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The New Issues Puzzle

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ABSTRACT

Companies issuing stock during 1970 to 1990, whether an initial public offering or a seasoned equity offering, have been poor long-run investments for investors. During the five years after the issue, investors have received average returns of only 5 percent per year for companies going public and only 7 percent per year for companies conducting a seasoned equity offer. Book-to-market effects account for only a modest portion of the low returns. An investor would have had to invest 44 percent more money in the issuers than in nonissuers of the same size to have the same wealth five years after the offering date.

IN THIS ARTICLE, WE show that companies issuing stock during 1970 to 1990, whether an initial public offering (IPO) or a seasoned equity offering (SEO), significantly underperform relative to nonissuing firms for five years after the offering date. The average annual return during the five years after issuing is only 5 percent for firms conducting IPOs, and only 7 percent for firms conducting SEOs. While evidence that firms going public subsequently underperform has been documented previously, our evidence that the same pattern holds for firms conducting SEOs is new.

The magnitude of this underperformance is economically important: based upon the realized returns, an investor would have had to invest 44 percent more money in the issuers than in nonissuers of the same size to have the same wealth five years after the offering date. Surprisingly, this number is the same for both IPOs and SEOs. While the difference in returns between issuers and nonissuers on which the 44 percent number is based only holds

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size constant, we also calculate abnormal performance after adjusting for book-to-market effects. Only a modest portion of the underperformance of issuing firms can be explained as a manifestation of book-to-market effects.

Since most SEOs occur after a period of high returns, we address whether the poor subsequent performance is merely a manifestation of long-term return reversals. We find that extreme winners that do not issue equity dramatically outperform extreme winners that do issue. We also document that the degree to which issuing firms underperform varies over time: firms issuing during years when there is little issuing activity do not underperform much at all, whereas firms selling stock during high-volume periods severely underperform.

We calculate the statistical significance of the underperformance using three different procedures. The first procedure calculates t-statistics using annual holding-period returns on issuing firms relative to nonissuing firms. The second procedure calculates t-statistics using a time series of cross-sectional regressions on monthly individual firm returns. The third procedure calculates t-statistics using 3-factor time-series regressions of monthly returns for portfolios of issuing and nonissuing firms. All three procedures result in rejection of the null hypothesis of no underperformance at high degrees of statistical significance.

The low returns on issuing firms demand an explanation. We show that the traditional measure of risk, beta, is slightly higher for issuing firms than nonissuers, implying that issuers should have higher, not lower, returns. As mentioned above, the poor performance of issuers is not merely proxying for long-term return reversals, and book-to-market effects can explain only a modest portion of the low returns. We are left with a puzzle: why do firms issuing equity produce such low returns for investors over the next five years?

The organization of the rest of this article is as follows. Section I describes the data. Section II presents evidence on the long-run performance of firms issuing stock during 1970 to 1990 and addresses some potential explanations. Section III presents statistical tests controlling for size and book-to-market effects. Section IV summarizes the findings and hypothesizes why the patterns exist and persist.

I. Data on New Issues

A. Initial Public Offerings

We use a sample of 4,753 operating companies going public in the United States during 1970 to 1990 and listed within the next three years on the University of Chicago Center for Research in Security Prices (CRSP) Nasdaq or American Stock Exchange (Amex) and New York Stock Exchange (NYSE) daily tapes. Closed-end funds, real estate investment trusts, and American Depository Receipts are excluded from our sample. Data on firms going public during 1970 to 1990 come from several sources. For 1970 to 1974, the "New

Market Names" section of *Investment Dealer's Digest* is used. For 1975 to 1984, *Going Public: The IPO Reporter* is used. For 1985 to 1990, we purchased listings of IPOs from IDD Information Services, Inc. and Securities Data Company. After the February 1971 introduction of Nasdaq, most firms going public have listed on Nasdaq, although CRSP does not start reporting Nasdaq returns until December 14, 1972. Prior to the introduction of Nasdaq, many newly public firms listed on the Amex, although typically with a delay of six months or more from the offering date.

B. Seasoned Equity Offerings

We use a sample of 3,702 seasoned equity offerings during 1970 to 1990, all of which involve at least some newly issued (primary) shares. Because utility offerings tend to be different from those of other operating companies, we exclude all utility offerings (standard industrial classification (SIC) codes 491 to 494) from our sample.[1] The data come from several sources: for 1970 to 1973, the Securities and Exchange Commission's registered offering statistics tape; for 1980 to 1984, the Loderer, Sheehan, and Kadlec (1991) sample; and for other years, data purchased from Securities Data Co. Our sample includes companies listed on the Amex, the NYSE, and Nasdaq, including offerings from the years before December 1972, when CRSP started recording Nasdaq prices. The 3,702 SEOs were conducted by 2,680 different companies, with only 15 firms conducting more than five SEOs during the 1970 to 1990 sample period. Thus, our sample of seasoned equity offerings is far more comprehensive than that used in all but one previous study of seasoned equity offerings. The exception is Choe, Masulis, and Nanda (1993), where a sample of 5,694 SEOs (many of which are by utilities) from 1971 to 1991 is used. Choe, Masulis, and Nanda (1993) focus on announcement period returns, unlike this article.

In Figure 1, we present the annual volume of IPOs and SEOs in our samples for each year during 1970 to 1990. As can be seen, there are large variations in the volume of equity issues, with the variations more extreme for IPOs than for SEOs.

C. Stock Returns

Using the CRSP Nasdaq and Amex-NYSE daily tapes, we follow each issuing firm from its offer date until the earlier of its delisting date, the offering's fifth anniversary, or December 31, 1992. We define a year as twelve 21-trading day intervals (252 days). Since most years actually have 253 trading days, our five-year anniversary date is typically a week before the actual five-year anniversary. The choice of an interval over which to measure the long-run performance of new issues involves a tradeoff: the longer the interval, the greater is the total underperformance, but the greater is the

[1]See Eckbo and Masulis (1995) for reasons why utility equity offerings are different from the equity offerings of other operating companies.

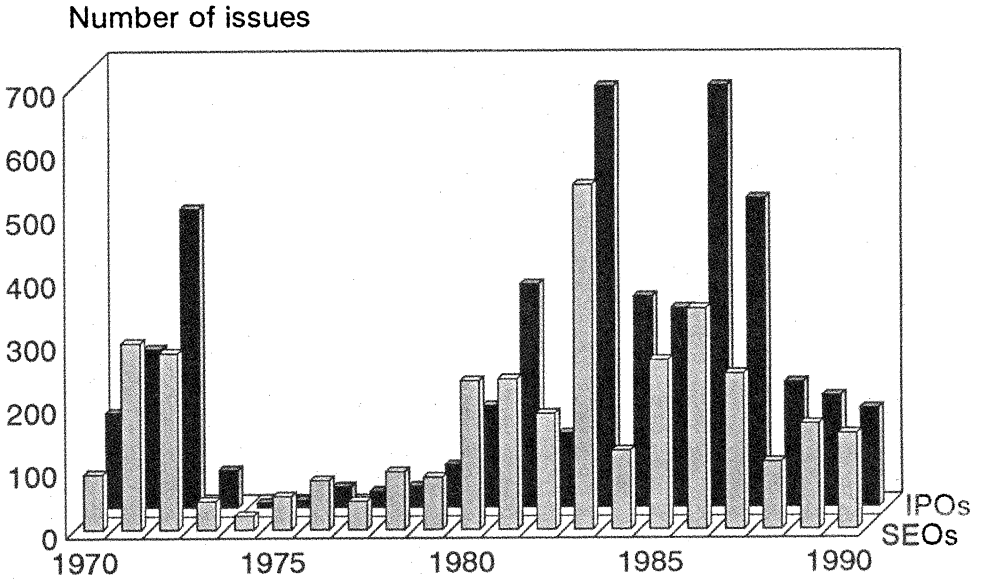

Figure 1. The annual volume of initial public offerings (IPOs) and seasoned equity offerings (SEOs), 1970–1990. The SEO volume excludes issues by utilities. The numbers graphed above are reported in Tables I (IPOs) and II (SEOs).

variability of returns. Balancing these two features, we have chosen two intervals: a three-year (756 trading days) window, to facilitate comparisons with other studies, and a five-year (1,260 trading days) window, which captures almost the entire period of underperformance. We choose a five-year interval based upon the evidence in Loughran (1993), who reports that IPOs underperform for approximately five years.[2]

To avoid problems caused by frequent transactions, we calculate the buy-and-hold return from the first CRSP-listed postissue closing price to the appropriate anniversary date of the offering. We do not include the issue-day return for several reasons. First, for offers from the early 1970s, there is frequently a multimonth or even multiyear period before the firm is listed on the CRSP tapes, primarily because the CRSP Nasdaq tape does not report returns before December 14, 1972. Second, for unit offerings, which typically involve shares and warrants, we only have the unit offering price and the market price of the stock (CRSP does not report unit prices; all of our returns are for common stock only). Third, and most importantly, it is frequently difficult for an investor to purchase shares at the offering price, whereas the

[2] Loughran (1993, Figure 2) reports underperformance for the five calendar years following the year of the IPO for 3,656 Nasdaq-listed IPOs from 1967 to 1988. Seyhun (1992) also reports underperformance for about six years after going public for a sample of 2,298 U.S. IPOs from 1975 to 1987. Levis (1993a) reports that British IPOs underperform beyond a three-year period as well.

market price represents a price that is available for an implementable portfolio strategy.

