

## **IPO Listings: Where and Why?**

Anne M. Anderson

*Perella Department of Finance, Lehigh University, Bethlehem, PA 18015*

Edward A. Dyl

*Eller College of Management, University of Arizona, Tucson, AZ 85721*

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Various studies suggest that firms benefit from being listed on the NYSE. Nevertheless, 224 of 641 firms eligible for an NYSE listing that went public from 1993 through 2000 chose to list their stock on Nasdaq. We hypothesize that this choice may be related to SEC Rule 144, which regulates the sale of restricted stock. We investigate the determinants of post-IPO sales of restricted stock, examine IPO firms' listing choices, and find evidence consistent with the proposition that firms select Nasdaq to reduce the effect of the limits on selling restricted stock imposed by the SEC's Rule 144. Venture capitalists appear to play an important role in the listing decision.

Correspondence: Edward A. Dyl, Department of Finance, McClelland Hall 315, University of Arizona, Tucson, AZ 85721. Phone: 520.621.9534 E-mail: [edyl@eller.arizona.edu](mailto:edyl@eller.arizona.edu).

Anne M. Anderson, Perella Department of Finance, Lehigh University, Bethlehem, PA 18015.

Phone: 610.758.5936 E-mail: [ama6@lehigh.edu](mailto:ama6@lehigh.edu)

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## **IPO Listings: Where and Why?**

### **Abstract**

Various studies suggest that firms benefit from being listed on the NYSE. Nevertheless, 224 of 641 firms eligible for an NYSE listing that went public from 1993 through 2000 chose to list their stock on Nasdaq. We hypothesize that this choice may be related to SEC Rule 144, which regulates the sale of restricted stock. We investigate the determinants of post-IPO sales of restricted stock, examine IPO firms' listing choices, and find evidence consistent with the proposition that firms select Nasdaq to reduce the effect of the limits on selling restricted stock imposed by the SEC's Rule 144. Venture capitalists appear to play an important role in the listing decision.

Various studies suggest that firms benefit from listing their stock on the New York Stock Exchange (NYSE). For example, Kadlec and McConnell (1994) find that share prices rise when firms move from Nasdaq to the NYSE. They conclude that this increase in value results from both the heightened visibility and respectability of being listed there and the superior liquidity of the NYSE marketplace. Huang and Stoll (1986) and Bessembinder and Kaufman (1997a, b) report that transaction costs are lower for NYSE stocks than for a matched sample of Nasdaq stocks. Merton (1987) and Amihud and Mendelson (1986), respectively, develop theories that show how the enhanced visibility and liquidity of trading on the NYSE can result in an increase in the value of the firm. This research suggests that most firms would choose to trade on the NYSE, rather than on Nasdaq, to increase the value of the firm and the wealth of the shareholders.

Nevertheless, not all firms that are eligible to list on the NYSE choose to do so. Cowan et al. (1992) report that in the 1980s hundreds of Nasdaq firms that qualified to list on the NYSE chose to remain on Nasdaq. More recently, Corwin and Harris (2001) report that over 20% of the companies that went public from 1991 to 1996 and that also qualified for listing on the NYSE at the time of their initial public offering (IPO) elected to have their stock traded on Nasdaq instead. We examine possible reasons for IPO firms to select Nasdaq over the NYSE. Several characteristics of the firm, such as its size, the volatility of its common stock, and whether or not it is classified as a high technology firm, are relevant (see Corwin and Harris, 2001). In addition to these variables, we consider the motives of founders, venture capitalists, and other pre-IPO investors who choose where the stock will trade after the IPO. In particular, we investigate whether some firms choose to list their stock on Nasdaq, rather than on the NYSE, to obtain more advantageous regulatory treatment under Securities and Exchange Commission (SEC) Rule 144 pertaining to post-IPO sales of restricted stock.

SEC Rule 144 regulates how many shares of restricted stock can be sold within specified periods after an IPO. Restricted stock is unregistered stock acquired from the issuer in a transaction that is not a public offering. An IPO usually includes only about 20-30% of the total number of shares that the firm has outstanding. Typical holders of the remaining 70-80% of the shares—which are unregistered, and therefore restricted, shares—are the firm’s early stage investors, including company founders, other employees, venture capitalists, and mezzanine investors. Rule 144 specifies that during any three-month window, the number of restricted shares that can be sold by an individual is limited to the greater of:

1. One percent of the shares outstanding.
2. The average weekly trading volume in the security calculated over the four calendar weeks preceding the week the notice of sale is filed on SEC Form 144.<sup>1</sup>

Hereafter, these two provisions of Rule 144 are referred to as the One Percent Restriction and the Trading Volume Restriction, respectively.

The choice of exchange listing is relevant because the SEC uses the trading volume that the exchange reports for the stock to calculate the Trading Volume Restriction of Rule 144. Nasdaq, a dealer market, reports trading volume differently from the NYSE, an auction market. In a dealer market, a market maker is the counterparty in nearly every transaction. When an investor sells 100 shares of a stock to a dealer, the dealer reports a trade of 100 shares. When another investor subsequently buys these shares from the dealer, she reports another 100-share transaction. One hundred shares have changed hands, but a trading volume of 200 shares has been reported. Inter-dealer trading further increases the volume of trading reported in a dealer market. For example, a public investor sells 100 shares to Dealer A, who sells them to Dealer B, who in

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<sup>1</sup> Rule 144 also requires that restricted shares be held for a minimum of one year from the time that they were originally acquired. Before 1997 this minimum holding period was two years. When the shares have been owned for two years or more, no volume restrictions apply to non-affiliated persons (essentially non-insiders) who own restricted shares. Insiders are always subject to volume restrictions.

turn sells the 100 shares to another public investor. One hundred shares have changed hands between two investors, but a total trading volume of 300 shares has been reported. In an auction market, however, most transactions occur directly between buyers and sellers, so when a trade of 100 shares is reported it generally means that 100 shares changed hands. *Ceteris paribus*, the trading volume reported for a stock is much higher when the stock trades in a dealer market like Nasdaq than it is in an auction market like the NYSE. Anderson and Dyl (2005) study changes in reported trading volume when firms switch from Nasdaq to the NYSE and find that reported trading volume declines significantly for these stocks. They conclude that Nasdaq volume is overstated vis-à-vis NYSE volume because Nasdaq is a dealer market. The SEC currently ignores the different protocols for reporting trading volume in dealer and auction markets in applying the Trading Volume Restriction of Rule 144.<sup>2</sup> The higher trading volume reported when a firm trades on Nasdaq allows pre-IPO owners to sell more restricted shares there than they could if the firm traded on the NYSE.

