Seasoned public offerings:

Resolution of the 'new issues puzzle'

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1999

Journal of Financial Economics, forthcoming

Abstract

The 'new issues puzzle' is that stocks of seasoned common stock issuers subsequently underperform nonissuers matched on size and book-to-market ratio. With 7,000+ seasoned equity and debt issues, we document that issuer underperformance reflects lower systematic risk exposure for issuing firms relative to the matches. A consistent explanation is that, as equity issuers lower leverage, their exposures to unexpected inflation and default risks decrease, thus decreasing their stocks' expected returns relative to matched firms. Equity issues also significantly increase stock liquidity (turnover), again lowering expected returns relative to nonissuers. We conclude that the 'new issue puzzle' is explained by a failure of the matched-firm technique to provide a proper control for risk. This conclusion is robust to issue characteristics and the choice of factor model framework.

*We appreciate the comments of Øyvind Bøhren, David Hirshleifer, Richard Priestley, Jay R. Ritter, David C. Smith, Michael Vetsuypens, an anonymous referee and, in particular, Wayne Ferson. We have also received helpful comments by seminar participants at the Norwegian School of Economics, the Norwegian School of Management, Vanderbilt University, the Tuck School of Business at Dartmouth, and the meetings of the 1998 European Finance Association, the 1998 Northern Finance Association, and the 1999 American Finance Association. Eckbo is at the Amos Tuck School of Business Administration, Dartmouth College, (b.espen.eckbo@dartmouth.edu), Masulis is at the Owen Graduate School of Management, Vanderbilt University, (ronald.masulis@owen.vanderbilt.edu), and Norli is at the Rotman School of Management, University of Toronto and Dartmouth College (oyvind.norli@dartmouth.edu).

1 Introduction

Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995) report that common stock returns of industrial firms making seasoned equity offerings (SEOs) underperform control groups of nonissuing firms by 40-60% over the three-to-five years following the offering date. These findings—commonly referred to as the "new issues puzzle"—appears to challenge the presumption of rational pricing in security markets. However, tests for abnormal returns are always joint tests of the model assumed to generate expected returns. With a sample exceeding 7,000 seasoned equity and debt offerings from 1964–1995, this study carefully examines the risk characteristics of the return *differential* between stock portfolios of issuing and nonissuing matched firms. We find that this return differential covaries with a set of macroeconomic risk factors commonly studied in the asset pricing literature. Moreover, the macroeconomic risk factors that primarily drive the differences in expected returns across issuers and nonissuing matched firms are economically plausible. Thus, we argue that the "new issues puzzle" reflects a failure of the matched-firm technique to provide a proper control for risk rather than market underreaction to the news in security issue announcements.[1]

We start by recreating earlier findings of significant five-year "underperformance" of issuer firm stocks relative to a sample of nonissuers matched on size and book-to-market ratios. We then show that zero-investment portfolios that are short stocks of issuers and long stocks of matched firms yield statistically insignificant abnormal returns when conditioned on a specific factor-generating model of expected returns. The portfolio factor loading estimates imply that issuing firms have slightly higher exposure to market risk than do matched firms, but that this higher market exposure is more than offset by issuers' lower exposure to risk factors such as unanticipated inflation, default spread, and changes in the slope of the term structure. It appears that *as equity issuers lower leverage, their exposures to unexpected inflation and default risks also decrease relative to the matched firms.* In addition, although stock liquidity is not part of the risk factor model, we find that SEOs significantly increase stock turnover, which is often interpreted as a measure of liquidity, while the matched firms experience no change in stock turnover. Thus, stocks of SEO issuers could require lower liquidity

[1] This paper examines seasoned security offerings. Loughran and Ritter (1995) also report long-run underperformance of initial public offerings (IPOs) relative to a size-matched sample of non-IPO firms. Brav, Geczy, and Gompers (1999) and Eckbo and Norli (1999) show that this IPO underperformance is eliminated when matching on both size and book-to-market. Moreover, Eckbo and Norli (1999) demonstrate that the return differential between IPO firms and their matches is priced using the macro-factor model discussed below. In sum, the long-run performance following IPOs also does not support the underreaction hypothesis.

premiums in the post-offering period. We conclude that during the post-offering period, issuer stocks are on average less risky —and require lower expected returns— than stocks of matched firms. The definition of abnormal performance that uses matched firms as a performance benchmark by itself gives rise to the "new issues puzzle".