If an issuing firm is delisted prior to its anniversary date, we truncate its total return on that date. Thus, the percentage buy-and-hold return for firm i is

$$R_{iT} = \left[\prod_{t=start}^{\min[T,delist]} (1 + r_{it}) - 1 \right] \times 100\%, \tag{1}$$

where *start* is the date of the first postissue CRSP-listed closing price, min[T, *delist*] is the earlier of the last day of CRSP-listed trading or the end of the three- or five-year window, and r_{it} is the return for firm i on date t. For firms that went public near the end of our sample period, the delisting date is no later than December 31, 1992, since we are using the version of the CRSP tapes ending on this date.

D. Matching Firms

For each issuing firm, we choose a nonissuing matching firm. To choose a matching firm, on each December 31 all common stocks listed on the CRSP Amex-NYSE and Nasdaq tapes that have not issued stock within the last five years are ranked by their market capitalization.[3] The firm with the market capitalization closest to but higher than that of the issuing firm is then chosen as its matching firm. If a matching firm is delisted before the ending date for its corresponding issuing firm, a second (and, if necessary, third, fourth, etc.) matching firm is spliced in after the delisting date of the first matching firm. The replacement firm is the nonissuing company with the market capitalization on the original ranking date immediately higher than the original matching firm. If a chosen matching firm subsequently issues stock, we treat it as if it is delisted on its offering date (although the announcement date is still in our returns).[4] As a result of these procedures, buy-and-hold returns over identical intervals, with companies matched by size, are created for both the issuing and nonissuing firms. These procedures introduce no survivorship or look-ahead biases and minimize the number of transactions implicit in the computations.

Matching by industry is not done for several reasons. First, if firms in an industry time their offers to take advantage of industry-wide misvaluations, controlling for industry effects will reduce the ability to identify abnormal performance. Second, there are frequently only a few publicly traded companies in an industry with approximately the same market capitalization as the

[3]This excludes all companies for their first five years after going public. Note that a newly listed company becomes eligible to be a matching firm after any five-year period during which it has not issued equity. Because the CRSP Nasdaq tape does not begin until December 1972, no Nasdaq-listed firms are included in our matching firms until the ranking on December 31, 1977.

[4]For example, if a firm issues equity on December 2, 1986 and its first matching firm's last CRSP-listed return is on July 7, 1987, a second matching firm is added starting on July 8, 1987. If this second matching firm issues equity on February 27, 1989, a third matching firm is added starting on February 28, 1989.

issuing firms, resulting in the same nonissuing firm being matched with numerous issuers. For empirical studies of the long-run performance of IPOs that control for industry effects, see Ritter (1991) and Rajan and Servaes (1993). Spiess and Affleck-Graves (1995) control for both size and industry effects in measuring the long-run performance of SEOs. They report that approximately one-third of the long-run underperformance of SEOs is associated with industry effects.

II. Time-Series Evidence on IPOs and SEOs

For IPOs and SEOs separately, we compute the average equally weighted holding-period returns for both the firms issuing in calendar year τ (which we refer to as the year τ cohort) and for their size-matched nonissuing firms, with the average T-year buy-and-hold return measured as

$$R_{\tau,T} = \frac{1}{n} \sum_{i=1}^{n} R_{iT} \tag{2}$$

where R_{iT} is the percentage buy-and-hold return on firm i for holding period T. To be precise, the T-year holding period for firm i is the maximum of either T years or the portion of this time during which it is listed on the CRSP tapes. We also calculate wealth relatives for each cohort year, where a wealth relative is defined as the ratio of the end-of-period wealth from holding a portfolio of issuers (IPOs or SEOs) to the end-of-period wealth from holding a portfolio of matching firms with the same starting market capitalization. The wealth relatives are ratios of average gross returns and are not averages of ratios.

A. Equally Weighted Buy-and-Hold Returns on IPOs

In Table I we report buy-and-hold returns and wealth relatives for the 4,753 sample firms going public between 1970 and 1990. Focusing first on the three-year returns, the overall three-year wealth relative is 0.80, close to the 0.83 reported in Ritter (1991) for 1,526 IPOs from 1975 to 1984.[5] Thus, it appears that the patterns existing in 1975 to 1984 are representative of a longer stretch of capital markets history.

We also report total returns and wealth relatives based upon five-year holding periods. The continued poor performance of IPOs in years 4 and 5 of the aftermarket shows up, with the mean wealth relative falling to 0.70. The average holding-period raw return is only 16 percent for the five years after going public. While not reported in the table, the median five-year raw return is -39 percent for the 4,753 IPOs and 16 percent for their matching firms, reflecting the skewness in the distributions of five-year buy-and-hold returns.

[5]Because we allow the stock portion of unit offerings into our sample, unlike Ritter (1991), during the first three years of seasoning our 1975 to 1984 sample size is 1,806 IPOs. The inclusion of firms conducting unit offerings has little impact on any of our conclusions.

Table I

The Long-Run Performance of IPOs by Cohort Year, 1970 to 1990

The sample consists of 4,753 IPOs by firms subsequently listed on Nasdaq, the American Stock Exchange (Amex), or the New York Stock Exchange (NYSE). Buy-and-hold returns for the companies going public in cohort year τ are computed using the first CRSP-listed closing price as the purchase price. Wealth relatives are computed as $[(\Sigma(1 + R_{iT}))/(\Sigma(1 + R_{mT}))]$, where R_{iT} is the holding-period return from the first CRSP-listed closing price until the earlier of the delisting date or the three-year (or five-year) anniversary of the IPO, R_{mT} is the holding-period return on a matching firm over the same holding period, and the summations are over the N observations in a cohort year. For example, 1970's five-year wealth relative of 0.67 is computed as 0.537/0.800, with 0.537 being the terminal wealth per dollar invested after having lost 46.3 percent on the IPO portfolio. The average holding period for firms held up to five years is 47 months.

		3 Years			5 Years		
		Mean Buy-and-Hold Returns (%)			Mean Buy-and-Hold Returns (%)		
Cohort Year	Number of IPOs	IPOs	Matching Firms[b]	Wealth Relative	IPOs	Matching Firms[b]	Wealth Relative
1970[a]	151	−20.9	−12.9	0.91	−46.3	−20.0	0.67
1971[a]	252	−55.6	−27.3	0.65	−31.6	6.1	0.64
1972[a]	473	−47.2	−10.8	0.59	−18.2	33.4	0.61
1973	60	−33.6	29.5	0.51	0.8	104.4	0.49
1974	8	73.2	87.5	0.92	234.4	173.0	1.22
1975	12	59.3	106.5	0.77	117.9	127.3	0.96
1976	33	135.3	81.3	1.30	259.4	205.0	1.18
1977	26	151.3	126.2	1.11	173.8	234.0	0.82
1978	34	131.0	87.5	1.23	217.9	227.0	0.97
1979	68	63.0	80.6	0.90	52.6	193.1	0.52
1980	162	80.1	123.4	0.81	−2.1	188.0	0.34
1981	354	6.3	90.5	0.56	14.9	194.7	0.39
1982	118	21.4	83.9	0.66	76.7	137.6	0.74
1983	665	21.4	55.4	0.78	3.8	67.2	0.62
1984	334	48.1	60.0	0.93	44.0	82.2	0.79
1985	316	5.7	28.9	0.82	9.5	58.6	0.69
1986	666	5.3	29.9	0.81	9.3	33.4	0.82
1987	489	−10.4	0.3	0.89	6.2	14.0	0.93
1988[c]	198	17.5	26.1	0.93	80.8	60.3	1.13
1989[c]	177	44.3	20.6	1.20	44.4	25.3	1.15
1990[c]	157	22.7	42.7	0.86	22.7	42.7	0.86
1970–90	4,753	8.4	35.3	0.80	15.7	66.4	0.70

[a]Prior to December 14, 1972, only returns from firms listed on the Amex and NYSE are included. After December 14, 1972, returns on Nasdaq-listed firms are included.

[b]At the time of going public, each IPO is matched with the seasoned firm (CRSP-listed for at least five years, without having issued equity during the prior five years) having the closest, but higher, market capitalization on the prior December 31. If this matching firm is delisted or issues equity prior to the end of the IPO aftermarket return interval, the next highest seasoned market cap firm that has not issued equity is spliced in on the delisting date. The same procedure is used if this firm is subsequently removed. For 1970 to 1977, all matching firms are Amex-NYSE listed. After 1977, the universe of firms from which matching firms are picked includes all operating companies listed on the Amex-NYSE and Nasdaq tapes which have not conducted an equity issue during the prior five years.

[c]The return window for these cohorts is truncated at December 31, 1992.

B. Equally Weighted Buy-and-Hold Returns on SEOs

If private firms are successful at selling stock at prices such that investors subsequently realize low returns, one would expect that publicly traded firms should have some ability to do the same. While numerous authors have documented that SEOs occur on average after substantial price runups and that there is a 3 percent price drop on average when an SEO is announced, there has been little focus on long-term postissue performance.[6] Here, we present evidence that there are low postissue returns on seasoned issuers.