The provisions of Rule 144 directly influence the speed with which pre-IPO shareholders can diversify their personal portfolios by selling stock in the firm subsequent to the IPO. Evidence suggests that this limitation is important to shareholders. Kahl, Liu and Longstaff (2003) find that the economic costs of such liquidity restrictions to the firm's entrepreneurs and other original shareholders can be sizeable. They show that these liquidity costs can be of the same order of magnitude as those reported in the executive stock options literature, in which Meulbroek (2001) finds that executive stock options are worth only 53-70 % of their Black-

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<sup>2</sup> In 1996 the NYSE petitioned the SEC to amend Rule 144 so that its trading volume standard would operate comparably in dealer and auction markets. In a letter dated July 9, 1996, the NYSE stated that "the double counting of trading volume in dealer markets results in a much higher base figure for those markets from which to calculate permitted sales of restricted securities pursuant to Rule 144. This enhanced ability to sell restricted securities listed on dealer markets places auction markets at a competitive disadvantage in attracting new listings ..." The SEC denied this petition (in a letter dated February 19, 1997), stating "The Petition provides no evidence to support the alleged anticompetitive effects of dealer market trading volume on the ability of the NYSE to attract new listings."

Scholes value and Hall and Murphy (2002) report that the value is 40-60 % of the Black-Scholes value. The post-IPO selling restrictions imposed by Rule 144 are therefore important to pre-IPO shareholders of newly public firms who would like to sell a large number of shares following an IPO.

If enabling pre-IPO investors to diversify their portfolios is an important objective when firms go public, why don't these investors simply sell more of their shares as a part of the IPO itself? This issue is addressed by Leland and Pyle (1977), who derive a signaling model in which the value of a firm seeking outside financing from investors is a function of the fraction of the firm's equity retained by the entrepreneurs and other pre-IPO investors. Subsequent empirical work by Downes and Heinkel (1982) and Ritter (1984) supports Leland and Pyle's asymmetric information hypothesis. Investment banks know that insider selling in an IPO conveys negative information about the value of the firm, so they dissuade pre-IPO investors from selling a material portion of their holdings in the IPO. A recent study by Ang and Brau (2003) underscores the concern about insiders selling stock in IPOs. They find that insiders devise elaborate ways to conceal the extent of their selling in IPOs. For example, insiders underreport the number of shares that they plan to sell in the widely-circulated original prospectus, and later they use an obscure amendment to communicate the true number of shares they will to sell. Such legerdemain notwithstanding, investment banks frequently dissuade insiders from selling any secondary shares in the IPO to avoid the negative signal, so the act of going public does not per se solve insiders' exit problems.

Lock-up agreements, signed with investment bankers at the time of the IPO, also restrict pre-IPO investors from selling shares immediately after an IPO. Such lock-up agreements prevent pre-IPO owners from selling shares for a specified period—typically six months—following the IPO, and they generally apply to most of the shares not sold in the IPO. Brav and Gompers (2003) describe lock-up agreements as a bonding mechanism, and Brau, Lambson, and McQueen

(2005) suggest that they may be a signaling mechanism. Field and Hanka (2001) examine 1,948 lockup agreements from 1988 through 1997 and find that trading volume increases permanently when lock-up agreements expire, with a statistically meaningful -1.5% abnormal return. Moreover, the decrease in the value of the firm is directly related to the volume of selling by pre-IPO investors.

Like lock-up agreements, Rule 144 provides public investors with some assurance against pre-IPO investors' selling a large amount of stock following the IPO. In fact, Goergen, Renneboog, and Khurshed (2004) liken Rule 144 in the U.S. to the mandatory lock-up agreements found in European IPO markets. The listing decision enables pre-IPO investors to signal a greater willingness to be bound by the limitations of Rule 144. When they announce that the firm will trade on the NYSE, they convey information about their selling intentions that could reduce the agency costs inherent in external equity financing. Conversely, pre-IPO investors can reduce the effect of Rule 144's restrictions by choosing to have their stock traded on Nasdaq rather than on the NYSE, albeit at the cost of a possibly negative signal regarding their selling intentions. Firms can determine how trading volume will be measured for regulatory purposes, depending on whether they choose to list their shares on an auction market, such as the NYSE or Amex, or on a dealer market such as Nasdaq. The extent to which Rule 144 limits post-IPO sales of restricted shares by insiders is thus partially at the discretion of the firm for firms that have a choice between Nasdaq and the NYSE.

We investigate the relation between post-IPO sales of restricted stock and the listing decisions of IPO firms from 1993 through 2000, controlling for other factors that have been shown to be relevant for the exchange listing decision. Our main results are the following:

1. Post-IPO sales of restricted stock are higher for volatile firms, for venture capital backed firms, for firms that went public after 1997, and for firms that go public in hot markets.

2. From 1993 through 2000, 224 (35%) of the 641 IPOs that met the eligibility requirements to list on the NYSE chose instead to list on the Nasdaq.
3. Firms choosing to list on the Nasdaq are smaller than those choosing the NYSE and more concentrated in the high tech sector.
4. Sixty-four percent of firms choosing Nasdaq have sales of restricted stock during the two-year period following the IPO, compared to only 39.8% of the firms choosing the NYSE.
5. The probability of post-IPO restricted stock sales, the number of shares sold in the aftermarket, and the number of sellers are all strongly related to the exchange listing decision.
6. Venture capitalists are influential in causing firms to choose Nasdaq instead of the NYSE, apparently to facilitate later sale of their restricted stock in the firm.

Overall, our evidence indicates that the welfare of the firm's post-IPO public shareholders is not the only factor at considered when pre-IPO owners decide where the firm's stock will be traded. This result is not surprising, since the firm's pre-IPO owners have no particular fiduciary responsibility to the firm's future shareholders. That is, the post-IPO public owners are not stakeholders in the firm at the time of the listing decision.

The remainder of the paper proceeds as follows. Section 1 provides information about the data used in our analysis. Section 2 examines the determinants of restricted stock sales during the two years following the firm's IPO. Section 3 reports our findings regarding the listing decision and post-IPO restricted stock sales, and Section 4 summarizes our conclusions.

## **1. Data**

Using the *Securities Data Corporation (SDC) New Issues* database, we identify firms that

went public from 1993 through 2000. There were 3,889 IPOs during this period, excluding closed end funds, REITs, ADRs, rights offerings, unit offerings, privatizations, spin-offs, and issues with an offer price less than \$5. Eighty-five percent of them traded on Nasdaq following their IPOs.

