

# Moving from Private to Public Ownership: Selling Out to Public Firms versus Initial Public Offerings

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*We study two alternative means to move assets from private to public ownership: through the acquisition of private companies by firms that are public (sellouts) or through initial public share offerings (IPOs). We consider firm-specific characteristics for 1,074 IPO and 735 sellout firms to identify differences in growth, capital constraints, and asymmetric information between the two types of transactions. Our results suggest that firms move to public ownership through an IPO when they have greater growth opportunities and face more capital constraints. We provide a better understanding of the firm-specific characteristics that lead firms to go public.*

Takeovers of private firms by publicly traded firms (sellouts) and initial public offerings (IPOs) are two methods by which privately owned assets move to public ownership. These transactions are comparable, since they represent significant shifts in ownership structure, a channel for raising capital, and a means of liquidation for owners. However, there are important differences between the transactions. In an IPO, the firm continues to exist as a separate entity, although it is now owned by public shareholders. In a sellout, the control of the assets moves to another public firm. In addition, the structures of the transactions that move the assets to public ownership are different: sellouts do not need to access the costly IPO process.

In this research, we consider the factors that determine the mechanism through which a firm moves to public status after the firm has decided to access the public equity market. Most closely related to our study, Brau, Francis, and Kohers (2003) report that IPOs are more likely under macroeconomic conditions such as a relatively high cost of debt and a "hotter" IPO market and industry characteristics such as in industries that are more highly concentrated and more high-tech, while sellouts are more likely in higher market-to-book industries and highly leveraged industries. More recently, Bayar and Chemmanur (2006) theoretically model the choice of exit strategy by entrepreneurs and venture capitalists. They find the probability of success in the product market as a stand-alone firm and the amount of information asymmetry between the insiders and IPO market investors or potential acquirers to be key drivers in the exit decision.

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They also suggest that synergies with the acquirer, the relative bargaining power of the private firm and the potential acquirer, and the presence of venture capitalists will affect the decision. Our work extends these studies by considering firm-specific factors (i.e., growth opportunities, financial constraints, and asymmetric information in firm valuation) that are associated with the method chosen to move assets from private to public status.

We identify 1,074 IPOs made between 1995 and 2004 and compare those firms to 735 sellout firms identified for the same period. As a robustness check, we create a matched subsample that we draw from the full sample of IPOs and sellouts, matched by the book value of assets, industry, and period. We also distinguish between venture capital (VC)-backed and non-VC-backed firms. VC firms may have the most experience in choosing the optimal method of going public and may be more willing to consider alternatives than owners making a one-time decision. Thus, the VC sample provides an alternative setting in which to examine the determinants of transition method.

We collect firm-specific data from Securities and Exchange (SEC) filings for private firms that undertake an IPO and from public acquirers in the takeovers of private firms. By using these data, we can directly compare and consider the factors that determine the method of moving to public ownership. The two samples are comparable in average, median, and aggregate size. Although data availability limits our ability to consider many smaller sellout firms, our focus on larger sellouts is interesting since it is in firms of this size that there is the largest variation in method of transition. Smaller firms are disproportionately involved in sellouts, while larger firms can consider alternative methods of transition to public ownership.

Our results illustrate the importance of firm-specific growth opportunities and market valuation in determining whether the firm goes public through an IPO rather than a sellout. We also find that IPO firms are subject to more capital constraints than are sellout firms. We find mixed results regarding the degree to which IPO firms have characteristically lower asymmetric information costs.

The paper begins with a background discussion of the relevant literature on IPOs, sellouts, and VC. We develop our testable hypotheses in Section II. In Section III, we discuss sample selection and descriptive statistics of transitioning firms. We present the results of our empirical tests in Section IV. Section V concludes.

## I. Background

When private firms move to public ownership, the fundamental decision is whether to do so through an IPO or sellout. A recent *Wall Street Journal* (2004) story begins:

IPO or sale? Sale or IPO? These days many young companies that seemingly are ready to go public through stock offerings are instead surprising the market and agreeing to be bought by other companies, making the potential IPO moot. It's a "bird in hand" strategy that is spreading its wings.

When Viewstar Corporation, one of our sample sellouts, decided to forgo an IPO in lieu of a sellout, the firm issued the following statement by Kamran Kheirloomoom, the president and CEO of Viewstar, illustrating a similar perspective:

Although Viewstar had planned an IPO of Viewstar Common Stock and considered it an attractive opportunity for the Viewstar shareholders, the Viewstar Board of Directors has concluded that the anticipated benefits of the proposed merger with Digital will provide a better opportunity for the shareholders to realize the full value of their investment.

Although both of these transaction types give the firm, its managers, and investors access to public capital markets, academic studies and the popular press focus primarily on IPOs.

Entrepreneurs often say that an IPO is the most desired form of “harvest” (see, e.g., Kensinger, Martin, and Petty, 2000). However, Sahlman (1990) finds that in the 1980s, more VC-backed firms resulted in sellouts than in IPOs (709 sellouts compared to 555 IPOs). Black and Gilson (1998) report that for 2,609 exits by venture capitalists from 1984 through 1996, 55% were by IPO and 45% were by sellout. By directly comparing IPOs to sellouts, we can better understand the underlying determinants affecting the method of transition to public ownership.<sup>1</sup>

In an IPO, a private firm generally sells off a portion of its outstanding equity, but the previous owners retain significant ownership and control of the public corporation. In contrast, sellouts are transactions in which a public company generally buys all of the outstanding shares of a privately held firm. The costs of the two types of transactions and the regulations that affect them are different. The costs of an IPO include initial registration with the SEC and continuing mandated disclosures, investment banking fees, and underpricing in the initial equity sale. Although there are similar types of costs associated with a sellout, they are probably lower than for an IPO, since the sellout firm is incorporated into the existing regulatory obligations of the acquirer. Furthermore, Chemmanur and Fulghieri (1999) show that since the public firm raises capital from a much larger number of investors, this larger number of investors must be convinced about the value of the firm. These costs can also lead to a reduced share price in an IPO. However, it is also possible that an acquirer is better able to extract value from a target when there are few potential competing acquirers, resulting in a lower price for the sellout.

Both sellout and IPO firms benefit from access to public debt and equity markets (in the case of the sellout, through the parent). Both types of transactions also benefit from liquidity of ownership for managers and investors, and the possibility of linking management and employee compensation to traded securities. In addition, sellouts represent the possibility for synergy between the firm and the acquirer, which would improve their ability to compete in the product market (see, e.g., Bradley, Desai, and Kim, 1988; Mulherin and Boone, 2000; Bayar and Chemmanur, 2006). However, the management of the selling firm is more like to lose its ability to set firm policy after a sellout than an IPO. In addition, it may be difficult to raise capital for the sellout firm’s projects, since, as Stein (1997) notes, the sellout firm would be competing with other projects of the acquiring firm in internal capital markets.

In his analysis of IPO underpricing from 1960 to 1982, Ritter (1984) reports first-day returns to investors of 18.8% for IPOs. More recently, Ritter and Welch (2002) document underpricing as high as 65% for the Internet boom period of 1999 and 2000, and Loughran and Ritter (2004) report that underpricing declined to 12% during 2001 to 2003. This underpricing represents a cost to the firm in addition to the direct costs of the stock issuance, estimated to be 11% for IPOs from 1990 to 1994 (Lee, Lochhead, Ritter, and Zhao, 1996). Fuller, Netter, and Stegemoller (2002) find that private acquisitions result in a 2% average return to bidders for the five days surrounding the announcement of the acquisition, suggesting that acquirers in private acquisitions also benefit from underpricing of the firm.