In Table II, we report the average buy-and-hold return for firms conducting SEOs for windows of three and five years after the offerings. Also reported is the average buy-and-hold return during the year prior to the offerings, and the postissue returns on matching firms chosen using the same procedure as in Table I. The wealth relatives for three- and five-year holding periods are also reported.

Table II reports that in the year prior to the offering, the average issuer has experienced a total return of 72 percent. Not reported in the table is that approximately half of this return is due to market runups, and half is due to the issuers outperforming the market. In the (up to) five years after an SEO, the average buy-and-hold return on issuing firms is 33 percent, while the average buy-and-hold return on their matching firms is 93 percent, with a wealth relative of 0.69. The wealth relative is virtually identical to that for IPOs reported in Table I. *Firms conducting seasoned equity offerings underperform just as severely as firms going public.* Although not reported in the table, the median five-year buy-and-hold return on the issuing firms is -8 percent, whereas the median five-year buy-and-hold return on their matching firms is 50 percent.

C. The Required Investments to Achieve the Same Terminal Wealth Levels

The five-year buy-and-hold return numbers in Tables I and II can be used to measure the investment in issuing firms that is required in order to have the same wealth five years later as would be produced by an investment in nonissuers. To illustrate, assume that a representative nonissuer sold for

[6] The announcement-period price drop has been documented by numerous authors, including Asquith and Mullins (1986), Masulis and Korwar (1986), Mikkelson and Partch (1986), Kalay and Shimrat (1987), Korajczyk, Lucas, and McDonald (1990), Loderer, Sheehan, and Kadlec (1991), Choe, Masulis, and Nanda (1993), Jegadeesh, Weinstein, and Welch (1993), Manuel, Brooks, and Schadler (1993), and Bayless and Chaplinsky (1993). Asquith and Mullins (1986) report postannouncement cumulative average returns (CARs) for 480 postannouncement trading days for their sample of 189 SEOs of industrial firms during 1963 to 1981, all of which were announced in the *Wall Street Journal*. They report a downward drift of about 6 percent in cumulative excess returns. Korajczyk, Lucas, and McDonald (1990) report postannouncement CARs for 100 trading days for their sample of 1,480 seasoned equity offerings from 1974 to 1983. They report postannouncement CARs of 0 percent using an equally weighted market index. Spiess and Affleck-Graves (1994) report long-run underperformance for the five years after the SEO for a sample of 1,247 nonutility offerings from 1975 to 1989. Their sample is restricted to firms selling primary shares only.

Table II

The Long-Run Performance of SEOs by Cohort Year, 1970 to 1990

The sample consists of 3,702 seasoned equity offers (SEOs) involving at least some newly issued shares (primary or combined primary and secondary shares) by firms listed on Nasdaq, the American Stock Exchange (Amex), or New York Stock Exchange (NYSE). Offerings by utilities (SIC codes 491–494) are excluded. The prior return is the raw buy-and-hold return for the 252 trading days ending on the issue date. If less than 252 trading days are available, the shorter holding period is used. For firms that went public less than one year before the SEO, the prior return is measured from the first CRSP-listed closing price. Wealth relatives are computed as $[(\Sigma(1 + R_{iT}))/(\Sigma(1 + R_{mT}))]$, where R_{iT} is the holding-period return from the closing price on the issue date until the earlier of the delisting date or the three-year (or five-year) anniversary of the SEO, R_{mT} is the holding-period return on a matching firm over the same holding period, and the summations are over the N observations in a cohort year. The average holding period for firms held up to five years is 52 months.

			3 Years			5 Years		
			Mean Buy-and-Hold Returns (%)			Mean Buy-and-Hold Returns (%)		
Cohort Year	Number of SEOs	Prior Return (%)	SEOs	Matching Firms[b]	Wealth Relative	SEOs	Matching Firms[b]	Wealth Relative
1970[a]	88	−6.2	−11.1	−4.2	0.93	−29.2	−4.7	0.74
1971[a]	296	59.2	−50.7	−29.9	0.70	−35.0	16.3	0.56
1972[a]	280	43.1	−49.3	−19.5	0.63	−22.0	25.9	0.62
1973	45	−1.4	−34.6	3.2	0.63	−15.7	37.9	0.61
1974	22	−1.0	50.1	74.0	0.86	91.0	155.0	0.75
1975	53	70.3	50.9	81.1	0.83	107.6	162.4	0.79
1976	78	80.8	35.8	45.6	0.93	135.5	136.4	1.00
1977	45	40.3	147.8	103.2	1.22	181.2	178.3	1.01
1978	92	65.2	83.5	101.5	0.91	126.1	266.5	0.62
1979	83	59.0	54.9	70.8	0.91	90.0	193.5	0.65
1980	236	99.0	69.4	140.7	0.70	43.7	214.2	0.46
1981	239	92.0	9.6	77.8	0.62	36.9	178.2	0.49
1982	184	53.3	51.3	113.2	0.71	90.6	207.9	0.62
1983	545	138.8	17.4	70.5	0.69	20.3	95.9	0.61
1984	125	16.6	49.3	80.2	0.83	73.4	105.4	0.84
1985	268	57.7	11.9	60.3	0.70	24.2	84.0	0.68
1986	350	68.7	11.3	30.8	0.85	23.2	32.4	0.93
1987	247	51.7	1.4	13.7	0.89	37.5	40.2	0.98
1988[c]	107	18.2	16.5	23.1	0.95	65.2	63.4	1.01
1989[c]	167	65.8	17.6	16.3	1.00	31.0	31.1	1.00
1990[c]	152	45.1	37.2	42.5	0.96	37.2	42.5	0.96
1970–90	3,702	72.3	15.0	48.0	0.78	33.4	92.8	0.69

[a]Prior to December 14, 1972, only returns from firms listed on the Amex and NYSE are included. After December 14, 1972, returns on Nasdaq-listed firms are included. Because CRSP Nasdaq returns are unavailable prior to December 14, 1972, the prior returns are available for only 283 of the 664 SEOs during 1970 to 1972.

[b]At the time of the new issue, each firm conducting an SEO is matched with the seasoned firm (CRSP-listed for at least five years, without having issued equity during the prior five years) having the closest, but higher, market capitalization on the prior December 31. If this matching firm conducts an SEO or is delisted prior to the end of the three- or five-year postissue holding period, the next highest seasoned market cap firm that has not issued equity is spliced in on the removal date. The same procedure is used if this firm is subsequently removed. For 1970 to 1977, all matching firms are Amex–NYSE listed. After 1977, the universe of firms from which matching firms are picked includes all operating companies listed on the Amex-NYSE and Nasdaq tapes which have not conducted an equity issue during the prior five years.

[c]The return window for these cohorts is truncated at December 31, 1992.

$10.00 at the close of the day on which another company with the same postissue market capitalization issued stock. The average five-year buy-and-hold return of 66.4 percent on IPO matching firms implies that $10.00 invested in size-matched nonissuers grows to $16.64 after five years. Because the average five-year buy-and-hold return on IPOs is only 15.7 percent, an investment of $14.38 is required to receive the same $16.64 at the end of the holding period ($1.157 \times \$14.38 = \$16.64$). Thus, an investor buying IPOs at the first closing market price would have to invest 43.8 percent more money than if nonissuers of the same size were purchased at the same time, in order to achieve the same terminal wealth level five years later.[7]

For SEOs, the Table II returns imply that $10.00 invested in size-matched nonissuers at the first postissue closing price will grow to $19.28 five years later, whereas an investment of $14.45 in issuers would be required to grow to this same $19.28, since the average total return for these issuers is only 33.4 percent ($1.334 \times \$14.45 = \$19.28$). Thus, the required investment in SEOs at the first postissue closing market price is 44.5 percent higher than that required for nonissuing firms of the same size in order to achieve the same terminal wealth level. Hence, for both IPOs and SEOs, 44 percent more money must be invested in issuers than in nonissuers of the same size to achieve the same wealth level five years later.

D. Annualized Returns on New Issues

While the average equally weighted five-year holding-period return on IPOs is 16 percent and that on SEOs is 33 percent, it is conventional to report annual returns. In Table III and Figure 2, we present the annual returns on issuers and their matching firms during the five years after the offerings. In Table III, we also divide the first year into two six-month periods.

For both unseasoned and seasoned stock issuers, returns are lower during each of the five years after issuing than on their size-matched nonissuing firms. For both groups of issuers, there is no underperformance during the six months after the offering. There is severe underperformance during the next 18 months. By the fifth year, the underperformance is narrowing noticeably. While we do not report it in Table III, the underperformance in years six and seven is only about 1 percent per year. In the last column, we report the geometric average annual return during the first five postissuing years for the issuing firms and for nonissuing firms with the same market capitalizations. The average return on firms going public is 5 percent per year, compared to 12 percent for their matching firms, an underperformance effect of 7 percent per year. For firms conducting SEOs, the average return is 7 percent per year, compared to 15 percent for their matching firms, an

[7]For those lucky enough to buy each IPO at the offering price, the required investment in issuers is only 30 percent higher than in nonissuers, since the 10 percent average initial return moves the price from $13.00 to a $14.38 market price immediately after issuing. This $13.00 offering price is still 30 percent higher than the $10.00 investment in nonissuing firms that produces $16.64 in terminal wealth.