### **1.1. Sample selection**

Because this study focuses on the listing choices of firms when they go public, we identify the IPO firms in 1993-2000 that actually faced a choice between trading on Nasdaq and on the NYSE. We screen the population of IPOs from 1993 through 2000 for firms that met the NYSE listing requirements in effect at the time of the IPO. These requirements, which changed during 1993-2000, primarily concern the firm's size, the number of public shares, and the firm's earnings history. The balance sheet and income statement data we use to determine whether or not the firm was eligible for listing on the NYSE are primarily from *Compustat*; when the data are not available from *Compustat*, we obtain them from SEC filings.

Information about sales of restricted shares during the two years following each firm's IPO comes from filings of the SEC's Form 144 provided by the *Vickers Stock Research Corporation*. Form 144 is a notice of the proposed sale of restricted securities. The stockholder must file it concurrently with either selling or placing an order to sell such securities, when either the number of shares sold during any three-month period exceeds 500 or the aggregate selling price is greater than \$10,000. Data on stock prices and trading volumes after the IPO are from the *Center for Research in Security Prices (CRSP)*.

The final sample consists of 641 firms that qualified to be listed on the NYSE at the time of their public offering, which is 16.5% of the 3,889 total number of firms with IPOs from 1993 through 2000.

## 1.2. Characteristics of the firms in our sample

Table 1 contains information about the 641 IPO firms that meet the NYSE's listing requirements, displayed according to the firm's exchange listing following the IPO. Firms that select the NYSE are much larger than those choosing Nasdaq, with a mean (median) market capitalization of \$1,479 (\$497) million, compared to a mean (median) capitalization of only \$266 (\$181) million for the Nasdaq firms. The mean and median offer prices for the NYSE firms are \$18.09 and \$17.00, respectively, compared to mean and median prices of \$14.58 and \$14.00 for the Nasdaq firms. On average, the NYSE firms have significantly more total shares outstanding than the Nasdaq firms, and they issue shares at higher prices.

The average proceeds of the IPOs are also larger for the NYSE firms, with mean (median) IPO proceeds of \$209 (\$108) million for NYSE firms compared to \$58 (\$49) million for Nasdaq firms. In each group of firms, the number of shares offered in the IPO is a small proportion of the total shares outstanding. The mean (median) proportion of shares offered in the IPO is 27.5% (23.1%) of shares outstanding for NYSE firms and 29.4% (27.8%) for Nasdaq firms. These results are roughly consistent with those of Field and Hanka (2001), who report that 33% of the total number of shares outstanding was sold in the average IPO for 1,948 IPOs that took place from 1988 through 1997. Secondary shares are 7.2% of the shares offered in the IPOs of the NYSE firms, compared to 5.7% for the Nasdaq firms, but the corresponding medians are zero and 3.06% respectively. We also report a measure of the "quality" of the lead underwriter for each offering, defining an investment bank of higher quality as one having a greater market share as lead underwriter (see Megginson and Weiss, 1991). Data about market share by investment bank are from SDC, and are constructed using all IPOs during the relevant period, not just those

in our sample.<sup>3</sup> Table 1 shows that, by this measure, investment banks that underwrite NYSE firms are of higher quality than those that underwrite Nasdaq firms.

The final item in Table 1 is volatility of the firms' stock, which is measured as the standard deviation of daily returns on the firm's stock during the 100 trading days following the IPO. The Nasdaq firms are more volatile than the NYSE firms, with a mean (median) standard deviation of returns of 3.41 (2.15) compared to a mean (median) of 2.67 (1.89) for the NYSE firms. The differences in the mean and median volatility of the firms' stock are significant at the 1% and the 10% level, respectively.

Table 2 provides information about other characteristics of the IPO firms that meet the NYSE's listing requirements, including whether they are backed by venture capitalists, are classified as "High Tech" firms, or go public during a so-called "hot" IPO market (see Helwege and Liang, 2004). As noted earlier, 35% of the firms choose to trade on Nasdaq, and 65% choose to list on the NYSE. Venture capitalists back only 119, or 17%, of the firms that qualify to list on the NYSE. Sixty-two percent of these VC-backed firms choose to list on Nasdaq, whereas only 38% choose the NYSE. These proportions contrast markedly with the overall sample. There are 153 IPOs in High Tech industries, which comprise 24% of the total sample. The majority of these firms (57% versus 43%) choose Nasdaq as a trading location rather than the NYSE.<sup>4</sup> Finally, 410 of the IPOs in our sample (63%) occur in hot IPO markets, as defined by Helwege and Liang

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<sup>3</sup> We measure lead underwriter quality for a set of underwriters  $I$  and year  $t$  by defining the three-year moving average (t-2,t-1,t) of IPO proceeds lead underwritten by underwriter  $j$  as  $x_{jt}$ . The lead underwriter quality rating is:

$$\text{Underwriter Quality} = \frac{\ln x_{jt}}{\max_{i \in I} [\ln x_{it}]} * 10$$

The underwriter with the highest three-year moving average of IPO proceeds for time  $t$  is given a rating of 10 based on market share (see Aggarwal, Krigman, and Womack, 2002). Alternative measures of underwriter quality are used in Johnson and Miller (1988) and Carter and Manaster (1990).

<sup>4</sup> A breakdown of industry affiliation by exchange listing is available from the authors upon request.

(2004). The proportion of these firms choosing Nasdaq versus the NYSE is indistinguishable from the proportions for the overall sample of IPOs that qualify for an NYSE listing.

## **2. Determinants of Post-IPO Sales of Restricted Stock**

Rule 144 limits an investor's sales of restricted stock in any three-month period to the greater of either 1% of the shares outstanding or the average weekly trading volume during the four weeks preceding the sale. Whether the One Percent Restriction or the Trading Volume Restriction is binding at a particular time depends on sales of the firm's shares during the preceding four weeks. When a stock's annual turnover rate during a particular four-week period exceeds 52%, the average weekly trading volume in the stock will exceed 1% of the shares outstanding. The average (median) annual turnover for the firms in our sample during the two years following the IPO is 101% (79%) for the NYSE firms and 168% (144%) for the Nasdaq firms. Average annual turnover during the two years following the IPO is measured for each firm by dividing the trading volume reported for each year by the number of shares outstanding at the end of the year and averaging the two values. Trading volume varies greatly from week to week, however, so annual turnover is not a good indicator of how often the sales of restricted shares permitted by the Trading Volume Restriction exceed the level of sales allowed under the One Percent Restriction. Annual turnover is an average for the year and does not indicate when trades actually occur during the year. That is, a firm's average weekly trading volume can be extremely high during a few months and very low at other times.

