence M., and Paul A. Spindt, 1989, "How Investment Bankers Determine Offer Price and Allocation of New Issues", *Journal of Financial Economics* 24, 343 – 361.

Bethel, Jennifer, and Laurie Krigman, 2006, "Managing the Costs of Issuing Common Equity: The Role of Registration Choice", Babson College working paper.

Biktimirov, N. Ernest, Arnold R. Cowan, and Bradford D. Jordan, 2004, "Do Demand Curves for Small Stocks Slope Down?" *Journal of Financial Research* 27, 161 – 178.

Bohren, Oyvind, B. Espen Eckbo, and Dag Michalsen, 1997, "Why Underwrite Rights Offerings? Some New Evidence," *Journal of Financial Economics* 46, 223-261.

Bortolotti, Bernardo, William L. Megginson, and Scott B. Smart, 2007, "The Rise of Accelerated Seasoned Equity Underwritings". University of Oklahoma working paper.

Bradley, Daniel J., Bradford D. Jordan, Ivan C. Roten , and Ha-Chin Yi, 2001, "Venture Capital and IPO Lockup Expiration: An Empirical Analysis," *Journal of Financial Research* 24, 465-492.

Braun, Matias, and Borja Larrain, 2008, "Do IPOs Affect the Prices of Other Stocks? Evidence from Emerging Markets," *Review of Financial Studies*, forthcoming.

Brav, Alon, and Paul A. Gompers, 2003, "The Role of Lock-ups in Initial Public Offerings," *Review of Financial Studies* 15, 1-29.

Busse, Jeffrey A., and T. Clinton Green, 2002, "Market Efficiency in Real Time", *Journal of Financial Economics* 65, 413 – 437.

Chanine, Salim, Alexander Ljungqvist, and Roni Michaely, 2008, "Marketing Financial Claims", working paper.

Chen, Hsuan-Chi, and Jay R. Ritter, 2000, "The Seven Percent Solution," *Journal of Finance* 55, 1105-1131.

Comanor, William S., and Tomas A. Wilson, 1967, "Advertising Market Structure and Performance," *Review of Economics and Statistics* 49, 423–440.

Corwin, Shane A., 2003, "The Determinants of Underpricing for Seasoned Equity Offers," *Journal of Finance* 58, 2249-2279.

Corwin, Shane A., and Paul Schultz, 2005, "The Role of IPO Underwriting Syndicates: Pricing, Information Production, and Underwriter Competition," *Journal of Finance* 60, 443-486.

Dhillon, Upinder, and Herb Johnson, 1991, "Changes in the Standard and Poor's 500 List," *Journal of Business* 64, 75-85.

Dixit, Avinash, and Victor Norman, 1978, "Advertising and Welfare," *The Bell Journal of Economics* 9, 1-17.

Eckbo, B. Espen, and Ronald W. Masulis, 1992, "Adverse Selection and the Rights Offer Paradox," *Journal of Financial Economics* 32, 293-332.

Eckbo, B. Espen, Masulis, Ronald W. and Norli, Oyvind, 2007, "Security Offerings", *Handbook of Corporate Finance: Empirical Corporate Finance* (North-Holland: Amsterdam), Ch13.

Eckbo, B. Espen and Norli, Oyvind, "The Choice of Seasoned-equity Selling Mechanism: Theory and Evidence" (November 2004). Tuck School of Business Working Paper.

Field, Laura Casares, and Gordon Hanka, 2001, "The Expiration of IPO Shares Lockups," *Journal of Finance* 56, 471-500.

Greenwood, Robin, 2005, "Short- and long-term Demand Curves for Stocks: Theory and Evidence on the Dynamics of Arbitrage," *Journal of Financial Economics* 75, 607 – 649.

Hansen, Robert S., and John M. Pinkerton, 1982, "Direct Equity Financing: A Resolution of a Paradox." *Journal of Finance* 37, 651-665.

Harris, Lawrence, and Eitan Gurel, 1986, "Price and Volume Effects Associated with Changes in the S&P List: New Evidence for the Existence of Price Pressures,' *Journal of Finance* 41, 815-829.

Heinkel, Robert, and Eduardo S. Schwartz, 1986, "Rights versus Underwritten offerings: An Asymmetric Information Approach," *Journal of Finance* 41, 1-18.

Heron, Randall A., and Erik Lie, 2004, "A Comparison of the Motivations for and the Information Content of Different Types of Equity Offerings," *Journal of Business* 77, 605-632.

Hodrick, Laurie S., 1999, "Does Stock Price Elasticity Affect Corporate Financial Decisions?" *Journal of Financial Economics* 52, 225-256.

Huang, Rongbing, and Donghang, Zhang, 2008, "Managing Underwriters and the Marketing of Seasoned Equity Offerings," University of South Carolina working paper.

Kalay, Avner, Orly Sade, and Avi Wohl, 2004, "Measuring Stock Illiquidity: An Investigation of the Demand and Supply Schedules at the TASE," *Journal of Financial Economics* 74, 461 – 486.

Kandel, Shmuel, Oded Sarig, and Avi Wohl, 1999, "The Demand for Stocks: An Analysis of IPO Auctions," *Review of Financial Studies* 12, 227-247.

Kaul, Aditya, Vikas Mehrotra, and Randall Morck, 2000, "Demand Curves for Stocks Do Slope Down: New Evidence from an Index Weights Adjustment," *Journal of Finance* 55, 893-912.