With long-horizon returns, abnormal return estimates are likely to be sensitive to the choice of the expected return benchmark. We perform sensitivity analysis with respect to model assumptions as well as issue characteristics. For example, given extant evidence that expected returns are to some degree predictable, we reestimate our performance measure conditioning factor loadings and risk premiums on a continually updated set of publicly available information. Also, we explore the effect on long-term performance of using alternative sets of risk factors. These alternatives include principal components factors (extracted from the covariance matrix of returns) used by Connor and Korajczyk (1988) to test an equilibrium arbitrage pricing theory, as well as the size and book-to-market factors of Fama and French (1993). Furthermore, we examine the effect of using the original raw macroeconomic factors (in the form of factor shocks) in place of their corresponding factor-mimicking stock portfolios. These raw macro factor shocks are interesting as they are not affected by stock market mispricing. Moreover, in response to the arguments in Loughran and Ritter (1999), we examine the effect of eliminating issuing firms from the stock portfolios used to mimic risk factors. Our main conclusions are robust to all of these methodological variations.

In terms of issue characteristics, we examine results broken down by stock exchange listing (NYSE/Amex/Nasdaq), industry type (industrial/utility), and class of security issued (equity/convertibles/straight debt). In this analysis, we uncover several key pieces of evidence. First, the issuer underperformance generated from a matched-firm technique is by and large driven by stocks of relatively small Nasdaq issuers. Interestingly, when using our factor model (but not the Fama and French (1993) model) these Nasdaq issuers have zero abnormal returns. Second, we find that stock returns of regulated utilities are largely indistinguishable from those of industrial issuers; neither generates significant long-run abnormal performance. Third, as Spiess and Affleck-Graves (1999), we show that the matched-firm technique produces some underperformance following both straight and convertible debt issues. However, contrary to Spiess and Affleck-Graves (1999), our factor model results indicate that this underperformance is largely a reflection of differential risk exposure between the stocks of issuers and matched firms. Thus, our results for debt issues reinforces the conclusion that evidence of long-run underperformance produced by the matched-firm technique is an artifact of the technique itself.

The rest of the paper is organized as follows. Section 2 discusses the econometrics of long-run performance estimation using a factor model as the return benchmark. Section 3 describes the data selection and main sample characteristics. Section 4 discusses the empirical results using matching-sample techniques, while Section 5 presents empirical estimates using factor model procedures. Section 6 summarizes the evidence and draws conclusions.

2 Data and sample characteristics

The sample of SEOs used in this study is drawn primarily from the Wall Street Journal Index over the 1963-1979 period and from Securities Data Corporation's (SDC's) New Issues database over the mid-1979 to 1995 period. Other data sources used to uncover SEOs include the Investment Dealer's Digest Corporate Financing Directory, Dow Jones News Retrieval Service, Lexis, Moody's Industrials and Utilities manuals, Drexel, Burnham & Lambert's annual Public Offerings of Corporate Securities, the Securities and Exchange Commission's Registered Offering Statistics (ROS) database, and offering prospectuses. These sources uncover about 7,000 SEOs which yield a usable sample of 4,860 SEOs after imposing the following restrictions:

(1) Issuer common stock is listed on the NYSE, Amex, or Nasdaq market at the time of the initial offering announcement and through the public offering date. This precludes IPOs from entering the sample. All issuer stocks are found in the Center for Research in Securities Prices (CRSP) monthly stock return database at the time of the SEO public offering date. The offer must have a CRSP share code of 10 or 11 (common stock). This sample requirement excludes, among other securities, issues by closed-end funds, unit investment trusts, real estate investment trusts (REITs), and American Depository Receipts (ADRs). We also require that the issuer's equity market value (price multiplied by shares outstanding) is available on the CRSP database at the year-end prior to the public offering date.

(2) Issues are publicly announced prior to the offering date. SEC registration dates are treated as public information. The debt offering and SEO announcement dates are obtained from the

Wall Street Journal Index, the Wall Street Journal, and prospectuses for 1963–1979, while announcement dates thereafter are based on the Dow Jones News Retrieval Service, Lexis, and Predicast's F&S Index of Corporations and Industries.

(3) For SEOs, there are no simultaneous offers of debt, preferred stock, or warrants. All issuers are U.S. domiciled and all issues are made publicly in the U.S. market. All private placements, exchange offers of stock, 144A shelf registered offers, pure secondary offerings, and canceled offers are excluded.

(4) All SEOs are firm commitment underwritten offers. Information on the flotation method is found in offering prospectuses, in the Investment Dealer's Digest Corporate Financing Directory, in the "Rights Distribution" section of Moody's Dividend Record, Moody's annual Industrial, Utilities, Bank & Finance, and Transportation manuals, the Wall Street Journal Index, Dow Jones News Retrieval Service, and Lexis.