For a more precise estimate of the effect of the Rule 144 restrictions on the firms in our sample, we calculate which restriction permits the greatest sales of restricted shares for 26 consecutive, non-overlapping four-week trading periods during the two years following the IPO. The proportion of the time that each of the two provisions that limit selling of restricted shares

under Rule 144, the One Percent Restriction and the Trading Volume Restriction, is the operative restriction for the firms in our sample is shown in Table 3. The One Percent Restriction is the relevant restriction for the average (median) Nasdaq firm 19% (12%) of the time, whereas the Trading Volume Restriction is the relevant restriction 81% (78%) of the time. In contrast, the One Percent Restriction is binding for the average (median) NYSE firm 41% (38%) of the time and the Trading Volume Restriction is binding 59% (62%) of the time. We attribute the greater importance of the Trading Volume Restriction on Nasdaq to higher reported trading volumes, relative to the number of shares outstanding, which are an artifact of the manner in which trading volume is reported in a dealer market.

### **2.1. Post-IPO sales of restricted stock**

Data on actual post-IPO sales of restricted shares for the firms in our sample, from Form 144 filings obtained through the *Vickers Stock Research Corporation*, are summarized in Panel A of Table 4. Only 310 of the 641 firms in our sample have sales of restricted stock during the two years following their IPOs. The likelihood of a particular firm having restricted stock sales is higher for the Nasdaq firms than for the NYSE firms. More than 64% of the firms that choose to trade on Nasdaq have investors who sell restricted shares during the two years following the IPO, compared to only 40% of the NYSE firms.

Panel B in Table 4 shows that, among the 310 firms that have restricted stock sales during the two years following the IPO, Nasdaq firms have significantly more sellers per firm and more days with sales than do NYSE firms. The mean (median) number of sellers per firm for the Nasdaq firms is 14.61 (6.0) sellers, compared to 8.86 (4.0) sellers for the NYSE firms, and the mean (median) Nasdaq firm has 27.99 (12) days with restricted stock sales, compared to 15.46 (6.0) days for the NYSE firms. Investors in Nasdaq firms sell an average (median) of 1.21 million (290,000) restricted shares during the two years following the IPO, compared to average (median)

sales of 610,000 (180,000) per NYSE firm, even though NYSE firms have a greater number of restricted shares outstanding. During the two years following the IPO, the average (median) Nasdaq firm's shareholders sell restricted shares equal to 27.48% (8.86%) of the shares offered in the IPO, compared to an average (median) of only 7.46% (2.80%) for the NYSE firms' shareholders. The average (median) proportions of restricted share sales as a percentage of restricted shares outstanding are 6.96% (3.03%) for Nasdaq firms and 3.64% (1.04%) for NYSE firms. Overall, the pre-IPO shareholders of firms that choose to list on Nasdaq are much more active in selling their holdings following the IPO.

## **2.2. Probit and Tobit models of restricted stock sales**

We examine the cross-sectional determinants of sales of restricted stock in IPO firms during the two years following the IPO irrespective of the listing choice. The dependent variables in our analyses are three different measures of post-IPO sales of restricted stock: (1) the presence/absence of any restricted stock sales during the two years following the IPO (yes = 1, no = 0); (2) the number of shares of restricted stock sold during the two years following the IPO; and (3) the number of individual sellers of restricted shares during the two years following the IPO. The independent variables in the analyses include the volatility of the stock, whether or not venture capitalists are pre-IPO backers of the firm, the number of secondary shares sold in the IPO, whether or not the IPO takes place before 1998, and whether or not the IPO takes place during a hot IPO market. We explain that rationale for and measurement of each of these independent variables in more detail below.

*Volatility.* Presumably, the reason that an IPO firm's founders and managers, venture capitalists, and other pre-IPO investors sell restricted shares post-IPO is to diversify their investment portfolios. The riskier the firm's stock, the greater is the incentive to diversify. Therefore, we include volatility as an independent variable in our models and predict that post-

IPO sales of restricted stock are positively related to the volatility of the firm's stock. We measure volatility as the standard deviation of the firm's daily stock returns during the 100 trading days following the IPO.

*Venture Capital Backing.* Black and Gilson (1998) suggest that IPOs provide an exit strategy for venture capitalists and other private equity investors. Helwege and Packer (2005) find empirical evidence that supports this proposition, and conclude that the primary motive for going public is that venture capitalists wish to liquidate their holdings. We include venture capital backing as a determinant of post-IPO selling and hypothesize that this variable is positively related to sales of restricted stock during the two years following the IPO. Venture Capital Backing is an indicator variable equal to one if venture capitalists are pre-IPO investors in the firm and zero otherwise.

*Secondary Shares.* This variable is the proportion of the IPO that consists of secondary shares, rather than primary shares. Although pre-IPO investors rarely sell secondary shares in the IPO, they occasionally do, as documented in Table 1. We expect this variable to be negatively related to post-IPO sales of restricted stock, because the pre-IPO investors who sell shares in the IPO have already diversified their portfolios and, therefore, have less need to sell additional (restricted) shares following the IPO. This variable is measured as the number of secondary shares sold in the IPO as a percentage of total shares sold in the IPO.

*Pre-1998.* The minimum holding period required before restricted shares may be sold changed from two years to one year in 1997. This variable is included in the model because this change in Rule 144 could have had an impact on either the decision to sell restricted stock following the IPO and/or how many restricted shares are available for sale. *Ceteris paribus*, more shares will be available for sale after 1998 than before 1998, so we predict that post-IPO sales of restricted shares will be negatively related to this variable. The variable is an indicator variable equal to one if the IPO took place before January 1998 and zero otherwise.

*Hot IPO Markets.* We show in Table 2 that 63% of the IPOs in our sample occurred during a hot IPO market. If IPO firms that go public during hot IPO markets are behaving opportunistically to take advantage of temporary overvaluation due to a high demand for IPO stocks, pre-IPO investors in these firms may be more inclined to sell their shares after the IPO. We therefore hypothesize that post-IPO sales of restricted shares will be higher for IPOs in hot markets. Following Helwege and Liang (2004), we define hot IPO markets as periods with of three consecutive months that have a moving average IPO count, scaled by business formations, of more than 30 IPOs.

Columns (1) through (3) of Table 5 show our findings regarding the determinants of restricted stock sales. The parameters of the Probit model, in which the dependent variable is whether or not any of the firm's owners sold restricted shares during the two years following the IPO (yes = 1, no = 0) are reported in Column (1). The presence or absence of selling is not related to volatility, but it is positively and strongly related to whether or not the IPO firm had financing from venture capitalists before the IPO. The probability of sales of restricted stock following the IPO is inversely related to the proportion of secondary shares sold in the IPO—a relation that is not significant, however. Restricted shares are less likely to be sold if the IPO occurred before 1998. This finding indicates that the SEC's change in the minimum holding period for restricted stock could have influenced the number of stock sales during the two years after the IPO. Finally, the probability of restricted stock sales is higher when the IPO took place during a hot IPO market, a finding consistent with the hypothesis that issuers are behaving opportunistically. The pseudo R-Squared of this Probit model is 6.84%.