Previous research suggests that both sellout and IPO firms are profitable prior to going public, outperforming similar firms. Matsusaka (1993) finds that private firms undergoing a takeover are more profitable than are comparable public firms. Camerlynck, Ooghe, and De Langhe (2005) find similar results for a sample of private Belgian firm takeovers. Mikkelsen, Partch, and Shah (1997) and Jain and Kini (1994) report the operating performance of private companies before

<sup>1</sup>In analysis similar to our work, Michaely and Shaw (1995) analyze how firms choose between a spin-off and an equity carve-out as a way to divest assets. They suggest that the choice is affected by the firm’s ability to access the capital markets, finding that riskier and less profitable firms are more likely to choose a spin-off.

and after an IPO. Both studies find that IPO firms outperform their industry counterparts, and that firms that go public do so when they are doing relatively well. Pagano, Panetta, and Zingales (1998) suggest that the high valuation may reflect market timing by firms when they go public, and find that firm valuation drops quickly after the IPO.

Multiples are often the basis by which firm value is assessed in the sellout and IPO process. Koeplin, Sarin, and Shapiro (2000) analyze a set of sellouts and public takeovers made between 1984 and 1998, and find that sellouts are valued at a 20% to 30% discount to similar public takeover deals. More recent work by Officer (2007) finds an average acquisition discount for stand-alone private targets of 15% from 1979 to 2003. In comparison, Kim and Ritter (1999) analyze IPO multiples and their work suggests that IPO firms are valued somewhat higher than are sellout firms although the difference in pretransaction performance is small.

Brau, Francis, and Kohers (2003) focus primarily on industry and macroeconomic determinants of the sellout compared to the IPO decision, including industry-related determinants, market timing, and demand for fund factors. They find industry factors are important, in that IPOs are more likely in industries that are more concentrated, have lower market-to-book ratios, and lower debt levels. They also find that firms are more likely to go public through an IPO when the overall ratio of IPOs to mergers is higher, the private firm is larger, and three-month Treasury bill rates are relatively high.

## II. Determinants of the Choice

Our work considers firm-level measures of explanatory variables suggested by Brau, Francis, and Kohers (2003) and further analyzes the role of growth, capital needs, and the difficulties in valuation of the firm in determining whether a firm moves to public status via an IPO or a sellout.

### A. Growth and the Need for Capital

We expect the growth and capital structure characteristics of the private firm to influence whether that firm goes public through an IPO or a sellout. Firms can range from being capital-starved with many growth opportunities to mature firms that in spite of producing a great deal of cash flow have few positive net present value (NPV) projects in which to invest. In an IPO, the private firm raises public capital and allocates it to projects that management deems most important. Lowry (2003) finds that aggregate IPO volume is correlated with measures of overall growth in the economy. Lerner (1994) reports that venture capitalists are more likely to take firms public at market peaks. Pagano, Panetta, and Zingales (1998) find that Italian firms that choose to go public do so after relatively high growth, though they suggest that these older firms are rebalancing their financing rather than seeking funds for new investments. In contrast, Brau, Francis, and Kohers (2003) find that IPO firms are more likely in industries with lower market-to-book ratios, generally an indicator of lower growth.

The ability to raise public capital is also relevant for sellouts but in a constrained framework. After the sellout is complete, the investment opportunities of the sellout firm must compete with other subsidiary operations for scarce resources within the merged firm's internal capital market (Stein, 1997). Since sellout firms are competing in the internal capital market for funds, high-growth firms might avoid a sellout due to the constraints imposed by that market. By undertaking an IPO, the firm may have greater flexibility in accessing resources, especially through its new access to the equity markets. In addition, investors in IPOs may be especially willing to invest

in high-growth firms, making it easier to raise capital through a public sale of shares. Thus, we hypothesize that firms with greater growth potential will go public through an IPO rather than through a sellout. We use changes in assets, capital expenditures, and revenues as proxies for growth in our sample firms. Since the above measures rely on more than one year of data, we also consider the impact of the ratio of capital expenditures and R&D to assets and the market-to-book ratio of each firm in the year preceding the transaction as additional firm-specific indicators of growth in the firm and the demand for capital.

Myers (1984) suggests that there is a strong link between a firm's growth options and its capital structure. Smith and Watts (1992) and Gaver and Gaver (1993) find empirical support for this premise. In particular, they find that public firms with more growth opportunities are more likely to use equity financing than those firms with fewer growth opportunities. If it is true that higher growth firms are more likely to undertake an IPO than a sellout, we would also expect to observe less leverage in IPO firms. Brau, Francis, and Kohers (2003) find that IPO firms are more likely to be in industries with lower debt ratios.

Capital structure may be the constraint that spurs a firm to seek public financing. A firm that has positive investment projects but is constrained by a large amount of debt relative to its optimal level may raise funds for its investment projects by issuing public equity. Similarly, a firm with few investment opportunities may seek to be acquired by a firm with a larger capacity for debt, thereby reducing free cash flows and agency costs. Looking at economy-wide factors, Brau, Francis, and Kohers (2003) find evidence that transitioning firms are more likely to go public via an IPO when Treasury bill rates are higher. However, their results, considering other measures of the demand for funds, are insignificantly different from zero.

Instead of relying on aggregate credit demand measures, we consider liquidity constraints for firms within our sample. We examine leverage (total debt scaled by assets) and cash constraints (interest expense relative to earnings before interest and taxes plus depreciation and amortization) for the firms in our sample to determine if capital structure and liquidity constraints affect the decision to go public through an IPO or a sellout.

## B. Asymmetric Information

The buyer's ability to gather and correctly assess information about the firm seeking transition may play an important role in determining the method by which a firm moves to public ownership. Beatty and Ritter (1986) suggest that IPOs are more costly (as measured by underpricing) when there is increased uncertainty of investors regarding the value of the IPO. Ellingsen and Rydqvist (1997) argue that firms with assets that are not easily valued by public shareholders are more likely to choose a direct sale to another firm or individual. Subscribers to an IPO are usually institutional managers that do not have expertise in the operational intricacies of the private firm. These managers then offer the shares to a diverse group of even less well-informed investors. Although investment bankers and money managers are more informed than the general investor, it is still difficult for them to value a set of assets that have unique qualities. In contrast, a company that is operating in an environment similar to that of the private firm would be better able to accurately value these firm-specific assets.<sup>2</sup>

<sup>2</sup>Bayar and Chemmanur (2006) suggest a similar consideration. Firms that are in the "early stage" with products that are untested against competition may prefer to sell out since the acquirer may be able to provide support to the firm in the product market (i.e., create synergies for the merged firms). "Later stage" firms that are more viable against product market competition are more likely to go public through an IPO.

We expect that firms that are more difficult to value will be more likely to use a sellout to transition to public status.<sup>3</sup> Chemmanur and Fulghieri's (1999) model implies that IPOs involve raising capital from many shareholders and thus involve duplication in the outsiders' cost of producing the information needed to value firms correctly. Therefore, firms with assets that are more easily valued by public shareholders are more likely to choose an IPO, and those with assets that are harder to value will choose a sellout.<sup>4</sup> However, we note that this hypothesis may be difficult to measure empirically. For example, in high-growth firms, it is generally considered to be difficult to identify the firm's future prospects. Since we expect high-growth firms to be more likely to use equity markets to finance their growth, the two hypotheses suggest opposite empirical predictions.

However, in addition to growth, we offer several alternative measures of information availability. These measures include the amount of intangible assets, whether the firm is in the development stage, whether the firm has VC backing, and the size and profitability of the firm. We expect that the lower the level of intangible assets, the more developed and larger the firm, and the more profitable the firm, the more information there is available about the firm's operations and prospects. We also expect that VC backing will provide additional information about the firm's prospects.