The debt offerings are drawn from two sources. First, we include the sample compiled by Eckbo (1986) which covers 723 offerings from 1964-81. (These debt offerings reflect a minimum restriction on the issue size and on the issuer's leverage change in the year of the offering.) Second, starting in mid-1979, another 1,420 debt offerings are identified from SDC's New Issues database. All debt issuers are U.S. domiciled and all issues are for cash. Simultaneous offers of debt and equity, offers sold entirely overseas, and municipal bonds and other government and agency issues are excluded. For the 1980–95 period, mortgages and medium-term notes are also excluded. The final sample thus consists of 7,003 seasoned offerings, of which 4,860 are SEOs and 2,143 are straight and convertible debt offerings. The SEOs are by 2,998 separate issuing firms, i.e., an average of 1.6 SEOs per issuer over the sample period. The debt offerings are by 945 different issuing firms, with an average of 2.3 offerings per firm.

Table 1 shows the annual distribution of security offerings classified by stock exchange (NYSE/Amex/Nasdaq), security type (equity/convertible/straight debt), and issuer type (industrial firm/public utility). Nasdaq issues begin in 1974. Note that the well known "hot" issue periods include 495 equity issues in 1983 and 442 issues in 1993. Of the total number of 4,860 equity issues, 55% are by NYSE/Amex-listed firms, while all but 54 of the 2,123 debt issues are by NYSE/Amex listed firms. The debt sample contains a total of 593 convertibles (28% of the debt sample) of which 94% are by

NYSE/Amex-listed firms. Public utility issues are almost exclusively by NYSE/Amex-listed firms, and these issues represent 21% (1,009) of the equity issue sample and 20% (423) of the debt issue sample. Utilities are defined as firms with CRSP SIC codes in the interval $[4910, 4939]$. Utility issuers are examined separately as their investment and financing policies are highly regulated, making it less likely that a utility announcing a stock offer is attempting to take advantage of temporary market overpricing.

Table 2 lists the average dollar amounts of securities offered, pre-issue equity market value, and securities offered divided by pre-issue equity market value, which for SEOs equals the percentage increase in outstanding shares produced by the offering. All figures are in terms of 1995 dollars. A straight debt issue is typically three times larger than the dollar value of an SEO on the NYSE/Amex. For NYSE/Amex listed firms, industrial issuers of SEOs increase their equity market value on average by 17%, while public utility issuers increase their equity value on average by 10%.

3 SEO performance using matched-firm techniques

We start the performance analysis by replicating the evidence of SEO underperformance reported in the extant literature which is based on a matching-firm technique. This technique equates abnormal performance with the difference in holding-period returns of issuing firms and their nonissuing matches. Let R_{it} denote the return to stock i over month t, and let ω_i denote stock i's weight in forming the average holding-period return. The effective holding period for stock i is T_i which is either five years or the time until delisting or the occurrence of a new SEO, whichever comes first. The percent weighted average holding-period return across a sample of N stocks is given by

$$BHR \equiv \sum_{i=1}^{N} \omega_i \left[\prod_{t=\tau_i}^{T_i} (1 + R_{it}) - 1 \right] \times 100. \quad (1)$$

The five-year abnormal performance following equity issues is then computed as the difference in BHR for issuers and their matched firms. Kothari and Warner (1997), Barber and Lyon (1997) and Lyon, Barber, and Tsai (1999) provide simulation-based analyses of the statistical properties of test statistics based on long-run return metrics such as BHR.

We select matched firms using a procedure analogous to the one employed by Fama and French when constructing their size- and book-to-market-ranked portfolios. Specifically, we first generate a list of all companies that have total equity values within 30% of the total equity market value of the issuer at the year-end prior to the issue's public offering date. Then we select from this list the firm with the book-to-market ratio that is closest to the issuer's. The book value of equity is from one of two periods: for offer dates in the first six months of the year, the book value is for the fiscal year-end two years earlier, and for offer dates in the second half of the year, the book value is for the prior fiscal year-end. Book value is defined as "the COMPUSTAT book value of stockholders equity, plus balance sheet deferred taxes and investment tax credits (if available), minus the book value of preferred stock. Depending on availability, we use the redemption, liquidation, or par value (in that order) to estimate the value of preferred stock"(Fama and French, 1993, p. 8). Matched firms are included for the full five-year holding period or until they are delisted or issue equity, whichever occurs sooner. If a match delists or issues equity, a new match is drawn from the *original* list of candidates described above. This procedure for replacing matching firms in the event of delisting of new issues is analogous to Loughran and Ritter (1995). We have also experimented with different replacement procedures, including rematching using information at the time of the delisting and monthly updating of matched firms. The overall impact of alternative procedures on the abnormal return estimates appears to be small.