Columns (2) and (3) in Table 5 report parameter estimates for regressions in which the dependent variables are the number of restricted shares sold during the two years following the IPO and the number of sellers of restricted stock during those two years, respectively. We use Tobit regressions to estimate the parameters of these models instead of ordinary least squares

(OLS) because the value of the dependent variables in each regression equals zero for 331 of the 641 observations in our sample. Tobit is more accurate than OLS when the distribution of the dependent variable is censored in this manner.

The results of the Tobit regressions reported in Columns (2) and (3) of Table 5 are basically the same. Both sales of restricted stock during the two years following the IPO and the number of sellers of restricted stock are positively related to the volatility of the firm's stock, to the presence of venture capitalists as pre-IPO investors, and to IPOs that occurred during a hot IPO market. Conversely, both restricted stock sales and the number of sellers are lower for firms that go public before 1998, when the minimum holding period for restricted stock was two years instead of the current one year. The coefficients on the proportion of secondary shares offered in the IPO are again negative, but not significant. In summary, four of the five independent variables are significant, each has the predicted sign, and the pseudo R-squares of the two Tobit regressions are 5.06% and 2.30%, respectively. Interestingly, OLS regressions yield parameter estimates that are essentially identical in magnitude and significance to the Tobit results, with  $R^2$ s of 17.8% and 15.9% respectively.

### **2.3. Does the listing choice affect restricted stock sales?**

The different way that trading volume is reported for NYSE versus Nasdaq firms means that stockholders of NYSE firms can sell fewer restricted shares than their counterparts in Nasdaq firms under the Trading Volume Restriction of Rule 144. Thus, we hypothesize that post-IPO sales of restricted shares are lower for firms that trade on the NYSE than for firms that trade on Nasdaq and investigate this possibility by adding a variable for the listing decision to the Probit and Tobit regressions in Table 5. The NYSE Listing variable is an indicator variable equal to one if the firm chooses to list on the NYSE and zero otherwise. We hypothesize that post-IPO sales of restricted shares are negatively related to an NYSE Listing.

The results of the regressions that include the firm's listing choice are reported in Columns (4) through (6) of Table 5. The coefficients on the NYSE Listing variable all have the predicted negative sign and are significant at the 1% level in each case. This relation is consistent with the proposition that the Trading Volume Restriction of Rule 144 is more stringent for firms that choose to list on the NYSE. Otherwise, the Probit and Tobit results in Columns (4) through (6) are very similar to those reported in Columns (1) through (3), although the magnitude of the intercepts of each regression are higher and the magnitude of the coefficients on the venture capital variable are lower. Including the listing variable increases the pseudo R-Squared of the Probit model from 6.84% to 10.67% and the pseudo R-Squares of the Tobit models from 5.06% to 5.36% and from 2.30% to 2.55%, respectively.

### **3. The Listing Decision**

Earlier we show that pre-IPO investors in firms that go public reduce the effect of the SEC's limits on selling restricted shares by choosing Nasdaq as a trading location instead of the NYSE. Post-IPO sales of restricted shares occur often and vary considerably from firm to firm. In this section we examine whether IPO firms' listing choices are influenced ex ante by pre-IPO investors who intend to sell restricted shares following the IPO. In particular, we estimate a set of logistic models that explain IPO firms' listing choices and that include either a measure of actual restricted stock sales or of expected restricted stock sales as independent variables.

#### **3.1. Logistic regressions of the listing decision**

The dependent variable in each of these logistic regressions is the choice of the stock market where the firm's stock will trade, denoted by an indicator variable that equals one if the firm chooses the NYSE and zero if the firm chooses Nasdaq. The independent variables are

various characteristics of the IPO and of the firm described earlier. They are included in the model to control for their influence on the listing choice. These variables are firm size, underwriter quality, and whether or not the IPO firm is a high technology firm. Each of the three models also contains an independent variable that measures the prevalence of restricted stock sales during the two years following the IPO. We explain the rationale for and measurement of each of these independent variables in more detail below.

*Firm size.* Corwin and Harris (2001) show that, among firms that qualify for an NYSE listing, firm size is far and away the most significant determinant of IPO firms' listing choices. We use the following two variables to incorporate firm size into our analysis: the offer price of the IPO and the number of shares outstanding after the IPO. We include both variables because Table 1 shows that the NYSE firms in our sample, in addition to being larger than the Nasdaq firms, have both higher offer prices and more shares outstanding. Fernando, Krishnamurthy, and Spindt (2004) present evidence that the price levels of IPO shares per se affect IPO outcomes.

*Underwriter quality.* This variable is included to control for the possibility that high-quality underwriters recommend the NYSE and vice versa. Carter and Manaster (1990) and Carter, Dark, and Singh (1998), among others, document the importance of underwriter reputation as a factor in IPO success. Our measure of underwriter quality is the ranking of the lead underwriter for the IPO, measured as described in footnote three.

*High tech industry.* For the purposes of this study, high technology industries include computer, cellular, healthcare, and data processing. Both Wall Street lore and the descriptive statistics reported earlier in Table 2 suggest that high technology firms tend to gravitate to Nasdaq, so we include this designation as an independent variable. This variable equals one if the firm's industry is classified as High Tech by SDC and zero otherwise.

*Restricted stock sales.* Finally, one of three measures of restricted stock sales during the two years following the IPO is also included as an independent variable in each of the models.

Although post-IPO selling occurs after the listing decision has been made, presumably investors intend to sell at the time they decide to list the stock on the NYSE or Nasdaq. Such selling intentions can affect the choice of a trading location for the firm's stock. The three measures of post-IPO selling of restricted shares used in the logistic models are also the dependent variables in the regressions reported in Table 5. Specifically, they are:

*Presence of restricted stock sales.* This variable indicates whether or not there are any sales of restricted stock of the firm during the two years following the IPO. The variable equals one if sales of restricted stock occurred during the two years following the IPO and zero otherwise;

*Number of restricted shares sold.* The number of shares of the firm's stock sold during the two years following the IPO that are subject to the requirements of Rule 144; and

*Number of sellers.* The number of individual sellers of restricted shares of the firm's stock during the two years following the IPO.