### III. Sample Information

We select the sellout and IPO samples from the Securities Data Company (SDC) databases on US Mergers & Acquisitions and US Global New Issues, respectively. We restrict dates to 1995-2004 for the announcement date of sellouts and the issue date of IPOs. This period has several advantages. These 10 years represent a substantial variation in the activity of IPO and takeover markets. There are numerous transactions in many different industries, so we can examine the breadth of the market in our analysis. In addition, the SEC's EDGAR database began keeping electronic filings in 1995 for sellouts and in 1996 for IPO prospectuses, increasing data availability.

To collect financial data on sellouts, we rely on financial disclosure requirements from two securities regulations that govern the financial reporting of private targets. The first is regulation S-X, which states that "if securities are being registered to be offered to the security holders of the business to be acquired, the financial statements . . . shall be furnished for the business to be acquired." This required information is most often in S-4 statements filed by the acquirer. In addition to financial data, reasons for the transaction, and the background of takeover negotiations, the S-4 statements contain a description of the target business, target ownership, and compensation data.

The second way we acquire private target data is through the transaction being a "material" transaction to the acquirer. Depending on the transaction year and the method of payment, acquisitions that are 10% to 20% or more of the acquirer's total assets must file target financial statements, since these transactions meet the level of materiality as discussed in Rodrigues and Stegemoller (2007). Owing to these restrictions, we limit our sample of sellouts to those deals

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<sup>3</sup>From a different perspective, Zingales (1995) argues that IPOs can give managers of private firms a means to establish a market value of the company before liquidating their position. Field and Mulherin (2003) show that IPOs are followed by a higher rate of takeover in the few years following the transaction than other publicly traded firms. We do not confirm this pattern in our matched sample; by the end of 2003, 120 of the acquirers of the sellout firms and 120 of the IPOs had been acquired or merged into another firm.

<sup>4</sup>Chung, Li, and Yu (2005) find evidence of more underpricing for IPOs that have greater growth opportunities and issue uncertainty.

valued at \$50 million or higher. The likelihood that a target will meet the significance measures required by the SEC and will report the necessary financial data drops off dramatically below this value. Although this restriction does decrease our sample size, it is unlikely that smaller firms are in a position to consider the tradeoffs between these two transaction types.

Our sample of sellouts begins with an initial sample size of 4,801 domestic, industrial, and private firms acquired from 1995 to 2004. The SDC defines deal value as the total value of consideration paid by the acquirer, excluding fees and expenses. In this sample we find 1,296 transactions that have a deal value of \$50 million or more, which are purchased by an acquirer listed on the New York Stock Exchange (NYSE), Nasdaq, or American Stock Exchange (Amex). For 843 of these transactions, the deal value is 10% or more of the bidder's assets, satisfying the materiality requirement. From these 843, we find 735 transactions that satisfy our data requirements and have at least one year of audited financial data for the target.

We obtain our IPO sample from the SDC for US industrial firms with an issue date between 1995 and 2004. We find 2,262 issues of common stock that are subsequently listed on the NYSE, Amex, or Nasdaq. To be comparable in size with our sellout sample, we restrict the IPO sample to those IPOs with a market value before the offering of \$50 million or more. This market value is the product of offering price and the number of shares outstanding after the IPO. This restriction leaves 1,790 firms. We further restrict the sample by requiring the availability of data for assets, sales, and earnings before interest, taxes, depreciation, and amortization (EBITDA) on Compustat in the year prior to the IPO. Thus, our main sample comprises 1,074 IPOs.

From these firms (sellouts and IPOs), we choose a matched sample to use in robustness testing and for additional data analysis. After considering transactions that are within the same Fama and French (1997) industry classification, we select only those IPOs that occur within approximately 550 calendar days of a sellout. We also restrict IPO assets to be within 20% of the assets of the sellout. Finally, we select the remaining IPO that is closest in asset amount to each sellout. If we cannot find Fama and French (1997) industry matches, then we match with two-digit SICs and proceed as above. We are able to identify 425 IPO/sellout pairs.

Table I provides deal and market values for our main sample of 1,074 IPOs and 735 sellouts. The two samples are comparable in average, median, and aggregate size. The average, median, and total deal value of the sellouts in our sample is \$244 million, \$127 million, and \$179 billion, respectively. For IPOs, the same measures for the market value of the firm are \$412 million, \$171 million, and \$442 billion. As noted, our research focuses on larger-sized sellouts, since these are the transactions that are most comparable to the IPO firms and have the greatest data availability.

In Table II, we report the reasons for transition from private to public ownership, as stated in SEC filings. We collect reasons for transition from 115 sellout documents, concentrated in S-4 statements, and in 856 IPO prospectuses. The discrepancy in number of filings is due to the uniform filing requirements for IPOs and the scarcer and nonmandatory nature of the corresponding information for sellouts. While we recognize the potential biases in these data that are due to both the lack of information for many firms and to the self-reporting nature of the responses, we are interested to observe the managerial statements. We group the rationale for transition into several broad categories and then further categorize the reasons offered within those groups. Our broad categories include reasons related to access to capital and growth, debt, payouts, marketing and personnel, and other reasons.

For IPO firms, the reasons given for a transition focus mainly on the firm's capacity for growth. Most IPO firms mention the need for capital access or the desire for funding to achieve growth through, for example, acquisitions, research and development (R&D), or capital expenditures. IPO firms specifically cite the ability to raise working capital (65.5%), the ability to fund future

**Table I. Values of Sellouts and IPOs, 1995-2004**

This table describes the size and number of deals in a given year. IPOs must be made by US firms, must be listed on NYSE, Amex, or Nasdaq; must be an original IPO; must not be a spin-off; and must be an offering of common stock. Sellouts must have a disclosed dollar value and must be a private US firm. The acquirer must be traded on the NYSE, Amex, or Nasdaq and must acquire 100% of the target. In addition, we eliminate financial and utility firms from both samples. The Total row provides the average deal value and also sums the deal values and number of sellouts and IPOs. We define Deal Value as the total value of consideration paid by the acquirer, excluding fees and expenses. We define Market Value for an IPO as the midpoint of the price on the opening day multiplied by the number of shares outstanding. The Average, Median, and Total columns report in millions of dollars.

	Sellout Deal Values				IPO Market Values			
	Average	Median	Total	N	Average	Median	Total	N
1995	\$169	\$123	\$4,385	26	\$156	\$95	\$15,087	97
1996	\$185	\$115	\$16,878	91	\$193	\$110	\$37,986	197
1997	\$173	\$94	\$14,573	84	\$342	\$134	\$49,899	146
1998	\$179	\$117	\$17,350	97	\$257	\$126	\$25,677	100
1999	\$367	\$136	\$40,403	110	\$700	\$211	\$160,307	229
2000	\$332	\$161	\$49,442	149	\$440	\$293	\$62,005	141
2001	\$196	\$135	\$9,590	49	\$423	\$304	\$14,808	35
2002	\$214	\$133	\$7,484	35	\$654	\$365	\$22,234	34
2003	\$160	\$116	\$7,524	47	\$430	\$279	\$11,620	27
2004	\$248	\$177	\$11,637	47	\$630	\$220	\$42,818	68
Total	\$244	\$127	\$179,264	735	\$412	\$171	\$442,440	1,074

acquisitions (36.7%), capital expenditures (34.6%), R&D (23.1%), and general growth (8.5%). In addition, 50.5% of the IPO firms specifically mention the desire to reduce debt. All of these reasons suggest that the IPO firms are more growth-oriented when compared to sellout firms

In contrast, sellout firms place greater emphasis on liquidity, the ability of the owners to "harvest" their initial investment, or the price paid (93.9%). Although there are a significant number of sellouts that mention growth (52.2%) or access to capital (40%), the most common reasons offered for the sellout focus on the value the sellers will receive for the firm. Thus, a majority of sellouts cite a rationale related to the payout that results from the transaction, but only a minority of IPO firms cite payouts, and then only in terms of a distribution to investors (6.4%) or in redeeming the investment of preferred stockholders (7.8%). Sellout firms also cite synergies (80.9%) with the acquirer as a reason for the transaction, consistent with Bayar and Chemmanur's (2006) findings, and are also more likely to mention reasons that reflect strategic considerations, such as marketing abilities or industry conditions. A further indication of differences in motivation is that 36.5% of sellouts mention favorable tax consequences and 33% mention risk reduction, neither of which is a reason mentioned by IPO firms.