Keim, Donald, and Ananth Madhavan, 1996, "The Upstairs Market for Large-Block Transactions: Analysis and Measurement of Price Effects," *Review of Financial Studies* 9, 1-36.

Korajczyk, Robert A., Deborah J. Lucas, and Robert L. McDonald, 1991, "The Effect of Information Releases on the Pricing and Timing of Equity Issues," *Review of Financial Studies* 4, 685-708.

Lee, Inmoo, 1997, "Do Firms Knowingly Sell Overvalued Equity?" *Journal of Finance* 52, 1439-1466.

Liu, Shinhua, 2000, "Changes in the Nikkei 500: New Evidence for Downward Sloping Demand Curves for Stocks," *International Review of Finance* 1:4, 2000, 245-267.

Lucas, Deborah J., and Robert L. McDonald, 1990, "Equity Issues and Stock Price Dynamics," *Journal of Finance* 45, 1019-1043.

Loderer, Claudio F., John W. Cooney, and Leonard D. Van Drunen, 1991, "The Price Elasticity of Demand for Common Stock," *Journal of Finance* 46, 621-651.

Lynch, Anthony, and Richard Mendenhall, 1997, "New Evidence On Stock Price Effects Associated with Changes in the S&P 500 Index," *Journal of Business* 70, 351-383.

Madhavan, Ananth, 2003, "The Russell Reconstitution Effect," *Financial Analyst Journal* 59, 51-64.

Masulis, Ronald W., and Ashok N. Korwar, 1986, "Seasoned Equity Offerings: An Empirical Investigation," *Journal of Financial Economics* 15, 91-118.

Meidan, Danny, 2004, "A Re-examination of Price Pressure around Seasoned Equity Offerings," Northwestern University working paper.

Merton, Robert C., 1987, "A Simple Model of Capital Market Equilibrium with Incomplete Information," *Journal of Finance* 42, 483-510.

Mola, Simona, and Tim Loughran, 2004, "Discounting and Clustering in Seasoned Equity Offering Prices," *Journal of Financial and Quantitative Analysis* 39, 1-23.

Morck, Randall, and Fan Yang, 2002, "The Mysterious Growing Value of S&P 500 Membership", University of Alberta working paper.

Myers, Stewart C., and Nicholas S. Majluf, 1984, "Corporate Financing and Investment Decisions When Firms Have Information that Investors Do Not Have," *Journal of Financial Economics* 13, 187-221.

O'Hara, Maureen, *Market Microstructure Theory*, 1995, Basil Blackwell, Cambridge, MA.

Richard Carter and Steven Manaster, 1990, "Initial Public Offerings and Underwriter Reputation", *Journal of Finance* 45, 1045 – 1067.

Rinne, Kalle and Matti J. Suominen, 2007, "Value Uncertainty, Price Impact and the Choice of the Equity Issuing Method", Helsinki School of Economics working paper.

Ritter, Jay R., 2003, "Investment Banking and Securities Issuance," *Handbook of the Economics of Finance* (North-Holland: Amsterdam), Ch 5.

Scholes, Myron S., 1972, "The Market for Securities: Substitution versus Price Pressure and the Effects of Information on Share prices," *Journal of Business* 45, 179-211.

Schultz, Paul H., 2008, "Downward Sloping Demand Curves, the Supply of Shares, and the Collapse of Internet Stock Prices," *Journal of Finance* 63, 351-378.

Shapiro, Carl, 1980, "Advertising and Welfare: Comment," *The Bell Journal of Economics* 11, 749-752.

Shleifer, Andrei, 1986, "Do Demand Curves Slope Down?" *Journal of Finance* 41, 579-590.

Smith, Clifford W. Jr., 1977, "Alternative Methods for Raising Capital: Rights vs. Underwritten Offers," *Journal of Financial Economics* 5, 273-307.

Securities and Exchange Commission release 2005-99, "SEC Votes To Adopt Securities Act Rule Reform and Shell Company Regulations; Considers Matters Remanded by Court of Appeals", http://www.sec.gov/news/press/2005-99.htm, July 1st 2005.

Warn, Ken, "Salomon Places $1bn YPF Shares with Institutions," *Financial Times* (July 17th, 1997), downloaded from Factiva.

Wurgler, Jeffrey, and Ekaterina Zhuravskaya, 2002, "Does Arbitrage Flatten Demand Curves for Stocks?" *Journal of Business* 75, 582-608.

Yuan, Yu, 2008, "Attention and Trading," University of Pennsylvania Working Paper.

Zhang, Donghang, 2004, "Why Do IPO Underwriters Allocate Extra Shares When They Expect to Buy Them Back?" *Journal of Financial and Quantitative Analysis* 39, 571–594.

BIOGRAPHICAL SKETCH

Xiaohui Gao earned her Bachelor of Science in mathematics with concentration in Control Science from Fudan University, China, in 2001. She earned her Master of Science in mathematics with concentration in probability and statistics from the University of Florida in 2003. Requirements for the degree of Doctor of Philosophy in finance were completed at the University of Florida during the summer of 2008. Upon graduation, Gao will join the University of Hong Kong as an assistant professor in the Department of Economics and Finance. Gao's primary research interests include security offerings and mutual funds.