The results of the logistic analyses of the listing decision are reported as Models 1, 2, and 3 in Table 6. Recall that the dependent variable in these logit models equals one if the firm chooses to list on the NYSE and zero if the firm chooses Nasdaq. The results are essentially the same for each model, and we discuss them as a single finding. Consistent with both Corwin and Harris (2001) and the univariate statistics in Table 2, we find that larger firms are more likely to select the NYSE. The coefficients on both of the size measures—offer price and shares outstanding—are positive and significant at the 1% level. (The results are essentially identical when we use a single measure of firm size—market capitalization—in place of the two separate variables, but the pseudo R-Squared of each regression is slightly lower.)

The coefficient on underwriter quality is positive and significant at the 1% level. This finding indicates that IPOs with a more prestigious lead underwriter are more likely to list on the NYSE. It is consistent with the idea that more prestigious underwriters recommend that their

clients list on the NYSE and with the notion that larger and better established firms both have access to more prestigious underwriters and choose the more prestigious trading location for their stock.

The coefficient on the High Tech industry variable is negative and significant at the 1% level, which means that firms in high tech industries are more likely to list on Nasdaq. Corwin and Harris (2001) report a similar result without comment, although they note that IPO firms tend to list on the same exchange as their industry peers.<sup>5</sup> The predilection of technology firms for the Nasdaq stock market is probably an historical artifact. In the 1970s and 1980s, many IPOs of technology firms that subsequently became extraordinarily successful, such as Intel and Microsoft, traded on Nasdaq because they did not qualify for the NYSE under the relatively stringent listing requirements in effect at that time. These firms subsequently found no compelling reason to switch to the NYSE, and Nasdaq has thus become the stock market in which technology firms are expected to trade.

Finally, the last independent variable in each of the logistic regressions shown as Models 1 to 3 in Table 6 is a measure of restricted stock sales during the two years following the IPO. In each of these models, the variable is negatively and significantly related to the dependent variable. This relation means that firms with a greater likelihood of having sales of restricted shares and/or those with larger sales of restricted shares are less likely to list on the NYSE. If post-IPO selling of restricted shares indicates investors' pre-IPO intentions about selling after the IPO, then these results support the hypothesis that IPO firms choose Nasdaq in part to reduce the effect of the selling limits on restricted stock imposed by the SEC's Rule 144. The logistic regressions each explain approximately 31% of the variation in listing decisions of IPO firms.

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<sup>5</sup> Adding a complete set of industry dummy variables to our logistic regressions does not improve the explanatory power of the models.

### **3.2. Logistic analyses using instrumental variables**

A potential problem with the analysis of the listing decision reported as Models 1 to 3 in Table 6 is the interpretation of the three variables that measure post-IPO sales of restricted stock. Each of these variables reports selling behavior that takes place after the listing decision is made and the stock is actually trading in the marketplace. Although we can assume that these ex post measures of restricted stock sales are valid proxies for investors' ex ante intentions regarding sales of restricted stock, the actual selling behavior that we observe appears to depend on the outcome of the listing decision as well. In particular, Rule 144 limits on sales of restricted shares can constrain the selling behavior of pre-IPO investors more when a firm chooses to list on the NYSE than when it chooses Nasdaq. In fact, the coefficient on the NYSE listing variable in the regressions reported in Columns (4) through (6) of Table 5 suggests that this extra constraint is frequently relevant.

To test formally for the presence of endogeneity, we use the regressions shown in Columns (1), (2), and (3) of Table 5. The Probit regression in Column (1) estimates the expected probability of post-IPO restricted stock sales for each of the firms in our sample and the Tobit regressions in Columns (2) and (3) estimate the expected post-IPO restricted stock sales and the expected number of sellers. We use the parameters of these regression equations to calculate expected values of the dependent variable for each firm, and we include the residuals from these models as an independent variable in the logistic regressions. We then re-estimate the parameters of the logistic regressions and find that the coefficient on the residual is significant in each model. This finding indicates endogeneity (see Wooldridge, 2001).

We address this issue by replacing the restricted stock sales variables in logistic Models 1, 2, and 3 in Table 6 with instrumental variables that are estimated without regard to the firm's listing choice. These instrumental variables are the expected values estimated from the Probit and Tobit regressions in Columns (1), (2), and (3) of Table 5. The results are reported as Models

4, 5, and 6 in Table 6. Using instrumental variables in place of the endogenous measures of restricted stock sales does not alter our findings. The signs and significance of the coefficients on the independent variables in Models 4, 5, and 6 are essentially identical those for Models 1, 2, and 3, although the pseudo R-Squared of the models drops slightly, from 31% to about 29%.

### **3.3. Venture capitalists and the listing decision**

In Table 5 we show that the presence of venture capitalists as pre-IPO investors in a firm greatly increases the volume of post-IPO sales of restricted stock. These results regarding venture capitalists and restricted stock sales are consistent with findings by Field and Hanka (2001), who report that after IPO lock-up agreements expire the volume of trading in the firm's stock increases and the ensuing three-day returns on the stock are negative. They also find that these effects are three times larger for firms backed by venture capitalists than for other firms. When lock-up agreements expire, venture capitalists appear to be more aggressive sellers of shares than other pre-IPO investors. Moreover, the selling restrictions under Rule 144 apply to the volume of sales by individuals, and there is evidence that the size of venture capitalists' sales of restricted shares dwarf those of other pre-IPO investors. Cao, Field and Hanka (2004) report that the value (number) of insider sales following lock-up expirations is distributed as follows: 33% (8%) by venture capitalists, 35% (68%) by employees; and 31% (24%) by other pre-IPO shareholders. These numbers suggest that venture capitalists' individual stock sales are eight times larger than individual stock sales by employees and more than three times larger than individual sales by other pre-IPO investors. Venture capitalists thus have an especially strong incentive to seek favorable treatment under Rule 144 with respect to post-IPO sales of restricted shares.

Since venture capitalists frequently serve on the boards of directors of the firms that they finance and are otherwise influential in financial decisions, they are in a good position to affect the firm's choice of trading location for its stock. We investigate whether or not venture capitalists

influence the firm's choice between the NYSE and Nasdaq by adding an indicator variable for venture capital backing to our earlier logistic regressions. The results are reported in Table 7. Models 1, 2, and 3 in Table 7 are analogous to Models 1, 2, and 3 in Table 6 except for the addition of this variable. The variable denoting venture capital backing has a negative sign and is significant in each of these logistic regressions of the listing choice. Moreover, the influence of venture capitalists is economically important. Examining the marginal effect of this variable reveals that the presence of a venture capitalist increases the likelihood of a firm choosing Nasdaq by 13% in Model 1, by 8% in Model 2, and by 11% in Model 3. Overall, our findings suggest that venture capitalists are influential in causing firms to seek a more favorable climate for post-IPO sales of restricted stock.