Table III

Average Annual Percentage Returns during the Five Years after Issuing for Firms Conducting Initial Public Offerings (IPOs) and Seasoned Equity Offerings (SEOs) during 1970 to 1990, and Their Matching Firms

Using the first closing postissue market price, the equally weighted average buy-and-hold return for the year after the issue is calculated for the issuing firms and for their matching firms (firms with the same market capitalization that have not issued equity during the prior five years). On each anniversary of the issue date, the portfolios are rebalanced to equal weights and the average buy-and-hold return during the next year for all of the surviving issuers and their matching firms is calculated. The first two columns report returns per six months (or shorter, if less than six months of returns are available). For matching firms that get delisted (or issue equity) while the issuer is still trading, the proceeds from the sale on the delisting date are reinvested in a new matching firm for the remainder of that year (or until the issuer is delisted). For each of the five years, the average holding period is about seven or eight days shorter than 252 trading days because about six percent of the firms are subject to either a late listing (especially for years 1 and 2) or a midyear delisting (especially for years 4 and 5). Returns are calculated until December 31, 1992. The *t*-statistics for the difference in returns are calculated using the difference in returns for each issuer and its matching firm, and assume independence of the observations.

	First 6 Months	Second 6 Months	First Year	Second Year	Third Year	Fourth Year	Fifth Year	Geometric Mean, Years 1–5
Panel A. Firms Going Public								
(1) IPO firms (%)	3.1	−1.1	1.6	3.6	5.0	4.0	11.6	5.1
(2) Matching firms (%)	3.0	3.4	6.1	14.1	13.3	11.3	14.3	11.8
(3) *t*-Statistic for difference	0.13	−5.50	−3.51	−8.01	−6.45	−5.61	−1.67	−11.37
(4) Sample size	4,082	4,351	4,363	4,526	4,277	3,717	3,215	4,753
Panel B. Firms Conducting SEOs								
(5) SEO firms (%)	5.6	0.5	6.6	0.1	7.5	9.1	11.8	7.0
(6) Matching firms (%)	5.7	6.8	12.9	12.3	16.2	17.7	17.4	15.3
(7) *t*-Statistic for difference	−0.22	−9.00	−5.59	−12.24	−8.08	−7.35	−4.50	−16.80
(8) Sample size	3,469	3,550	3,561	3,614	3,496	3,154	2,805	3,702

underperformance effect of 8 percent per year. It is also worth noting that the average annual returns on issuing firms are no higher than T-bill returns, which have averaged 7 percent per year during our sample period.

In rows 3 and 7 of Table III, we report *t*-statistics for the null hypothesis that the difference in annual returns between the issuing firms and their matching firms is zero. Except for IPOs in their fifth year of seasoning, the null hypothesis can be rejected at high levels of statistical significance, with *t*-statistics in the second year of seasoning as large as −8.01 for IPOs and −12.24 for SEOs. The *t*-statistics are calculated using the standard deviation of the mean of $r_{it} - r_{mt}$, where r_{it} is the return on issuing firm i during year t of seasoning, and r_{mt} is the return on its matching firm during the identical time period. Because the *t*-statistics are calculated assuming independence of

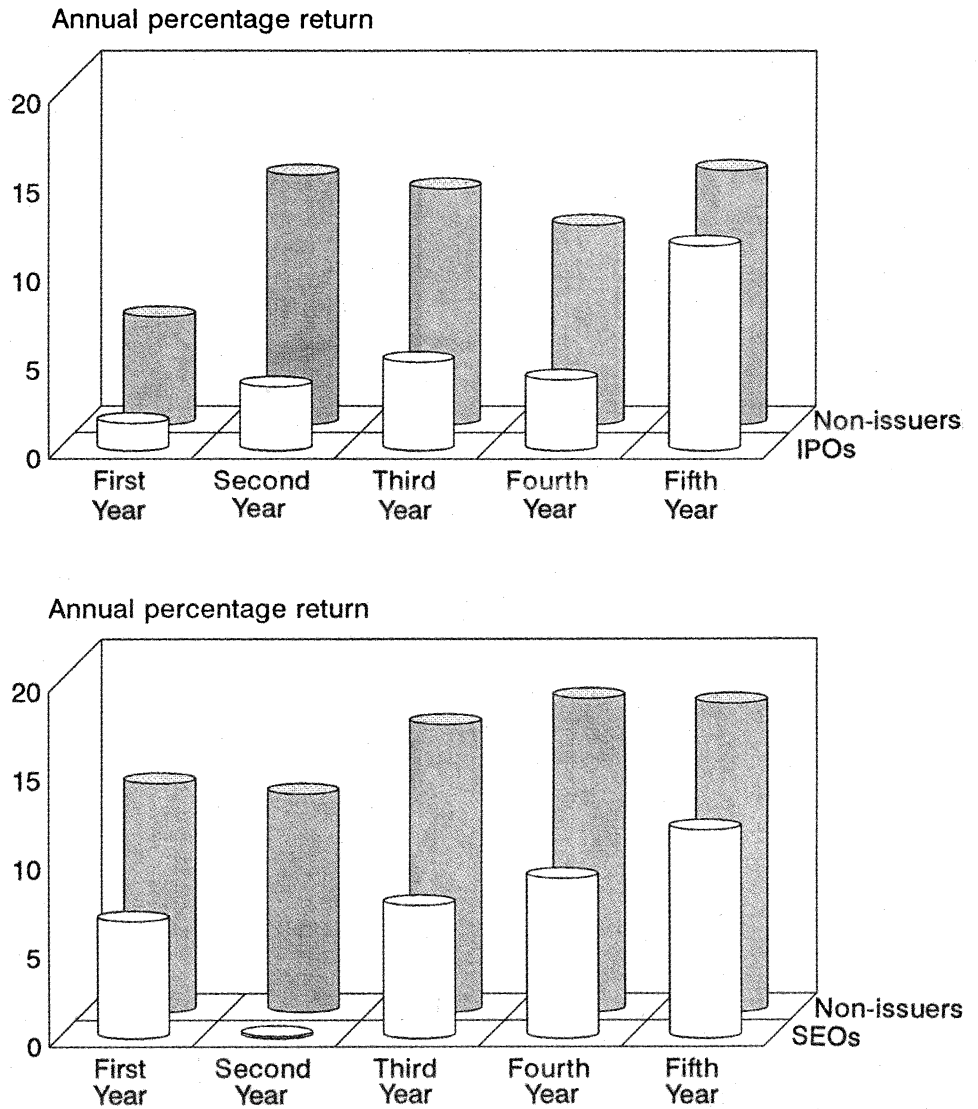

Figure 2. The average annual raw returns for 4,753 initial public offerings (IPOs), and their matching nonissuing firms (top), and the average annual raw returns for 3,702 seasoned equity offerings (SEOs), and their matching nonissuing firms (bottom), during the five years after the issue. The equity issues are from 1970 to 1990. Using the first closing postissue market price, the equally weighted average buy-and-hold return for the year after the issue is calculated for the issuing firms and for their matching firms (firms with the same market capitalization that have not issued equity during the prior five years). On each anniversary of the issue date, the equally weighted average buy-and-hold return during the next year for all of the surviving issuers and their matching firms is calculated. For matching firms that get delisted (or issue equity) while the issuer is still trading, the proceeds from the sale on the delisting date are reinvested in a new matching firm for the remainder of that year (or until the issuer is delisted). The numbers graphed above are reported in Table III.

the observations, they should be viewed as only suggestive.[8] Further statistical tests (reported in Tables VIII and IX) explicitly adjust for the correlation of contemporaneous returns that is ignored in Table III.

In Table III, we rebalance the portfolios on each anniversary date, so that the annual returns weight each firm equally. This differs from our use of three- and five-year buy-and-hold returns, where a firm that has already appreciated 1000 percent during its first four years would receive 20 times as much weight in the fifth year as a firm that has declined in value by 50 percent during its first four years. We should note, however, that the annualized returns are not very sensitive to whether we rebalance the portfolios annually or not. We should also note that the sample sizes with which we compute the annual returns are always less than the total sample sizes because of three effects: (i) delayed listings in the early 1970s; (ii) delistings before the fifth-year anniversaries; and (iii) the truncation of the return data at the end of 1992, which affects the cohorts from the late 1980s. The fact that the average holding period is less than five years also explains why the average buy-and-hold return numbers from Tables I and II are less than those implied by compounding the five annual numbers in Table III. For IPOs, the average five-year holding period is 47 months, and for SEOs, the average is 52 months.[9]

E. Alternative Benchmarks

The measurement of long-term abnormal performance is sensitive to the benchmark used. Although in Tables I and II we only report the returns on issuing firms relative to the returns on companies of the same size that have not issued equity within the previous five years, we have also computed wealth relatives using common indices. In Table IV, we calculate wealth relatives using, in addition to our matching firms, five common indices as benchmarks. As can be seen, while the exact magnitude of the underperformance of issuing firms is dependent upon the benchmark used, both IPOs (Panel A) and SEOs (Panel B) have underperformed all of the commonly used benchmarks: the CRSP equally weighted and value-weighted Amex-NYSE and Nasdaq indices, and the S&P 500. The underperformance relative to the S&P 500 Index is particularly noteworthy, for it does not include dividend income. When using the equally weighted CRSP indices as the benchmark, we do not compound the daily index to get the buy-and-hold return. Instead,

[8]The t-statistics assume normality and independence of the observations. While three- and five-year buy-and-hold returns are highly skewed, the distribution of *differences* in annual returns closely approximates a normal distribution. The t-statistics are overstated because the cross-sectional dependence existing in contemporaneous returns is not accounted for, but they are understated by using matching firm returns, rather than using an index return as the benchmark, due to the firm-specific risk that could be diversified away by using an index. Also, high t-statistics might be expected due to the relatively large sample size.