Table III provides median and mean values for accounting, ownership, and other firm-specific variables for our full sample of sellout and IPO firms for the year preceding the transaction. We report Wilcoxon test statistics for differences in the distribution for each median and *t*-statistics for the differences in the means. We note that we are able to identify the balance sheet and income statement items for all of the firms in both samples. However, ownership data and other non-balance-sheet items are more difficult to identify, especially for the sellout firms.

In general, the median values suggest that sellout firms are larger in terms of revenues, assets, and EBITDA prior to the transaction, although the median dollar value of the



**Table II. Reasons Given for the Transition from Private to Public Ownership**

This table presents reasons found in SEC filings for a sample of private firms that are either acquired by a public company or that undertake an initial public offering. There are more observations for IPOs, since the information gathered from prospectuses for IPOs is uniform, but the corresponding information for sellouts is scarcer and not always mandatory. In addition to the reason reported by the private firm, we report in both absolute and percentage terms the frequency with which the reason is recorded.

Access to Capital and Growth	Sellouts (N = 115)		IPOs (N = 856)	
	#	%	#	%
Acquisitions	7	6.1%	314	36.7%
Capital expenditures (access to capital)	46	40%	296	34.6%
General corporate purposes	3	2.6%	642	75%
Growth	60	52.2%	73	8.5%
R&D	24	20.9%	198	23.1%
Working capital	—	—	561	65.5%
<b>Debt</b>				
Debt reduction	—	—	432	50.5%
<b>Payouts</b>				
Favorable tax consequences	42	36.5%	—	—
Liquidity/fair price/stock of public firm	108	93.9%	6	0.7%
Pay a distribution	7	6.1%	55	6.4%
Redeem preferred stock	—	—	67	7.8%
Pay a termination fee	—	—	5	0.6%
Repurchase common stock	—	—	12	1.4%
<b>Marketing and Personnel</b>				
Issues related to personnel	31	27%	18	2.1%
Marketing activities	29	25.2%	125	14.6%
<b>Other</b>				
Create value	16	13.9%	—	—
Efficiencies/scale/synergies	93	80.9%	—	—
Industry conditions/competition	27	23.5%	—	—
Risk reduction	38	33.0%	—	—
Timing	9	7.8%	—	—
Fund operating losses	—	—	12	1.4%
Litigation expenses	—	—	2	0.2%
Reorganization and alliances	—	—	9	1.1%

going-public transaction is significantly larger for IPO firms. In contrast, IPO firms are, on average, significantly larger than sellout firms in each of these categories. This conflict between mean and median results may indicate that IPO firms are in general less-proven, younger, more growth oriented firms, but the IPO sample may also include some firms that are larger and more established. The fact that IPO firms have a higher median dollar valuation while the median asset, revenue, and EBITDA medians are lower suggests the importance of the growth opportunities of these firms.

According to both the median and mean values, sellout firms invest less in capital expenditures and R&D than do IPO firms. Sellout firms also tend to be older than IPO firms. The average (median) age is 15.6 (7) years for sellout firms and 10.1 (6) years for IPO firms. Venture capitalists back 55.5% of our IPO sample compared to 41.4% of our sellout sample. Although this difference is significant, it is noteworthy that there is VC backing for a large portion of the sellout sample.

**Table III. Statistics for Sellouts and IPOs, 1995-2004**

This table provides the median and mean values for sellouts and IPOs from the sample. We report the *p*-values for Wilcoxon signed-rank test statistics for differences in distribution in Column (4) and for a *t*-test for differences in means in Column (7). We report dollars in millions.

(1) Firm characteristics	(2) Sellout		(3) IPO	(4) Wilcoxon	(5) Sellout		(6) IPO	(7) <i>t</i> -test
	Median				Mean			
Revenues prior to transaction	\$36.5 735	\$26.9 1,074		0.5099	\$100.3 735	\$196.9 1,074		0.0005
Total assets prior to transaction	\$27.7 735	\$26.3 1,074		0.0460	\$79.1 735	\$159.5 1,074		0.0001
Dollar value of transaction	\$127.4 735	\$171.5 1,074		0.0001	\$243.9 735	\$412.0 1,074		0.0038
EBITDA prior to transaction	\$4.0 735	\$1.6 1,074		0.0185	\$7.8 735	\$15.7 1,074		0.0021
Capital expenditures	\$1.5 735	\$1.9 1,074		0.0001	\$8.2 735	\$27.8 1,074		0.0019
Research and development expense	\$0.0 735	\$1.7 1,074		0.0001	\$2.2 735	\$6.0 1,074		0.0001
Intangibles	\$0.0 735	\$0.0 1,074		0.0247	\$10.0 735	\$29.5 1,074		0.0081
Years of operating history	7 549	6 415		0.0001	15.6 549	10.1 415		0.0001
Number of employees	269 292	235 788		0.8468	996.4 292	1449.2 788		0.0818
Venture backing	41.4% 735	55.5% 1,074		0.0001	41.4% 735	55.5% 1,074		0.0001
Age of CEO	47.5 140	45.5 424		0.0825	47.9 140	46.3 424		0.0593
Insider ownership prior to transaction	75.4% 228	65.1% 419		0.0167	68.4% 228	64.5% 419		0.0894
Insider ownership after the transaction	0.0% 425	50.1% 421		0.0001	5.6% 425	49.4% 421		0.0001

Finally, there is, on average, a marginally significant difference in insider ownership prior to the transaction and IPOs maintain higher (42%) insider ownership after the transaction. These data suggest that the median sellout firm tends to be larger, somewhat older, and more established than is the median IPO firm. The median IPO firm is investing more in capital expenditures and R&D than is median sellout firm.

#### IV. Empirical Results

We first report summary data and univariate tests on our variables of interest and follow these results with our logit regression analysis of the method of going public. We acknowledge that univariate statistics are limited in their ability to explain the choice of transition method relative to regression analysis. Nevertheless, they provide an overview into the characteristics that may be important in the decision.

**Table IV. Growth, Investment, Asymmetric Information, and Debt in Sellouts and IPOs, 1995-2004**

In this table, Panel A presents the median growth rates for sales, total assets, and capital expenditures (capex). Year 0 represents the year in which the transaction occurs. Growth rates are represented by the change in sales, assets, and capital expenditures from year -2 to year -1. Panel B shows scaled investment in the year prior to the IPO or acquisition. Panel C presents measures of debt and financial distress. We measure EBITDA as earnings before taxes plus amortization and depreciation. Interest is interest expense reported in the income statement. Panel D provides data on measures of asymmetric information as of the year prior to the IPO or acquisition. The number of observations appears below the median. We report significance levels for Wilcoxon test statistics for differences in distribution in the sellout rows. Superscript numbers shown in the scaled R&D and scaled intangibles cells represent the observation at the 75th percentile.