The addition of the independent variable denoting venture capital backing increases the pseudo R-Squared of each of the regressions in Table 7 compared to that of the corresponding regression in Table 6. The question of endogeneity due to the variables that are measures of actual ex post restricted stock sales arises again, as it did with the regressions in Table 6. When we formally test for endogeneity, as described in the preceding section, we find that the coefficient on the residuals from the Probit and Tobit regressions is not significantly different from zero, so there is no indication that endogeneity is a problem in the regressions in Table 7 (Wooldridge, 2001). In summary, venture capitalists are influential players in the IPO firm's decision about a stock market listing, and their influence favors choosing Nasdaq instead of the NYSE.

#### **4. Conclusions**

SEC Rule 144 limits the number of restricted shares that an individual can sell during any three-month period to either 1% of shares outstanding or the average weekly trading volume reported during the preceding four weeks. In conjunction with the different protocols for

reporting trading volume on the NYSE versus Nasdaq, this provision of Rule 144 affects the listing decisions of firms that are going public. In particular, it causes many IPO firms eligible for listing on the NYSE to choose to have their shares traded on Nasdaq. From 1993 through 2000, 224 of the 641 IPOs—35%—that meet the eligibility requirements to list on the NYSE chose to trade on Nasdaq.

We examine post-IPO sales of restricted shares for a sample of firms that went public from 1993 through 2000 and find that Nasdaq firms' shareholders were more active in selling restricted stock following the IPO than were investors in firms that listed on the NYSE. Sixty-four percent of the firms that chose Nasdaq have sales of restricted stock in the two years following the IPO, compared to only 40% of the NYSE firms. Probit and Tobit models reveal that restricted stock sales are positively related to the stock's volatility, to the presence of venture capitalists as pre-IPO investors, and to whether or not the firm went public during a hot IPO market, and are negatively related to whether or not the firm went public before 1998 and/or chose to list on the NYSE.

We find that, after controlling for firm size, underwriter quality, and other variables, the IPO listing decision is significantly related to subsequent restricted stock selling activity. The probability of restricted stock sales, the number of restricted shares sold, and the number of sellers are each strongly related to the exchange listing decision in a manner consistent with firms choosing Nasdaq over the NYSE to reduce the effect of the SEC's limits on sales of restricted shares. When we replicate the analyses using measures of expected restricted stock sales as instrumental variables in place of actual sales, we reach the same conclusions. When we add an additional independent variable denoting venture capital backing, we find that venture capitalists influence the firm's listing choice over and above the other variables and that this influence favors Nasdaq listings. Overall, firms appear to list on Nasdaq to obtain advantageous regulatory treatment under SEC Rule 144.

Our evidence suggests that the interests of pre-IPO owners seeking to minimize the effect of SEC Rule 144 are an important element in the listing decision. The welfare of public shareholders is not the only factor at play when a firm's pre-IPO owners decide where to list the firm's stock following the IPO. One implication of our findings is that a more consistent measure of trading volume across auction and dealer markets may be desirable for regulatory purposes.

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**Table 1**  
**IPO firms classified according to the listing decision**

	<u>Nasdaq Firms</u>		<u>NYSE Firms</u>		<u>Test of Means</u>	<u>Test of Medians</u>
	Mean	Median	Mean	Median	(p-value )	(p-value)
Number of Firms	224		417		-	-
Firm Size (millions)	\$266	\$181	\$1,479	\$497	(.0001)	(.0001)
Offer Price	\$14.58	\$14.00	\$18.09	\$17.00	(.0001)	(.0001)
Shares Outstanding (millions)	17.69	12.19	65.49	27.99	(.0001)	(.0001)
IPO Proceeds (millions)	\$57.61	\$49.05	\$209.48	\$107.50	(.0001)	(.0001)
Shares Offered (% of shares outstanding)	29.37%	27.83%	27.53%	23.14%	(.0002)	(.0001)
Secondary Shares (% of shares offered)	5.66%	3.06%	7.20%	0.00%	(.0028)	(.0001)
Underwriter Quality	8.00	8.10	8.79	9.10	(.0001)	(.0001)
Volatility ( $\sigma$ )	3.41	2.15	2.67	1.89	(.0043)	(.0766)

Means and medians of data for 641 firms that went public from 1993 through 2000 and that meet the NYSE's listing requirements. The last two columns contain p-values from a t-test of means and a Kruskal-Wallis test of medians across exchange listing.

**Table 2**  
**Characteristics of the sample of IPO firms**

Firm Characteristic	<u>All Sample Firms</u>		<u>Nasdaq Firms</u>		<u>NYSE Firms</u>	
	Number	Percent	Number	Percent	Number	Percent
IPO Firms	641	100%	224	35%	417	65%
Venture Capital Backing	119	17%	74	62%	45	38%
High Tech Firms	153	24%	87	57%	66	43%
IPO in a Hot Market	410	63%	144	35%	266	65%

The number and proportion of IPO firms that meet NYSE listing requirements and also have the characteristic indicated are shown for the total sample and for subsets of the sample classified according to listing choice.

**Table 3**  
**Percent of time a restriction is binding under Rule 144**

	<u>One Percent Restriction</u>		<u>Trading Volume Restriction</u>	
	Mean	Median	Mean	Median
Nasdaq Firms	19%	12%	81%	78%
NYSE Firms	41%	38%	59%	62%
p-values	<.001	<.001	<.001	<.001

Shows the proportion of time that each provision of Rule 144 is the binding constraint on sales of restricted stock (i.e., permits the greatest sales of restricted shares) during 26 consecutive non-overlapping four-week trading periods in the two years following 641 IPOs from 1993-2000 where the firms qualify for an NYSE listing at the time of the IPO.