[9]There is a second reason why the average buy-and-hold returns in Tables I and II are not equal to the compounded annual returns in Table III. This is due to the covariance of returns and the length of the holding period: on average, losers are delisted earlier than winners.

Table IV

Average Five-Year Returns and Wealth Relatives for New Issues from 1970 to 1990 Computed Using Alternative Benchmarks

The average five-year buy-and-hold returns from Table I for initial public offerings (IPOs) and Table II for seasoned equity offerings (SEOs) are compared with alternative benchmarks, including the matching firms used in Tables I and II. For each issuing firm, the benchmark return is calculated by compounding the daily returns on the index for the identical days that the issuing firm is held. (For equally weighted index returns, we compound the CRSP monthly index returns for all full calendar months in order to minimize bid-ask spread bias.) Wealth relatives are calculated by dividing the average terminal value from investing $1 in each issuing firm with the average terminal value from investing $1 in the relevant index. The S&P 500 Index returns do not include dividends. The CRSP Nasdaq index returns do not start until December 14, 1972. In calculating the wealth relatives using the Nasdaq indices, we use samples of IPOs and SEOs that issued equity after December 14, 1972. EW signifies equally weighted, and VW signifies value-weighted.

Benchmark	Average 5-Year Return (%)		5-Year Wealth Relative
	Issuers	Benchmark	
Panel A. Initial Public Offerings			
Size-matched firms	15.7	66.4	0.70
CRSP Amex-NYSE EW index	15.7	48.8	0.78
CRSP Amex-NYSE VW index	15.7	57.3	0.74
Standard & Poor's 500	15.7	38.3	0.84
CRSP Nasdaq EW index (3,886 firms)	25.2	47.5	0.85
CRSP Nasdaq VW index (3,886 firms)	25.2	54.2	0.81
Panel B. Seasoned Equity Offerings			
Size-matched firms	33.4	92.8	0.69
CRSP Amex-NYSE EW index	33.4	67.7	0.79
CRSP Amex-NYSE VW index	33.4	66.3	0.80
Standard & Poor's 500	33.4	43.0	0.93
CRSP Nasdaq EW index (3,042 firms)	46.9	75.2	0.84
CRSP Nasdaq VW index (3,042 firms)	46.9	66.4	0.88

to minimize the substantial bid-ask spread bias that exists in the daily equally weighted indices, we compound the monthly index returns except for the partial months at the beginning and ending of each five-year period.[10]

F. Value-Weighted Buy-and-Hold Returns on New Issues

The equally weighted five-year wealth relatives reported in Tables I and II reflect the results of a portfolio strategy of investing an equal dollar amount in every issuing firm versus investing an equal dollar amount in every

[10] The upward bias in the daily equally weighted index returns is substantial. For example, compounding the 60 monthly returns of the CRSP Amex-NYSE equally weighted index from January 1974 to December 1978 gives a total return of 154.0 percent, whereas compounding the daily returns for the identical time period gives a total return of 243.4 percent.

Table V

The Aggregate Total Dollar Returns on New Issues in 1970 to 1990 During the Five Years after Issuing

The Panel A sample consists of 4,753 initial public offerings (IPOs) during 1970 to 1990 subsequently listed by CRSP. All numbers are exclusive of initial returns. The Panel B sample consists of 3,702 nonutility CRSP-listed seasoned equity offerings (SEOs) during 1970 to 1990. Dollar values are computed after converting all nominal proceeds into dollars of 1991 purchasing power using the U.S. consumers price index. For example, all of the issues in 1970 have their proceeds multiplied by 3.49. The dollar value of the return is computed as the number of shares issued multiplied by the first CRSP-reported postissue price per share (using 1991 purchasing power) multiplied by the return. Most issuing firms from prior to 1973 and after 1987 have less than five years of returns included due to either delays in being listed by CRSP or the truncation of returns at December 31, 1992. In 1991 dollars, the average SEO postissue market value of the newly issued shares is \$48 million, twice the size of the IPO average of \$25 million. The average postissue market value of the seasoned issuers is \$374 million, six times as large as the \$61 million for firms going public.

Panel A. Initial Public Offerings	
(1) Dollar value (1991 purchasing power) of IPOs valued at first CRSP-listed price	\$117.6 billion
(2) Dollar value (1991 purchasing power) of returns on IPOs	\$39.8 billion
(3) Dollar value (1991 purchasing power) of returns on matched seasoned firms	\$78.8 billion
(4) Value-weighted percentage return [(2) ÷ (1)] × 100%	33.8%
(5) Value-weighted wealth relative [(1) + (2)] ÷ [(1) + (3)]	0.80
Panel B. Seasoned Equity Offerings	
(6) Dollar value (1991 purchasing power) of SEOs valued at first CRSP-listed price	\$176.8 billion
(7) Dollar value (1991 purchasing power) of returns on SEOs	\$67.9 billion
(8) Dollar value (1991 purchasing power) of returns on matched seasoned firms	\$145.6 billion
(9) Value-weighted percentage return [(7) ÷ (6)] × 100%	38.4%
(10) Value-weighted wealth relative [(6) + (7)] ÷ [(6) + (8)]	0.76

size-matched nonissuing firm. One might argue that a more relevant portfolio strategy would involve investing an amount in every issuing firm (and matching firm) that is proportional to the size of the offering.

Table V reports the dollar value of five-year returns that investors received in the aggregate from the 4,753 CRSP-listed firms going public (Panel A) and the 3,702 CRSP-listed seasoned equity issuers (Panel B) in 1970 to 1990. Since there was substantial inflation during this 21-year period, we have converted all nominal amounts into dollars of 1991 purchasing power. Valued at the first CRSP-listed market price, the aggregate dollar value of investment (in 1991 dollars) is \$118 billion for the IPOs, as reported in row 1 of

Panel A. The aggregate dollar value of returns (capital gains plus dividends) from this investment is $40 billion, resulting in a value-weighted five-year buy-and-hold return of 34 percent. This is higher than the equally weighted 16 percent average five-year return for the 4,753 IPOs going public in 1970 to 1990, reflecting the pattern that smaller offerings (frequently more speculative firms) underperform by more than larger offerings. For matching firms, the aggregate dollar value of returns from a nearly identical investment is $79 billion, resulting in a value-weighted five-year return of 67 percent, virtually the same as the equally weighted five-year return of 66 percent reported in Table I.

As reported in row 5 of Table V, the value-weighted five-year wealth relative on IPOs is 0.80, higher than the 0.70 equally weighted number reported in Table I, but still substantially below 1.00. More striking is the value of the foregone returns from investing in IPOs: $39 billion was foregone by investors relative to what others earned by investing the same amount of money in nonissuing firms of the same size. Now, it should be noted that our IPO returns do not include the initial returns earned by investors lucky enough to be allocated shares at the offering price. If the value-weighted average initial return is 10 percent, aggregate aftermarket returns would increase by $12 billion, reducing the opportunity loss from $39 billion to about $27 billion.

The value-weighted five-year wealth relative for the firms conducting SEOs is 0.76, indicating that small issues are not driving the equally weighted results. The value-weighted five-year buy-and-hold return is 38 percent, only slightly above the equally weighted return of 33 percent reported in Table II.

G. SEOs Categorized by Years of Seasoning

Because many of the firms conducting SEOs had gone public within the prior five years, the wealth relatives for SEOs are not independent of the wealth relatives for IPOs. Consequently, in Table VI, we divide the SEO sample into those firms conducting SEOs more than five years after going public (2,561 issues) and those firms issuing within five years of the IPO date (1,141 issues).[11]

Inspection of Table VI discloses that firms conducting SEOs more than five years after going public underperform by slightly more than young firms: the five-year wealth relative is 0.68, slightly less than the five-year wealth relative of 0.72 for firms conducting SEOs within five years of going public.

[11] It is also worth noting that the number of SEOs implies a probability of issuing of about 3 percent per year, although this number fluctuates considerably from year to year. This probability is only slightly higher for young firms. This number is calculated by taking the average number of SEOs per year and dividing by the average number of CRSP-listed firms per year. The frequency of SEOs by young firms in our sample is consistent with the numbers reported in Table 1 of Jegadeesh, Weinstein, and Welch (1993).