<i>Panel A. Measures of Growth (Growth Rates)</i>			
	<b>Growth in Sales</b>	<b>Growth in Total Assets</b>	<b>Growth in Capex</b>
Sellouts	26.2%***	18.8%***	16.3%***
	550	588	568
IPOs	44.6%	49.2%	49.3%
	555	605	574
<i>Panel B. Measures of Growth (Scaled Investment)</i>			
	<b>Capex/Total Assets</b>	<b>R&amp;D/Total Assets</b>	<b>(Capex + R&amp;D)/Total Assets</b>
Sellouts	6.9%***	0% <sup>22.2%***</sup>	14.7%***
	735	735	735
IPOs	7.9%	8.2% <sup>30.5%</sup>	25.6%
	1,074	1,074	1,074
<i>Panel C. Measures of Debt</i>			
	<b>Total Debt/ Total Assets</b>	<b>Long-Term Debt/ Total Assets</b>	<b>% of Firms Where Interest &gt; EBITDA</b>
Sellouts	65.7%***	11.6%***	28.6%***
	735	735	735
IPOs	58.6%	7.8%	35.3%
	1,074	1,074	1,074
<i>Panel D. Measures of Asymmetric Information</i>			
	<b>Intangibles/ Total Assets</b>	<b>Percentage of Firms in the Development Stage</b>	
Sellouts	0% <sup>7.4%***</sup>	15%	
	735	735	
IPOs	0% <sup>3.6%</sup>	15.7%	
	1,074	1,074	

\*\*\*Significant at the 0.01 level.

### A. Summary Data and Univariate Statistics

Panels A and B of Table IV present univariate statistics on different growth measures for sellout and IPO firms. The growth-rate measures (Panel A) represent the change in sales, total assets, and capital expenditures from the fiscal year-end two years prior to the transaction, relative to the fiscal year-end prior to the IPO or sellout transaction. The data requirement for two years before the transaction results in a significant drop in sample size from 1,074 IPO firms to 555, and from

735 sellout firms to 550. We expect that firms that choose to transition to public status via an IPO will be higher-growth firms.

Before the going-public transaction, the IPO firm median sales growth rate is 44.6% from year -2 to year -1. This growth rate is significantly greater (as measured by the Wilcoxon test statistic) than is the median growth in sales of 26.2% that sellout firms experience. We also find that the IPO firms have significantly greater growth in total assets and in capital expenditures relative to the sellout firms. Median asset growth for IPO firms in the year prior to the transaction is 49.2%, compared to growth in assets for sellout firms of 18.8%. The median growth in capital expenditures in the year preceding the transaction in the IPO firms is 49.3%, relative to 16.3% in the sellout firms. This evidence is consistent with our hypothesis that growth, and the capital needs that accompany that growth, are important considerations in the decision to go public through an IPO.

In Panel B we consider expenditures on capital improvements and R&D as alternative measures of growth. Since these measures are based on only one year of data, they are available for our full sample. We scale capital and R&D expenditures by total assets. Median scaled capital expenditures are significantly different at 7.9% for IPO firms and 6.9% for sellout firms. The median scaled R&D is also significantly different at 8.2% for IPOs and 0.0% for sellouts. Thus, our univariate results present evidence that IPO firms are more growth oriented than are sellouts.

We also consider the impact of leverage and liquidity on the going-public decision. Panel C of Table IV reports differences in the debt characteristics of the firms. In the year before the transition from private to public ownership, sellout firms have more debt as a percentage of assets than do IPO firms. The median ratios of total debt to assets and long-term debt to assets are 65.7% and 11.6%, respectively, for sellouts, and 58.6% and 7.8%, respectively, for IPOs. These differences are significant at the 1% level. This result is consistent with IPO firms having greater growth prospects. This result also supports the findings in the capital structure literature that high-growth firms have less debt.

However, we are interested in whether IPO firms have reached the stage where they need additional access to equity financing. We use a measure of cash constraints as a proxy for this need. We say a firm is cash constrained if its interest payments are greater than cash flows, as measured by EBITDA. We find that 35.3% of IPO firms have interest expenses greater than their EBITDA, significantly greater at the 1% level than the 28.6% for sellout firms. Thus, despite having less debt in general, IPO firms are more constrained in their ability to service their debt.

In Panel D of Table IV, we report two additional measures of asymmetric information in the private firms leading up to the time of the transition. The first is intangibles (including goodwill, patents, etc.) scaled by total assets. It may be easier for managers to communicate the value of the intangibles to a small set of investors rather than the diffuse set of shareholders in an IPO. We find that the percentage of the firm's assets tied to intangibles is significantly greater for sellout firms than for IPO firms, as measured by the Wilcoxon test statistic. Although the medians are both zero, the 75th percentile is 3.6% for IPO firms and 7.4% for sellout firms.

We also measure information asymmetries by the percentage of firms that are in the development stage at the time of the transaction. We classify a firm as being in the development stage if the firm has revenues of less than \$500,000, or if R&D expenses are greater than revenues. We suggest that these firms are the ones with assets that the general investing public finds the most difficult to value, and which may receive a more accurate valuation by an acquirer with asset-specific knowledge (see Officer, Poulsen, and Stegemoller, 2007). In our univariate analysis, we find no difference in the percentage of IPO firms compared to sellout firms in the development stage.

As noted above, it is difficult to interpret our results for asymmetric information. Many empirical studies characterize high-growth firms as firms with more asymmetric information on

**Table V. Median Valuation Multiples of IPOs and Sellouts, 1995-2004**

This table presents median valuation multiples for IPO and sellout firms. For every multiple the numerator is the market value (MV) for an IPO, which we define as the midpoint of the price on the opening day multiplied by the number of shares outstanding, or deal value for a sellout. The MV divided by the book value of assets uses the value of assets from the balance sheet. The sales multiple is MV scaled by total revenues. In Panel B, we compare multiples for only the matched sample of IPOs and sellouts. Panel C reports the differences in the multiples of venture capital (VC) and non-VC firms.

<i>Panel A. All Firms</i>		
	<b>Sellouts</b>	<b>IPOs</b>
MV/book value of assets	3.9	5.8
	735	1,074
MV/sales	3.5***	5.9
	735	1,074
<i>Panel B. Matched Firms</i>		
MV/book value of assets	4.3***	6.4
	425	425
MV/sales	3.2***	6.6
	425	425
<i>Panel C. VC Backing</i>		
<b>VC-backed</b>		
MV/book value of assets	8.9 <sup>a</sup>	7.9 <sup>a</sup>
	304	596
MV/sales	9.6 <sup>a</sup>	10.4 <sup>a</sup>
	304	596
<b>Non-VC-backed</b>		
MV/book value of assets	3.0	3.2
	431	478
MV/sales	2.1	2.3
	431	478

\*\*\*Significant at the 0.01 level for a Wilcoxon test for difference in distribution in medians between IPO and Sellout values.

<sup>a</sup>Significant at the 0.01 level for a Wilcoxon test for difference in distribution in medians between VC and non-VC value.

their potential projects and payoffs from those projects. Thus, our results for growth measures suggest that IPO firms may be subject to more asymmetric information problems, while our alternative measure of intangibles to assets suggests the opposite. In regression analysis, we include both factors to sort out the dual effects of growth and asymmetric information. The univariate results in Table IV present a general picture suggesting that firms that choose to go public through an IPO tend to be higher-growth firms and firms that need access to nondebt sources of funding.