Table 3 shows the impact on the performance estimates of using only a size-matching criterion, as opposed to matching on both size and book-to-market ratios. The table presents value-weighted as well as equal-weighted holding-period returns. For the total sample of 3,851 industrial SEOs, size matching leads issuer stocks to underperform their matched firms by 26.9% using equal weighting and 21.1% using value weighting. Both performance estimates are highly significant. The p-values in Table 3 are based on the student-t distribution. Reporting p-values based on the bootstrapped empirical distribution of BHR tends to decrease the significance levels but does not alter the conclusions drawn from Table 3. Moving to size and book-to-market matching (which reduces the total sample to 3,315 due to the COMPUSTAT data requirement), industrial issuers now underperform matched firms by 23.2% using equal weighting and 10.6% using value weighting. The attenuating effect of adding book-to-market matching and using value-weighted returns for industrial SEOs, shown in Table 3, is also consistent with the findings of Brav, Geczy, and Gompers

(1999). Interestingly, Table 3 shows that this attenuation effect is specific to industrial issues. Utility SEOs exhibit *greater* underperformance with size and book-to-market matching than when only matching on size (18.6% vs. 6.2%, respectively, using value weighting).

The finding of significant underperformance for utility issuers when using the matching technique is new to the literature. Loughran and Ritter (1995) do not report results for utilities because of their regulatory status. As pointed out by Eckbo and Masulis (1992), the regulatory approval process reduces the ability of utilities to selectively time an issue to exploit private information about temporary overpricing. Since the matched-firm technique does not match on industry type (matching is only on size and book-to-market ratio), and given the small number of listed utility companies, it is possible that matching firms are less comparable in terms of risk for utility stocks than for industrial stocks. Nevertheless, the apparent utility underperformance tends to undermine arguments that the new issues puzzle is driven by opportunistic issuer behavior.

Turning to Panels B and C of Table 3, we see that Nasdaq issuers exhibit greater underperformance than NYSE/Amex issuers (Note that in Panels B and C the population of matched firms is restricted to the stock exchanges under investigation.) Focusing on size and book-to-market matching under value weighting, industrial SEO firms underperform matched firms by 18.2% in the Nasdaq sample and 6.4% in the NYSE/Amex sample. The latter underperformance is statistically indistinguishable from zero. Stocks of utility issuers (NYSE/Amex only) underperform matched firms by a significant 18.4%. Finally, when using equal weighting, all issuer categories in Table 3 significantly underperform their respective size- and book-to-market-matched firms by 15% or more.

Table 4 shows five-year holding-period abnormal returns (issuer minus match) broken down by size and book-to-market quintiles. The quintiles are defined using breakpoints for NYSE-listed stocks only. The right side of the table contains the number of observations and the percentage of the sample represented by Nasdaq issues. Focusing on industrial SEOs, significant abnormal returns occur only in the first two rows, i.e., the two lowest *book-to-market* quintiles. Moreover, with one exception, significant abnormal returns occur only for the three smallest *size* quintiles. These six cells represent about 60% of the total sample, and 71% of these are Nasdaq issues. Thus, from Table 4, it is difficult to judge whether one ought to characterize the underperformance generated by the matching-firm technique as a small-firm effect or a Nasdaq effect. The results in Table 4 are consistent with the findings of **?** who also reports abnormal buy-and-hold returns sorted by size- and book-to-market quintiles.

In sum, like earlier studies, we find that the matched-firm technique produces significant buy-and-hold abnormal returns for the overall sample of SEOs. Next we proceed to examine whether this abnormal performance is compensation for differential risk bearing of issuing and matched firms. In particular, we ask whether a zero-investment portfolio strategy of shorting issuing firms and purchasing matched firms yields abnormal returns conditional on a specific factor model that generates expected returns. In so doing, we also gain insights into the specific factors, if any, that are responsible for generating lower-than-expected returns for issuing firms.