Table VI

The Long-Run Performance of Seasoned Equity Offerings Categorized by Whether the Issuing Firm Went Public within the Prior Five Years

The Table II sample of 3,702 seasoned equity offerings (SEOs) by nonutilities during 1970 to 1990 is categorized by whether the issuer went public within the previous five years. Wealth relatives are computed as $[(\Sigma(1 + R_{iT}))/(\Sigma(1 + R_{mT}))]$, where R_{iT} is the holding-period return from the first postissue closing price until the earlier of the delisting date or the three-year (or five-year) anniversary of the SEO, R_{mT} is the holding-period return on a matching firm over the same holding period, and the summations are over the N observations in a category. At the time of the new issue, each firm conducting an SEO is matched with the seasoned firm (CRSP-listed for at least five years, without having issued equity during the prior five years) having the closest, but higher, market capitalization on the prior December 31. If this seasoned firm conducts an SEO or is delisted prior to the end of the three- or five-year aftermarket-return window, the next highest seasoned market cap firm that has not issued equity is spliced in on the removal date. The same procedure is used if this firm is subsequently removed. For 1970 to 1977, all matching firms are Amex-NYSE listed; after 1977, Nasdaq firms are also included.

		3 Years			5 Years		
		Mean Buy-and-Hold Returns (%)			Mean Buy-and-Hold Returns (%)		
Length of Time Since IPO at Date of SEO	Number of SEOs	SEOs	Matching Firms	Wealth Relative	SEOs	Matching Firms	Wealth Relative
5 or fewer years	1,141	2.3	34.4	0.76	19.5	66.9	0.72
More than 5 years	2,561	20.7	54.1	0.78	39.5	104.4	0.68
Total	3,702	15.0	48.0	0.78	33.4	92.8	0.69

Thus, the poor long-run performance of seasoned equity issuers is not merely another manifestation of the low returns on IPOs.

H. Returns on Extreme Winners

The pronounced underperformance of seasoned issuers, following a substantial runup (72 percent, on average) in the year prior to issuing, raises a question as to whether the low returns are merely a manifestation of long-term mean reversion, as documented in De Bondt and Thaler (1987). In Table VII, we compare the subsequent returns on firms that have large price runups, categorized by whether they subsequently issue or not. In this table, we delete stocks with a price below $10 because of the large number of low-priced stocks that would otherwise be present among the nonissuing firms. Unlike previous tables where we calculate five-year returns starting on the issue date, here we calculate five-year returns beginning six months after the calendar year of the runup. Among these winners, the average issuer has a five-year return of 26 percent, compared with 98 percent for the nonissuers. In summary, what matters for future returns is not the previous year's return, but whether or not a firm has issued stock.

Table VII

The Long-Run Performance of Extreme Winners from 1969 to 1989 Categorized by Whether or Not They Issued Equity

The average buy-and-hold returns and wealth relatives are calculated for the companies with a market-adjusted return of at least 50 percent more than the CRSP American Stock Exchange (Amex)-New York Stock Exchange (NYSE) value-weighted index in a calendar year. The sample includes Nasdaq, Amex, and NYSE domestic operating companies, exclusive of utilities. A firm is classified as an issuer if it conducted an SEO during the 18-month interval ending on the June 30 after the calendar year in which it outperformed the market. Thus, the 21 cohorts have long-run returns measured starting on June 30, 1970 through June 30, 1990. Firms must have a price of at least $10 on this June 30, which is when the five-year buy-and-hold return period begins. For firms that are delisted before the end of this interval, buy-and-hold returns are calculated until the delisting date, and the index return is truncated on this date as well. If a nonissuer issues equity during the five-year period, it is retained in the sample, rather than having its buy-and-hold return truncated at this date.

		Mean 5-Year Buy-and-Hold Return (%)		
	Sample Size	Firms	Index	Wealth Relative
Issuers	896	26.4	74.6	0.72
Nonissuers	5,219	98.3	71.9	1.15

III. Statistical Tests Controlling for Size and Book-to-Market Effects

Many firms going public are growth stocks, and most firms conducting SEOs have had a substantial increase in share price during the prior year. As a result, most issuing firms have relatively low (postissue) book-to-market ratios, and firms with low book-to-market ratios have had low returns in recent decades, as documented by, among others, Rosenberg, Reid, and Lanstein (1985), De Bondt and Thaler (1987), Fama and French (1992), and Hawawini and Keim (1993). While the average raw return on new issues is very low and firms selling equity underperform nonissuing firms of the same market capitalization, one might ask whether the appropriate benchmark for measuring abnormal performance is size-matched firms. We address this by presenting (i) cross-sectional and (ii) time-series multiple regression results, using monthly returns controlling for both size and book-to-market effects.

A. The Cross-section of Realized Returns

To test whether there is an independent "new issue effect" above and beyond other determinants of the cross-sectional variation of returns during 1973 to 1992, we run cross-sectional regressions on the universe of all CRSP-listed Amex, NYSE, and Nasdaq firms for which we have the book value of equity.

We calculate the book-to-market ratio annually on June 30, using the book value of equity for the most recent fiscal year ending on or before January 31,

and the market value of equity on June 30. COMPUSTAT (including the historical and research files) is the primary source of information for book values (COMPUSTAT annual data item 60). We augment the COMPUSTAT book value of equity numbers, without introducing a survivorship bias, by using the 1973 and 1974 *Moody's OTC Industrial Manual* for pre-1975 IPOs, the prospectuses for IPOs in 1975 to 1984, and the IDD and SDC databases for firms going public after 1984. For firms that conducted SEOs between the end of their fiscal year and June 30, we compute the June 30 book values by adding the gross proceeds raised by the firm (exclusive of any overallotment option) in the offering to the preissue book value.[12]

In Table VIII, we report the average coefficients from 240 cross-sectional regressions with a dependent variable of monthly returns on individual stocks:

$$r_{it} = a_o + a_1 \ln MV_{it} + a_2 \ln(BV/MV)_{it} + a_3 ISSUE_{it} + e_{it} \qquad (3)$$

As explanatory variables, we use three variables: the natural logarithm of the market value of equity, the natural logarithm of the book-to-market ratio, and a dummy variable taking on the value of 1 if a firm conducted one or more public equity issues within the previous five years.[13] (While we do not report the results in order to conserve space, when we use separate IPO and SEO dummy variables, the coefficients are virtually identical.) The two explanatory variables in addition to the new issue dummy are motivated by prior empirical studies of the determinants of stock returns, including work by Banz (1981), Chan, Hamao, and Lakonishok (1991), Fama and French (1992), Davis (1994), and Lakonishok, Shleifer, and Vishny (1994). When we include a cross-product term to allow for more severe underperformance of firms conducting SEOs within five years of their IPOs, the cross-product term is economically and statistically insignificant. We compute *t*-statistics using the standard deviation of the 240 coefficient estimates, an approach introduced by Fama and MacBeth (1973). We also report the proportion of the coefficients that are positive.

In row 1 of Table VIII, using all months, the average coefficient of -0.05 on size (ln *MV*) is not statistically significant at conventional levels. This parameter implies that a \$50 million firm would have a monthly return 23 basis points higher than a \$5 billion firm. The coefficient of 0.30 on ln *BV/MV* is reliably different from zero and implies that, ceteris paribus, a firm with a book-to-market ratio of 1 would have a monthly return 27 basis points higher than a firm with a ratio of 0.4. On an annual basis, this amounts to about 3

[12] In practice, the net proceeds are boosted by the exercise of overallotment options (after 1983, typically 15 percent of the base issue amount), and lowered by commissions and other issuing costs. Hanley (1993) reports that 66 percent of firm commitment IPOs in 1983 to 1987 exercise overallotment options. Muscarella, Peavy, and Vetsuypens (1992) report similar numbers.

[13] For companies with book values of less than \$100,000, including negative book values, we assign a book value of \$100,000. We do this to avoid problems with outliers and the logarithm of negative numbers. The results are robust to an alternative procedure of excluding companies with negative book values.

Table VIII

Average Parameter Values from Monthly Cross-sectional Regressions of Percentage Stock Returns on Size, Book-to-Market, and a New Issues Dummy Variable, 1973 to 1992

The universe is New York Stock Exchange (NYSE), American Stock Exchange (Amex), and Nasdaq firms for which the book value of equity is available from COMPUSTAT or our new issues data. *t*-Statistics, computed from the time-series standard deviation of the parameter values, and the percentage of the coefficient estimates that are positive, are listed in brackets. r_{it} is the percentage return on stock i in calendar month t. MV_{it} is the market value of equity (in millions) on the most recent June 30. BV/MV_{it} is the ratio of the book value of equity to the market value of equity, where the book value is the book value of equity for the most recent fiscal year ending on or before the January 31 preceding June 30. For recent IPOs where the offering was after the end of the fiscal year, the postoffering book value is used. For companies conducting SEOs after the end of their fiscal year, we add the proceeds to the prior book value. Companies with book values below \$100,000, including negative book values, are assigned book values of \$100,000. $ISSUE_{it}$ is a [0, 1] dummy variable taking on the value of 1 if a company conducted at least one public equity offering within the 60 months preceding a given June 30. The sample includes issues through June 30, 1992. Utility stocks (SIC = 491–494) are excluded from the universe of firms. Logs are natural logarithms. Firms are excluded from the following 12 months if they have a market value on June 30 of less than \$1,000,000 during 1973 to 1979, \$2,000,000 during 1980 to 1989, and \$3,000,000 during 1990 to 1992. Periods following light and heavy volume are based upon the fraction of our sample stocks that have the *ISSUE* dummy variable equal to 1. The periods following heavy volume during our 20-year sample period are January 1973 to June 1974 and July 1983 to December 1991.