In Table V, we report valuation multiples as an additional measure of the value of growth opportunities for our sample firms. In general, higher valuation multiples of either assets or earnings suggest future growth. We report the dollar amount paid for the firm as a multiple of total assets and sales. (Owing to the problematic nature of negative values for these accounting items, we do not consider multiples of earnings or cash flows.) We measure the market value of sellouts as the deal value reported by the SDC. For IPOs, we use the product of the offer price and total shares outstanding after the offer.

In Panel A, we report the valuation multiples for our full sample of firms. In Panel B, we focus on the matched sample, in which we control for industry, size, and timing of the transactions. In both the full and the matched samples, we find that the median market value to book value of assets for IPO firms is greater than the ratio for sellout firms (significantly so for the matched sample). In the full (matched) sample, the market value to book value of assets is 5.8 (6.4) for IPO firms compared to 4.3 (3.9) for sellout firms. This result suggests that IPO firms have more growth opportunities and therefore are valued more highly than are comparable sellout firms. Confirming this observation, the ratio of market value to sales is significantly higher for both the full and matched IPO samples compared to the sellout sample.

In Panel C of Table V, we separate the sample according to whether the firms receive VC backing or not, as identified by the SDC VC database, and consider whether the valuation multiples differ with VC backing. We find that firms with VC backing have consistently higher valuation multiples than those firms that do not. However, the statistically significant difference between IPO- and sellout-firm valuations disappears in both subsets. We note that the proportion of sellout firms with VC backing (41.3% compared to 55.5% of the IPO firms) is quite high, despite the general view that VC firms prefer to exit their investments via an IPO.

The ability of a firm to produce sustainable profits may have a significant impact on the marketability of that firm to the general public. This marketability serves as another proxy for the ability of investors to value a company. If we observe stronger performance, it could suggest future profitability. In addition to factors such as the firm being in the development stage, possibly having poor management, or perhaps being too small to benefit from scale efficiencies, poorer performance could indicate uncertainty about future performance. We measure pretransaction performance with two accounting measures: EBITDA scaled by sales (return on sales) and EBITDA scaled by total assets (return on assets).

We report the results in Table VI for both the year before and two years before the transaction. Again, the requirement for an additional year of data causes the sample size to drop. Both return measures indicate that sellout firms are more profitable than IPO firms before the transaction occurs. The median return on sales for sellout firms in year  $-1$  for the full sample is 6.5%, in contrast to 4.3% for IPOs. The return on assets for sellout firms in year  $-1$  is 11%, compared to 6% for IPO firms. Both of these differences in medians are statistically significant.

When we consider the matched sample, and control for industry, size, and timing considerations, we again find that the performance of the sellout firms is significantly better than that for the IPO firms. The results for year  $-2$  mirror the results for year  $-1$ . Thus, the univariate profitability results are not consistent with our hypothesis that if profitability is a proxy for less asymmetric information, more profitable firms will undertake an IPO.

## B. Logistic Regression Analysis

We use logistic regressions to provide an integrated analysis of our various univariate tests. We present results from our logistic regression analysis in Tables VII and VIII, where the dependent variable is equal to one for IPO firms and zero for sellout firms. The explanatory variables consider the importance of growth, capital structure, and asymmetric information in the decision on the method of transition. We also include, but do not report, dummy variables that control for the fixed effects that result from commonalities in the firm's industry and the year of the transaction.

The regression models in Table VII differ in the choice of the proxy variable included to measure the growth of the firm. In regressions 1 through 3, we consider growth rates in assets, capital expenditures, and revenues, respectively. However, the growth rate measures reduce the sample size, so we exclude them from regression 4. Regression 4 relies on the ratios of capital

**Table VI. Median Operating Performance Prior to IPO or Sellout**

This table reports the median income (EBITDA measured as earnings before taxes plus amortization and depreciation) of sellouts and IPOs scaled by sales and total assets. Year 0 represents the year in which the transaction occurs. These returns are unadjusted operating returns. Significance levels of Wilcoxon test statistics for differences in distribution are reported in the sellout rows.

<i>Panel A. All Firms</i>		
	<b>Year -1</b>	<b>Year -2</b>
<b>EBITDA/Sales</b>		
Sellouts	6.5%***	7.4%***
	735	549
IPOs	4.3%	3.6%
	1,074	555
<b>EBITDA/Total assets</b>		
Sellouts	11.0%***	11.3%***
	735	569
IPOs	6.0%	3.9%
	1,074	590
<i>Panel B. Matched Sample</i>		
<b>EBITDA/Sales</b>		
Sellouts	7.1%***	8.8%***
	425	177
IPOs	0.7%	3.1%
	425	177
<b>EBITDA/Total assets</b>		
Sellouts	11.3%***	11.7%***
	425	192
IPOs	1.3%	3.1%
	425	192

\*\*\*Significant at the 0.01 level.

expenditures to assets, market to book, and R&D to assets as the measures of growth. Although these latter measures do not capture actual prior growth in the operations of the firm, they do represent investments in the firm that can lead to growth or expected growth.

In each regression, the growth measures suggest that firms with faster growth are more likely to go public through an IPO. This result confirms our hypothesis that faster-growing firms can benefit from direct access to public equity markets. It is also consistent with Lowry's (2003) findings that IPO volume is significantly related to overall capital demands in the economy. In addition, the significance of the market-to-book ratio is consistent with earlier findings that IPO firms tend to be in industries with high valuation ratios.

We measure the importance of capital structure and liquidity constraints by using the leverage of the firm (total debt scaled by total assets) and an indicator variable for whether interest expense is greater than EBITDA when interest expense is positive. We call the latter variable the "constrained cash flow indicator." We find that firms that use an IPO to go public have significantly less debt than do the sellout firms. This result is consistent with the growth findings and the capital structure proposition that high-growth firms will have less debt. However, the decision to use an IPO to go public is more closely related to the question of whether the firm has reached its optimal debt level and further debt capacity is limited. The significantly positive coefficient on

**Table VII. Logistic Regression Analysis of Factors Influencing Transition Method for Sellouts and IPOs, 1995-2004**

In this table, the dependent variable is a dummy equal to zero if the observation is a sellout and equal to one if it is an IPO. We measure all independent variables in year -1: growth in assets, capital expenditures (capex), and revenues are the change from years -2 to -1. For market-to-book, the numerator is the midpoint of the price on the opening day multiplied by the number of shares outstanding for an IPO and is the deal value for a sellout; the denominator is the value of assets from the balance sheet. Venture capital (VC) backing is a dummy variable where one denotes the presence of VC financing. Leverage is total debt scaled by total assets. We define deal value (IPO value) as the total value of consideration paid by the acquirer, excluding fees and expenses (the offer price multiplied by the number of shares outstanding after the IPO). Constrained cash flow is a dummy equal to one when interest expense is greater than EBITDA and interest expense is positive. Return on assets is EBITDA divided by total assets. We winsorize independent accounting variables at the 5% and 95% levels. We include, but do not report, industry and year dummies in regressions (1)-(4). *P*-values are in parentheses.