**Table 4**  
**Sales of restricted stock during the two years following the IPO**

	<u>Nasdaq Firms</u>		<u>NYSE Firms</u>		Test of Means	Test of Medians
<i>Panel A: N = 641 firms</i>						
Number of Firms	224		417		-	-
Number of Firms with Restricted Stock Sales	144		166		-	-
Proportion of Firms with Restricted Stock Sales	64.29%		39.81%		-	-
<i>Panel B: N = 310 firms</i>						
	<u>Mean</u>	<u>Median</u>	<u>Mean</u>	<u>Median</u>	<u>p-value</u>	<u>p-value</u>
Sellers per Firm	14.61	6	8.86	4	(.0136)	(.0394)
Days with sales per Firm	27.99	12.0	15.46	6	(.0004)	(.0009)
Average Shares Sold per Firm (million)	1.21	0.29	0.61	0.18	(.0210)	(.1114)
Shares Sold (% of IPO Shares)	27.48%	8.86%	7.46%	2.80%	(.0001)	(.0001)
Share Sold (% of Restricted Shares)	6.96%	3.03%	3.64%	1.04%	(.0001)	(.0001)

Information about sales of restricted shares during the two years following each firm's IPO from filings of the SEC's Form 144 obtained from the *Vickers Stock Research Corporation*. Data in Panel A are for the 641 firms with IPOs from 1993-2000 that qualify for an NYSE listing at the time of the IPO. Data in Panel B are for the 310 firms with IPOs from 1993-2000 that report sales of restricted shares in the two years following the IPO. The last two columns contain p-values from a t-test of means and a Kruskal-Wallis test of medians across exchange listing.

**Table 5**  
**Determinants of restricted stock sales**

Independent Variables	(1) Selling (Yes or No)	(2) Number of Shares Sold	(3) Number of Sellers	(4) Selling (Yes or No)	(5) Number of Shares Sold	(6) Number of Sellers
Intercept	0.3542***	0.7431***	7.0105***	0.7978***	1.0238***	10.1061***
Volatility ( $\sigma$ )	5.26e-06	0.0693***	0.4801***	0.0009	0.0685***	0.4712***
Venture Capital Backing (Yes = 1, No = 0)	0.6127***	0.7597***	8.7945***	0.4464***	0.6381***	7.4609***
Secondary Shares (% of IPO)	-0.0194	-0.0037	-0.0144	-0.0092	0.0032	0.0616
Pre-1998 IPO (Yes = 1, No = 0)	-0.9391***	-1.1243***	-8.4295***	-1.0046***	-1.1426***	-8.6402***
Hot Market (Yes = 1, No = 0)	0.4060***	0.3453**	3.3065**	0.4333***	0.3524**	3.3907**
NYSE listing (Yes = 1, No = 0)	-	-	-	-0.6059***	-0.3960***	-4.3633***
Pseudo R-Squared	6.84%	5.06%	2.30%	10.07%	5.36%	2.55%

The dependent variables are measures of restricted stock sales during the two years following the IPO for 641 firms that go public during 1993-2000. Information about sales of restricted shares during the two years following each firm's IPO is from filings of the SEC's Form 144, which we obtain from the *Vickers Stock Research Corporation*. The dependent variables are (1) whether or not selling occurred (yes = 1, no = 0); (2) the number of shares sold; and (3) the number of sellers of restricted shares. The model with Selling as the dependent variable is a Probit model. The models with Number of Shares Sold and Number of Sellers as the dependent variables are Tobit models. The independent variables are: volatility, measured as the standard deviation of stock returns during the 100 trading days following the IPO; secondary shares as a percentage of IPO; and indicator variables denoting firms with venture capital backing, IPOs occurring before 1998, IPOs during hot IPO markets, and IPOs that list on the NYSE. \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% level, respectively

**Table 6**  
**Logistic regressions of the listing choice of IPO firms from 1993-2000**

Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	-7.1380***	-7.1324***	-7.3910***	-6.4731***	-7.2764***	-7.1360***
Offer Price (\$)	0.0909***	0.0849***	0.0976***	0.0919***	0.1026***	0.1039***
Shares Outstanding (millions)	0.0299***	0.0471***	0.0321***	0.0308***	0.0312***	0.0307***
Underwriter Quality	0.7499***	0.6935***	0.7338***	0.7093***	0.7105***	0.7095***
High Tech Industry (Yes = 1, No = 0)	-1.4639***	-1.4468***	-1.4653***	-1.5431***	-1.5307***	-1.4965***
Restricted Stock Sales (Yes = 1, No = 0)	-0.8646***	-	-	-	-	-
Number of Restricted Shares Sold	-	-0.6957***	-	-	-	-
Number of Sellers of Restricted Stock	-	-	-0.0382***	-	-	-
Expected Probability of Restricted Share Sales	-	-	-	-1.6060**	-	-
Expected Number of Restricted Shares Sold	-	-	-	-	-0.3883***	-
Expected Number of Sellers of Restricted Shares	-	-	-	-	-	-0.0556***
Pseudo R-squared	30.23%	32.83%	30.66%	28.69%	29.10%	29.42%

The dependent variable is the stock market listing for 729 firms that go public during 1993-2000 (NYSE = 1, Nasdaq = 0). The independent variables are the offer price of the IPO; the number of shares outstanding; underwriter quality measured as the market share of the lead underwriter; whether the firm is in a high technology industry; and one of three measures of post-IPO selling of restricted stock during the two years following the IPO.. The measures of actual restricted stock sales in columns one to three are: whether there were any sales (Yes = 1, No = 0); the number of shares sold; and the number of sellers of restricted stock. The measures of expected restricted stock sales in columns four to six are: the expected probability of sales; the expected number of shares sold; and the expected number of sellers of restricted stock \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% level, respectively

**Table 7**  
**Logistic regression of the listing choice with venture capitalists**

Independent Variables	Model 1	Model 2	Model 3
Intercept	-6.9808***	-6.9814***	-7.2256***
Offer Price (\$)	0.0964***	0.0892***	0.1024***
Shares Outstanding (millions)	0.0276***	0.0440***	0.0299***
Underwriter Quality	0.7404***	0.6872***	0.7251***
High Tech Industry (Yes = 1, No = 0)	-1.3343***	-1.3522***	-1.3701***
Venture Capital Backing (Yes = 1, No = 0)	-0.8144**	-0.6444**	-0.7458***
Restricted Stock Sales (Yes = 1, No = 0)	-0.7896***	-	-
Number of Restricted Shares Sold	-	-0.6446***	-
Number of Sellers of Restricted Stock	-	-	-0.0339***
Pseudo R-Squared	31.48%	33.57%	31.68%

The dependent variable is the stock market listing for 641 firms that go public during 1993-2000 (NYSE = 1, Nasdaq = 0). The independent variables are the offer price of the IPO; the number of shares outstanding; underwriter quality measured as the market share of the lead underwriter; whether the firm is in a high technology industry, whether the firm has venture capital backing; one of three measures of post-IPO selling of restricted stock during the two years following the IPO; and an interaction variable equal to the VC dummy times the restricted sales measure. The measures of actual restricted stock sales for columns one to three are: whether there were any sales (Yes = 1, No = 0); the number of shares sold; and the number of sellers of restricted stock. \*\*\*, \*\*, \* denote significance at the 1%, 5%, and 10% level, respectively.