$$r_{it} = a_o + a_1 \ln MV_{it} + a_2 \ln BV/MV_{it} + a_3 ISSUE_{it} + e_{it}$$

Model	Average Parameter Values				Avg. R^2	No. of Months
	Intercept	ln *MV*	ln *BV/MV*	*ISSUE*		
All months (1)	1.70 [3.46, 59%]	−0.05 [−0.91, 50%]	0.30 [4.57, 65%]	−0.38 [−3.68, 40%]	0.019	240
January only (2)	12.94 [5.88, 95%]	−1.46 [−6.12, 5%]	0.55 [1.47, 60%]	0.00 [0.01, 45%]	0.039	20
Feb.–Dec. only (3)	0.68 [1.55, 55%]	0.08 [1.45, 55%]	0.27 [4.40, 66%]	−0.42 [−4.03, 39%]	0.017	220
All months (4)	1.42 [3.67, 63%]			−0.49 [−3.98, 37%]	0.004	240
All months (5)	1.58 [3.10, 59%]	−0.05 [−0.84, 51%]	0.33 [4.82, 66%]		0.016	240
Periods following light volume (6)	3.45 [4.63, 71%]	−0.26 [−3.12, 42%]	0.20 [1.80, 59%]	−0.17 [−1.19, 44%]	0.021	120
Periods following heavy volume (7)	−0.05 [−0.08, 47%]	0.16 [2.11, 59%]	0.39 [6.30, 72%]	−0.60 [−3.98, 35%]	0.016	120

percent per year. The coefficient of −0.38 on the issuing firm dummy variable implies that, ceteris paribus, issuing firms underperform by 38 basis points per month, or over 4 percent per year, during the next five years.

In rows 2 and 3, we report the average coefficients for January and non-January months. Consistent with other studies, the size effect is purely a January phenomenon. Unlike almost all other anomalies, the new issue effect is not concentrated in January.

Since most issuing firms have relatively low book-to-market ratios, it is worthwhile to examine how much of the low returns on issuing firms can be attributed to book-to-market effects. In row 4, we report the average coefficients from monthly regressions where the sole explanatory variable is the new issue dummy variable. The mean parameter value of −0.49 indicates that firms conducting new issues subsequently underperform by 49 basis points per month, or about 6 percent per year. Comparing the *ISSUE* coefficients of −0.38 in row 1 and −0.49 in row 4 indicates that less than 25 percent of the underperformance of new issues can be attributed to size and book-to-market effects. Thus, the underperformance of issuing firms is partly, but only partly, a manifestation of the more general tendency for firms with low book-to-market ratios (growth firms) to have low returns.

In Table III, we reported size-adjusted underperformance of 7 percent per year for IPOs and 8 percent per year for SEOs. These numbers are larger than those implied by the coefficients in rows 1 to 4 of Table VIII. Why is there a difference?

The answer is simple: in Table III, we are weighting each *issuer* equally, whereas in Table VIII, we are weighting each *month* equally, so we do not pick up the tendency of more severe underperformance following heavy new issue activity that is apparent in Tables I and II. In rows 6 and 7, we divide the sample period into months following light issuance activity and months following heavy issuance activity.[14] Following light issuance activity, issuing firms underperform by only 17 basis points per month, whereas after heavy issuance activity, issuing firms underperform by 60 basis points per month. Thus, weighting each month equally understates the extent of underperformance.

Our interpretation of Table VIII is that there are economically and statistically significant book-to-market and new issue effects. Neither subsumes the other. Since they are correlated, any study of return patterns that uses Nasdaq stocks should take these effects into account. Indeed, Loughran (1993) finds that much of the return difference between NYSE and Nasdaq stocks, documented by Reinganum (1990), is due to the fact that Nasdaq has been intensive in recent IPOs.

Of course, it is possible that we have mismeasured the abnormal returns on firms that issued equity. It should be noted, however, that we have controlled

[14] Months are categorized as following light or heavy issuance activity on the basis of the fraction of the sample firms in a month that have issued equity during the prior five years, as listed in Table VIII.

for both size and book-to-market in our Table VIII regressions, and these two variables have been demonstrated by Fama and French (1992) to be the most important determinants of cross-sectional return patterns during our sample period. As an alternative check on the robustness of our underperformance findings, we also perform time-series regressions.

B. Three-Factor Time-Series Regressions

In Table IX, we report the results of time-series regressions of monthly portfolio returns on three factors, as used in Fama *et al.* (1993). A desirable feature of these tests is that by forming portfolios, the cross-sectional dependence problem that exists in Table III is eliminated. One disadvantage of these tests is that by forming portfolios, power is sacrificed. Another disadvantage is that to the degree that the portfolios are correlated with omitted factors, the intercepts can embody factors other than what is explicitly being controlled for.

Our regressions use as the dependent variable either the portfolio excess return ($R_{pt} - R_{ft}$) or the difference in returns between portfolios of issuing and nonissuing firms:

$$R_{pt} - R_{ft} = a + b[R_{mt} - R_{ft}] + sSMB_t + hHML_t + e_t \tag{4}$$

where R_{mt} is the return on the value-weighted index in month t; R_{ft} is the three-month T-bill rate in month t; SMB_t is the return on small firms minus the return on large firms in month t; and HML_t is the return on high book-to-market stocks minus the return on low book-to-market stocks in month t.[15] In Table IX, we report results after dividing the sample into large and small firms; large firms are those whose market capitalization is above the size of the median Amex and NYSE firm in our sample. Panel A reports results using value-weighted portfolios, whereas Panel B reports results weighting each firm in a portfolio equally. To save space, we do not report results for all firms; the value-weighted numbers are similar to the value-weighted large firm results, whereas the equally weighted numbers are similar to the equally weighted small firm results.

If the poor performance of issuing firms is merely a manifestation of confounding effects (differences in beta, differences in size, and differences in book-to-market ratios), then the intercepts in the regressions should be economically and statistically indistinguishable from zero. Inspection of the Table IX coefficients shows that this is not the case: in regressions (3), (6), (9), and (12), issuing firms underperform by, respectively, 24, 26, 36, and 47 basis points per month. The t-statistics range from -2.0, to -5.0 on these coefficients. These numbers are of the same order of magnitude as the point estimates on the new issue dummy variable in the Table VIII regressions, suggesting that the underperformance of new issues is robust to alternative

[15]The construction of the explanatory variables that we use in the three-factor equation is explained in Table II of Fama *et al.* (1993). They measure size relative to the median NYSE firm.

Table IX

Time-series Regressions of Equally Weighted and Value-Weighted Monthly Percentage Returns on Fama and French's Market, Size, and Book-to-Market Return Realizations, for Portfolios of Large and Small Firms, Categorized by Whether the Firm Issued Equity during the Prior Five Years, January 1973 to December 1992

The universe is CRSP-listed New York Stock Exchange (NYSE), American Stock Exchange (Amex), and Nasdaq firms for which the book value of equity is available from COMPUSTAT or our new issues data. Large firms are those whose market cap on June 30 of year t is greater than the market cap of the median NYSE and Amex operating company in our sample; while small firms are those whose market cap is below this median. R_{mt} is the return on the value-weighted index of NYSE, Amex, and Nasdaq stocks in month t; R_{ft} is the beginning-of-month three-month T-bill yield in month t; SMB_t is the return on small firms minus the return on large firms in month t; and HML_t is the return on high book-to-market stocks minus the return on low book-to-market stocks in month t. The factor definitions are described in Fama *et al.* (1993). The dependent variable in regressions (3), (6), (9), and (12) is the difference in returns between the issuing and nonissuing portfolios. t-Statistics are in parentheses. Each regression uses 240 monthly observations.

$$R_{pt}\text{-}R_{ft} = a + b[R_{mt} - R_{ft}] + sSMB_t + hHML_t + e_t$$

	Coefficient Estimates				
	a	b	s	h	R^2_{adj}
Panel A. Value-Weighted Portfolio Returns					
(1) Large nonissuers	0.03	1.02	−0.05	0.00	0.99
	(1.0)	(159.9)	(−5.0)	(0.1)	
(2) Large issuers	−0.21	1.03	0.19	−0.19	0.92
	(−1.9)	(40.0)	(5.0)	(−4.2)	
(3) Return difference (2) − (1)	−0.24	0.01	0.24	−0.19	0.19
	(−2.0)	(0.2)	(5.7)	(−3.9)	
(4) Small nonissuers	−0.08	0.97	1.19	0.31	0.98
	(−1.3)	(63.9)	(51.9)	(11.8)	
(5) Small issuers	−0.34	1.12	1.36	−0.01	0.95
	(−3.0)	(41.0)	(33.1)	(−0.3)	
(6) Return difference (5) − (4)	−0.26	0.15	0.17	−0.32	0.51
	(−2.6)	(6.4)	(4.9)	(−8.0)	
Panel B. Equally Weighted Portfolio Returns					
(7) Large nonissuers	0.08	1.07	0.52	0.18	0.99
	(1.8)	(101.5)	(32.5)	(10.1)	
(8) Large issuers	−0.27	1.16	0.80	−0.21	0.96
	(−2.8)	(50.8)	(23.0)	(−5.3)	
(9) Return difference (8) − (7)	−0.36	0.10	0.28	−0.39	0.62
	(−4.2)	(4.9)	(9.3)	(−11.3)	
(10) Small nonissuers	0.02	0.91	1.34	0.36	0.94
	(0.2)	(35.1)	(34.2)	(8.2)	
(11) Small issuers	−0.45	1.05	1.50	0.09	0.92
	(−3.1)	(31.0)	(29.2)	(1.6)	
(12) Return difference (11) − (10)	−0.47	0.14	0.16	−0.27	0.48
	(−5.0)	(6.4)	(4.7)	(−7.1)	

specifications. As with Table VIII, weighting each month equally understates the extent of underperformance.