<b>Variables</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
Intercept	-4.98*** (.000)	-5.02*** (.000)	-5.01*** (.000)	-2.16*** (.007)
<b>Growth proxies</b>				
Growth in assets	0.16*** (.000)	—	—	—
Growth in capex	—	0.07*** (.008)	—	—
Growth in revenues	—	—	0.08** (.018)	—
Capex/total assets	—	—	0.87 (.229)	1.87*** (.001)
Market-to-book	0.18*** (.000)	0.20*** (.000)	0.19*** (.000)	0.23*** (.000)
R&D/total assets	1.05** (.018)	0.81* (.067)	0.72* (.100)	0.58* (.086)
<b>Capital structure proxies</b>				
Leverage	-0.59*** (.003)	-0.69*** (.000)	-0.69*** (.001)	-0.63*** (.000)
Constrained cash flows	0.34* (.069)	0.33* (.077)	0.34* (.069)	0.38*** (.009)
<b>Asymmetric information proxies</b>				
Intangibles/total assets	-0.93** (.037)	-1.01** (.024)	-0.93** (.039)	-0.59 (.102)
Development stage	-0.77*** (.004)	-0.51* (.063)	-0.44 (.108)	-0.55*** (.006)
VC backing	0.34** (.024)	0.46*** (.003)	0.44*** (.005)	0.48*** (.000)
Log (total assets)	0.78*** (.000)	0.79*** (.000)	0.78*** (.000)	0.62*** (.755)
Return on assets	-0.07 (.000)	-0.00 (.991)	0.06 (.796)	-0.15 (.393)
Likelihood ratio test statistic	268.3*** (.000)	255.6*** (.000)	255.4*** (.000)	317.3*** (.000)
Number of observations/Number of IPOs	606/589	589/575	590/574	1,074/735

\*\*\*Significant at the 0.01 level.

\*\*Significant at the 0.05 level.

\*Significant at the 0.10 level.



the constrained cash flow variable suggests that the IPO firms face capital constraints that could be alleviated by access to public equity markets. Thus, these results confirm that high-growth firms that need access to equity capital are more likely to choose to go public through an IPO.

We consider several variables related to the measurement of asymmetric information to determine if the difficulty in valuing the firm has an impact on the decision to go public through an IPO. These proxies include the ratio of intangibles to total assets, whether the firm is in the development stage, whether the firm has VC backing, and the return on assets of the firm. In general, the results from our alternative variables are consistent with the importance of asymmetric information and the difficulty in firm valuation to determining the method the firm uses to go public. Firms with more intangible assets and firms in the development stage are more likely to be involved in a sellout to a public firm than they are to go public through an IPO. In a sellout, the managers of the firm are better able to provide information about the firm, and in addition, prospective buyers may be in similar industries or be able to benefit from synergies in production. Firms with VC backing—a source of information about the quality of the firm (see, e.g., Megginson and Weiss, 1991; Denis, 2003)—are more likely to go public via an IPO. The coefficient on the return-on-assets variable is never significant in the reported regressions.

We also include the log of total assets in the firm as an additional measure that can be a proxy for asymmetric information of the firm's prospects. Previous researchers have found that larger firms are more likely to go public through an IPO rather than staying private (Pagano, Panetta, and Zingales, 1998; Chemmanur, He, and Nandy, 2007) or selling out to a public firm (Brau, Francis, and Kohers, 2003). We also find that larger firms are more likely to go public as an IPO.

While our alternative measures of asymmetric information suggest the importance of asymmetric information concerns in the decision between an IPO and a sellout, we note that high-growth firms—those that are more likely to go public through an IPO—are generally characterized as firms with significant asymmetric information concerns. Thus, our conflicting results make it difficult to interpret our results. Nevertheless, there does seem to be a role for asymmetric information as a contributing factor in the determination of the means through which firms go public, especially after controlling for growth in the firm.

In Table VIII, we separate our sample on the basis of whether the firm is VC backed or not and present the results from regression 4 of Table VII for each subsample (with the exclusion of the VC indicator variable). It may be that VC firms, given their portfolio of investments and repeat decisions about exiting firms, will have more expertise and greater willingness to explore different exit strategies. Lerner (1994), for example, finds supportive evidence that seasoned venture capitalists are more proficient at timing IPOs in the biotechnology industry in the 1980s. By more closely examining VC-backed firms, we can limit the impact of one-time decision makers who may prefer one exit strategy over another for personal liquidity, control, or other nonfinancial reasons.

The regression analysis for VC-backed firms supports the importance of growth, capital structure, and asymmetric information in determining the method of going public. The significance of the positive coefficient on the market-to-book ratio confirms the importance of valuation and growth expectations in determining the method of going public. The capital structure proxies are significant, and show that lower leverage and higher capital constraints increase the probability of an IPO. With the exception of return on assets, the other asymmetric information variables also remain significant, as in the earlier regressions.

The regressions for non-VC-backed firms support the general pattern of our findings, but the results are somewhat weaker. The coefficients on the growth proxies still suggest that

**Table VIII. Logistic Regression Analysis of Venture and Non-Venture Firms and Factors Influencing Transition Method for Sellouts and IPOs, 1995-2004**

In this table, the dependent variable is a dummy equal to zero if the observation is a sellout and equal to one if it is an IPO. The first regression presents only those firms that have venture capital (VC) backing at the time of the transaction. The second regression analyzes those firms that did not have VC backing at the time of the transaction. We measure all independent variables in year  $-1$ : growth in assets, capital expenditures (capex), and revenues are the change from years  $-2$  to  $-1$ . For market-to-book, the numerator is the midpoint of the price on the opening day multiplied by the number of shares outstanding for an IPO and is the deal value for a sellout; the denominator is the value of assets from the balance sheet. VC backing is a dummy variable where one denotes the presence of VC financing. Leverage is total debt scaled by total assets. We define deal value (IPO value) as the total value of consideration paid by the acquirer, excluding fees and expenses (the offer price multiplied by the number of shares outstanding after the IPO). Constrained cash flow is a dummy equal to one when interest expense is greater than EBITDA and interest expense is positive. Return on assets is EBITDA divided by total assets. We winsorize independent accounting variables at the 5% and 95% levels. We include, but do not report, industry and year dummies. *P*-values are in brackets.

Variables	VC	Non-VC
Intercept	-1.84** (.034)	-2.83*** (.004)
<b>Growth proxies</b>		
Capex/total assets	0.59 (.475)	2.94*** (.000)
Market-to-book	0.18*** (.000)	0.27*** (.000)
R&D/total assets	0.55 (.231)	0.21 (.700)
<b>Capital structure proxies</b>		
Leverage	-0.77*** (.000)	-0.57** (.012)
Constrained cash flows	0.61*** (.001)	-0.05 (.852)
<b>Asymmetric information proxies</b>		
Intangibles/total assets	-2.27*** (.000)	0.52 (.309)
Development stage	-0.80*** (.001)	0.18 (.685)
Log (total assets)	0.65*** (.000)	0.65*** (.000)
Return on assets	-0.06 (.798)	-0.39 (.156)
Likelihood ratio test statistic	169.8*** (.000)	173.2*** (.000)
Number of observations/Number of IPOs	596/304	478/431

\*\*\*Significant at the 0.01 level.

\*\*Significant at the 0.05 level.

fastergrowing firms will go public through an IPO even when not backed by VC. Although firms with less leverage are more likely to use an IPO, the constrained cash flow variable is not significantly different from zero for this subsample. In addition, the alternative asymmetric information proxies have nonsignificant explanatory power, except for confirming that larger firms are more likely to use an IPO. We do not find it surprising that these results are weaker,

since we expect that there are more idiosyncratic differences among these individual sellers as compared to the sellers of VC-backed firms.

## V. Conclusion

In this paper, we investigate the movement of assets from private to public ownership through two alternative means: the acquisition of private companies by firms that are public (sellouts) or by IPOs. We identify 1,074 IPOs from 1995 through 2004 and compare those firms to 735 sellout firms from the same period. We gather firm-specific information from public filings of the firms themselves or of the acquiring firms. Also, by focusing on IPO firms that have a median market value of about \$170 million compared to sellout firms with a median value of about \$130 million, we directly compare firms that could viably use either transition method.