Note also that the b coefficients in the regressions indicate that issuers have betas slightly above nonissuers, and slightly above 1.0. Thus, to the degree that beta risk is priced, issuers should have *higher* returns than nonissuers.

IV. Summary and Conclusions

Investing in firms issuing stock is hazardous to your wealth. Firms issuing stock during 1970 to 1990, whether an IPO or an SEO, have been poor long-run investments for investors. The average annual return during the five years after issuing is only 5 percent for firms conducting IPOs, and only 7 percent for firms conducting SEOs. Investing an equal amount at the same time in a nonissuing firm with approximately the same market capitalization, and holding it for an identical period, would have produced an average compound return of 12 percent per year for IPOs and 15 percent for SEOs. The magnitude of the underperformance is large: it implies that 44 percent more money would need to be invested in the issuers than in the nonissuers to be left with the same wealth five years later.

We have entertained a number of possible explanations for the poor subsequent performance of issuing firms. Holding both size and the book-to-market ratio constant, issuing firms have lower subsequent returns than nonissuers. In addition, the poor performance of firms conducting SEOs is not a manifestation of long-term return reversals, nor is it attributable to differences in betas. While it is possible that some as yet unidentified risk factor or factors can explain some or all of the low returns, there is another possible explanation.

Our evidence is consistent with a market where firms take advantage of transitory windows of opportunity by issuing equity when, on average, they are substantially overvalued. We now explore related evidence and implications of this hypothesis.

A. The Misvaluation of IPOs

For IPOs, the prior rapid growth of many of the young companies makes it easy to justify high valuations by investors who want to believe that they have identified the next Microsoft. Consistent with the hypothesis that IPOs have poor subsequent returns due to misvaluations at the time of going public, Jain and Kini (1994) report that for 682 firms going public during the 1976 to 1988 period, the median operating cash flow-to-assets ratio fell dramatically between the year prior to going public and three years later. Mikkelson and Shah (1994) report similar findings for IPOs from 1980 to 1983: while sales grew, total cash flows did not grow sufficiently to justify high valuations at the time of the offerings.

Evidence that cycles in IPO volume are due to issuers taking advantage of windows of opportunity is contained in Lerner (1994). Lerner tracks all of the financing of the biotechnology industry in the United States during January 1978 to September 1992, using information on both private and public sources of capital. Lerner finds that IPO activity is highly related to the inflation-adjusted price that public investors are willing to pay, with much of the IPO activity substituting for additional venture capital financing.

The finding that IPOs are poor long-run investments has been publicized for years. *Forbes* has periodically run stories along these lines since December 1985 (see Stern and Bornstein (1985)). Working with typical academic speed, it took until March 1991 for Ritter to confirm this in the academic literature. Yet 1992 was characterized by numerous biotechnology and restaurant chain companies going public at high multiples, and 1993 saw golf club manufacturers and riverboat casinos rushing to market.

A possible reason for why these patterns persist is that investors are betting on longshots. If the true probability that a given IPO will be the next Microsoft is 3 percent, but investors have instead estimated that it is 4 percent (resulting in a 33 percent overvaluation), it takes a very large sample over a long period of time before Bayesian investors would adequately revise their estimates. In other words, investors seem to be systematically misestimating the probability of finding a big winner. It is the triumph of hope over experience.

B. The Misvaluation of SEOs

The finding that SEOs are poor long-run investments is largely new. In some of the academic literature from the 1960s, e.g., Stigler (1964) and Friend and Longstreet (1967), there is evidence using small samples that issuing firms do poorly in the long run, but this early literature largely has been forgotten.

This poor postissuing performance is not predicted by asymmetric information models for the timing of seasoned equity issues, such as that of Lucas and McDonald (1990). In their model, firms that are undervalued postpone their equity offerings. An equity issue announcement is associated with the market revaluing the firm so that, on average, it is no longer overvalued or undervalued. Our evidence is consistent with a market in which companies announce stock issues when their stock is grossly overvalued, the market does not revalue the stock appropriately, and the stock is still substantially overvalued when the issue occurs.

The ability to sell grossly overvalued equity, where the degree of misvaluation varies through time, is also consistent with the large swings in SEO volume graphed in Figure 1. Existing articles, such as Korajczyk, Lucas, and McDonald (1990), Choe, Masulis, and Nanda (1993), and Bayless and Chaplinsky (1993), explain the cycles in volume on the basis of firms choosing to issue equity when the announcement price drop is 2.8 percent rather than 3.2 percent. But does it make sense that a firm would wait years to issue equity

just to save 10 cents on a $25 issue? Our focus is on whether the company can sell at an offer price of $28.80 rather than $20.00, not whether it will save 10 cents.

Our numbers can be used to back out what the announcement effect should be when companies announce seasoned equity offerings, if investors are to receive the same returns on issuers as on nonissuers of the same size. If firms conducting SEOs are overpriced by 44.5 percent at the time of the new issue, after having already fallen by 3 percent at the time of the announcement, they were at a price 49 percent too high (1.445/0.97) beforehand. A 33 percent drop would be required to eliminate this 49 percent overvaluation. Thus, our numbers imply that if the market fully reacted to the information implied by an equity issue announcement, the average announcement effect would be −33 percent, not −3 percent.

Healy and Palepu (1990), Hansen and Crutchley (1990), and Loughran and Ritter (1994) investigate the operating performance of SEOs. Loughran and Ritter find that the median issuer reports substantial improvements in operating measures (profit margins, return on assets, etc.) in the year of the issue. If the operating performance improvement persists, the 72 percent stock price runup in the year prior to the offering that we document in Table II can be justified. However, Loughran and Ritter (1994) show that this improvement is largely transitory, with operating performance deteriorating to levels below the preissue years.

Are issuers knowingly selling overvalued equity? One way of addressing this is to look at the insider trading behavior around SEOs. Lee (1994) finds that insiders seem to be subject to the same misperceptions that the market has: while there is some increase in insider selling (as normally occurs after price increases, whether or not there is an equity issue), firms in which insiders are net buyers underperform just as severely as those where insiders are net sellers.

C. Related Evidence and Implications

The patterns documented here do not appear to be unique to the United States. Levis (1993a) reports that companies going public in the United Kingdom during 1980 to 1988 subsequently underperform, and Levis (1993b) reports that firms conducting SEOs in the United Kingdom subsequently underperform. Marsh (1979) reports that firms conducting SEOs in the United Kingdom during 1962 to 1972 outperform the market during the following year and then underperform in the second year after the offering. Loughran, Ritter, and Rydqvist (1994) document that during the last 20 to 30 years, in 14 of 15 countries, including the United States, there is a positive correlation between the annual volume of IPOs and the level of the stock market. In 10 of 14 countries, including the United States, annual IPO volume is negatively related to the market return during the following year.

Ikenberry, Lakonishok, and Vermaelen (1994) document that firms repurchasing shares in the open market subsequently overperform. Nelson (1994)

shows that since 1926, NYSE firms that increase the number of (split-adjusted) shares outstanding subsequently underperform relative to those that reduce the number of shares outstanding. These studies, in conjunction with the evidence of this article, raise serious questions about the validity of using announcement-period returns as unbiased estimates of the impact of corporate decisions on stockholder welfare.

More generally, issuing firms typically have had recent improvements in their operating performance. The market appears to overweight this recent improvement and underweight long-term, mean-reverting tendencies in operating performance measures. The market is systematically misestimating the autocorrelation of earnings growth. Consequently, at the time of issue, market prices reflect the capitalization of transitory operating improvements. When the transitory nature of the operating performance becomes apparent, the stocks underperform. But this underperformance does not start immediately after issuing. In Table III, we report that there is no underperformance during the first six months after issuing for either IPOs or SEOs. Because the underperformance is delayed, the connection with issuing firms is less obvious to the market.

If issuing firms are successful at selling stock when the firm is substantially overvalued, is the market catching on? An inspection of Tables I and II discloses that our last three cohort years, 1988 to 1990, have wealth relatives close to 1.0 for both IPOs and SEOs, possibly suggesting that a prior inefficiency is disappearing. There are two reasons that we doubt that this is the case, however. First, there is no evidence that the first-day returns on IPOs and the announcement effects for SEOs have changed. Second, the period between the October 1987 market crash and the February 1991 Gulf War victory was a period of low issuing volume, and previous periods of low issuing volume produced wealth relatives close to 1.0 as well. An out-of-sample test of the windows of opportunity hypothesis is whether the issuing companies from the high-volume period of 1992 to 1993 will underperform in the long run. This hypothesis predicts that these stocks will be a disaster for investors.

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