Our evidence suggests that firm characteristics contribute significantly to the decision of whether a firm accesses public equity markets through an IPO or instead is sold to a public company. Firms that go public through an IPO tend to be highergrowth firms with higher valuation ratios and firms that need access to nondebt sources of funding. We find that IPO firms are more likely to face capital constraints. Furthermore, IPO firms have fewer intangible assets, are less likely to be in the development stage, and are more likely to be backed by VC investors. All these factors are associated with fewer asymmetric information problems, although the fact that IPO firms tend to have higher growth may contradict this result.

Venture capitalists may have more experience in choosing the optimal method for going public and may be subject to fewer personal preferences for liquidity or control than are the sellers of non-VC-backed firms since they invest in and divest from many firms. Thus, we separate our sample on the basis of whether VCs have invested in the firms. Our results are strongest in the subsample of IPO and sellout firms backed by VCs.

There is an extensive body of literature that studies IPOs, partly because IPOs provide a unique perspective from which to understand fundamental firm characteristics and decisions in such major areas as corporate governance and raising capital. However, not every firm moving into public ownership does so through an IPO. By empirically modeling the factors related to the method of accessing public equity markets, we can better understand the underlying differences between these alternative organizational structures and the characteristics that lead to the firm's choice. ■

## References

- Bayar, O. and T. Chemmanur, 2006, "IPOs or Acquisitions? A Theory of the Choice of Exit Strategy by Entrepreneurs and Venture Capitalists," Boston College Working Paper.
- Beatty, R. and J. Ritter, 1986, "Investment Banking, Reputation, and the Underpricing of Initial Public Offerings," *Journal of Financial Economics* 15, 213-232.
- Black, B. and R. Gilson, 1998, "Venture Capital and the Structure of Capital Markets: Banks versus Stock Markets," *Journal of Financial Economics* 47, 243-277.
- Bradley, M., A. Desai, and E.H. Kim, 1988, "Synergistic Gains from Corporate Acquisitions and Their Division between the Stockholders of Target and Acquiring Firms," *Journal of Financial Economics* 21, 3-40.

- Brau, J., B. Francis, and N. Kohers, 2003, "The Choice of IPO versus Takeover: Empirical Evidence," *Journal of Business* 76, 583-612.
- Camerlynck, J., H. Ooghe, and T. De Langhe, 2005, "Pre-Acquisition Profile of Privately Held Companies Involved in Takeover: An Empirical Study," *Small Business Economics* 24, 169-186.
- Chemmanur, T. and P. Fulghieri, 1999, "A Theory of the Going-Public Decision," *Review of Financial Studies* 12, 249-279.
- Chemmanur, T., S. He, and D. Nandy, 2007, "The Going Public Decision and the Product Market," Boston College Working Paper.
- Chung, K., M. Li, and L. Yu, 2005, "Assets in Place, Growth Opportunities, and IPO Returns," *Financial Management* 34, 65-88.
- Denis, D., 2003, "Entrepreneurial Finance: An Overview of the Issues and Evidence," *Journal of Corporate Finance* 10, 301-326.
- Ellingsen, T. and K. Rydqvist, 1997, "The Stock Market as a Screening Device and the Decision to Go Public," Stockholm School of Economics and Norwegian School of Management Working Paper.
- Fama, E. and K. French, 1997, "Industry Costs of Equity," *Journal of Financial Economics* 43, 153-193.
- Field, L. and H. Mulherin, 2003, "Newly-Public Firms as Acquisition Targets: A Comparison with Established Target Firms," Pennsylvania State University Working Paper.
- Fuller, K., J. M. Netter, and M. Stegemoller, 2002, "What do Returns to Acquiring Firms Tell Us? Evidence from Firms that Make Many Acquisitions," *Journal of Finance* 57, 1763-1793.
- Gaver, J. and K. Gaver, 1993, "Additional Evidence on the Association between the Investment Opportunity Set and Corporate Financing, Dividend, and Compensation Policies," *Journal of Accounting and Economics* 16, 125-160.
- Grimes, A., 2004, "Many Start-Ups Opt for 'Dual Tracking' IPO or Outright Sale," *Wall Street Journal*, July 23.
- Jain, B. and J. Kini, 1994, "The Post-Issue Operating Performance of IPO Firms," *Journal of Finance* 49, 1699-1726.
- Kensinger, J., J. Martin, and J. Petty, 2000, "Harvesting Value from Entrepreneurial Success," *Journal of Applied Corporate Finance* 12, 81-93.
- Kim, M. and J. Ritter, 1999, "Valuing IPOs," *Journal of Financial Economics* 53, 409-737.
- Koeplin, J., A. Sarin, and A. Shapiro, 2000, "The Private Company Discount," *Journal of Applied Corporate Finance* 12, 94-101.
- Lee, I., S. Lochhead, J. Ritter, and Q. Zhao, 1996, "The Costs of Raising Capital," *Journal of Financial Research* 19, 59-74.
- Lerner, J., 1994, "Venture Capitalists and the Decision to Go Public," *Journal of Financial Economics* 35, 293-316.
- Loughran, T. and J. Ritter, 2004, "Why has IPO Underpricing Changed Over Time?" *Financial Management* 33, 5-37.
- Lowry, M., 2003, "Why does IPO Volume Fluctuate So Much?" *Journal of Financial Economics* 67, 3-40.
- Matsusaka, J., 1993, "Target Profits and Managerial Discipline during the Conglomerate Merger Wave," *Journal of Industrial Economics* 41, 179-189.

- Meggison, W. and K. Weiss, 1991, "Venture Capitalist Certification in Initial Public Offerings," *Journal of Finance* 46, 879-903.
- Michaely, R. and W. Shaw, 1995, "The Choice of Going Public: Spin-Offs vs. Carve-Outs," *Financial Management* 24, 5-21.
- Mikkelsen, W., M. Partch, and K. Shah, 1997, "Ownership and Operating Performance of Companies that Go Public," *Journal of Financial Economics* 44, 281-307.
- Mulherin, J.H. and A. Boone, 2000, "Comparing Acquisitions and Divestitures," *Journal of Corporate Finance* 6, 117-140.
- Myers, S., 1984, "The Capital Structure Puzzle," *Journal of Finance* 39, 575-592.
- Officer, M., 2007, "The Price of Corporate Liquidity: Acquisition Discounts for Unlisted Targets," *Journal of Financial Economics* 83, 571-598.
- Officer, M., A. Poulsen, and M. Stegemoller, 2007, "Information Asymmetry and Acquirer Returns," *Journal of Financial Economics* 83, 571-598.
- Pagano, M., F. Panetta, and L. Zingales, 1998, "Why Do Companies Go Public? An Empirical Analysis," *Journal of Finance* 53, 27-64.
- Ritter, J., 1984, "The 'Hot Issue' Market of 1980," *Journal of Business* 57, 215-240.
- Ritter, J. and I. Welch, 2002, "A Review of IPO Activity, Pricing and Allocations," *Journal of Finance* 67, 1795-1828.
- Rodrigues, U. and M. Stegemoller, 2007, "An Inconsistency in SEC Disclosure Requirements? The Case of the 'Insignificant' Private Target," *Journal of Corporate Finance* 13, 251-269.
- Sahlman, W., 1990, "The Structure and Governance of Venture Capital Organizations," *Journal of Financial Economics* 27, 473-524.
- Smith, C. and R. Watts, 1992, "The Investment Opportunity Set and Corporate Financing, Dividend and Compensation Policies," *Journal of Financial Economics* 32, 263-292.
- Stein, J., 1997, "Internal Capital Markets and the Competition for Corporate Resources," *Journal of Finance* 52, 111-113.
- Zingales, L., 1995, "Insider Ownership and the Decision to Go Public," *Review of Economic Studies* 62, 425-448.