4 SEO performance using factor models

4.1 Factor model specification

Let r_{pt} denote the return on portfolio p in excess of the risk-free rate, and assume that expected excess returns are generated by a K-factor model,

$$E(r_{pt}) = \beta_p' \lambda, \tag{2}$$

where β_p is a K-vector of risk factor sensitivities (systematic risks) and λ is a K-vector of expected risk premiums. This model is consistent with the APT model of Ross (1976) and Chamberlain (1988) as well as with the intertemporal (multifactor) asset pricing model of Merton (1973).[2] The excess-return generating process can be written as

$$r_{pt} = E(r_{pt}) + \beta_p' f_t + e_{pt}, \tag{3}$$

where f_t is a K-vector of risk factor shocks and e_{pt} is the portfolio's idiosyncratic risk with expectation zero. The factor shocks are deviations of the factor realizations from their expected values, i.e., $f_t \equiv F_t - E(F_t)$, where F_t is a K-vector of factor realizations and $E(F_t)$ is a K-vector of factor expected returns.

Regression equation (3) requires specification of $E(F_t)$, which is generally unobservable. How-

[2] Connor and Korajczyk (1995) provide a review of APT models.

ever, consider the excess return r_{kt} on a portfolio that has unit factor sensitivity to the kth factor and zero sensitivity to the remaining $K-1$ factors, i.e., it is a "factor-mimicking" portfolio. Since this portfolio must also satisfy Eq. (2), it follows that $E(r_{kt}) = \lambda_k$. Thus, when substituting a K-vector r_{Ft} of the returns on factor-mimicking portfolios for the raw factors F, Eqs. (2) and (3) imply the following regression equation in terms of observables:

$$r_{pt} = \beta_p' r_{Ft} + e_{pt}. \tag{4}$$

Eq. (4) generates stock p's returns. Thus, inserting a constant term α_p into a regression estimate of Eq. (4) yields a measure of abnormal return. We employ monthly returns, so this "Jensen's alpha", first introduced by Jensen (1968), measures the average monthly abnormal return to a portfolio over the estimation period. Given our multifactor framework, our use of Jensen's alpha resembles the more recent applications of Ferson and Schadt (1996) in the context of mutual funds and Eckbo and Smith (1998) who study insider trades.

As listed in Table 5, we use a total of six prespecified macro factors: the value-weighted CRSP market index (RM), the return spread between Treasury bonds with 20-year and one-year maturities (20y−1y), the return spread between 90-day and 30-day Treasury bills (TBILLspr), the seasonally adjusted percent change in real per capita consumption of nondurable goods (RPC), the difference in the monthly yield change on BAA-rated and AAA-rated corporate bonds (BAA−AAA), and unexpected inflation (UI). These factors also appear in, Ferson and Harvey (1991), Evans (1994), Ferson and Korajczyk (1995), and Ferson and Schadt (1996), among others.[3] As shown in Panel B of Table 5, the pairwise correlation coefficient between these factors ranges from -0.166 for UI and BAA-AAA to 0.392 for TBILLspr and 20y−1y.

Of the six factors, three are themselves security returns, and we create factor-mimicking portfolios for the remaining three, RPC, BAA−AAA, and UI. When we also use factor mimicking portfolios for the yield curve factors 20y−1y and TBILLspr, the main conclusion of the paper remains unchanged. A factor-mimicking portfolio is constructed by first regressing the returns on

[3]The returns on T-bills, and T-bonds as well as the consumer price index used to compute unexpected inflation are from the CRSP bond file. Consumption data are from the U.S. Department of Commerce, Bureau of Economic Analysis (FRED database). Corporate bond yields are from Moody's Bond Record. Expected inflation is modeled by running a regression of real T-bill returns (returns on 30-day Treasury bills less inflation) on a constant and 12 of its lagged values.

each of the 25 size and book-to-market sorted portfolios of Fama and French on the set of six factors, i.e., 25 time-series regressions producing a (25×6) matrix B of slope coefficients against the six factors. If V is the (25×25) covariance matrix of error terms for these regressions (assumed to be diagonal), then the weights on the mimicking portfolios are formed as

$$w = (B'V^{-1}B)^{-1}B'V^{-1}. \tag{5}$$

For each factor k, the return in month t on the corresponding mimicking portfolio is determined by multiplying the kth row of factor weights with the vector of month t returns for the 25 Fama-French portfolios. As shown in Panel C of Table 5, when we regress the mimicked factors on the set of six raw factors, it is only the own-factor slope coefficient that is significant, as required.[4]

Assuming stationarity of factor loadings and risk premiums, the model implies that Jensen's alpha is zero for passive portfolios. When regressing size-sorted decile portfolios (CRSP value- or equal-weighted) on our factors, none of the alpha estimates are statistically significant at the 5% level or higher. The alpha estimates are also insignificant for 24 of the 25 Fama-French portfolios. The exception is the Fama-French "small-low" portfolio with the lowest size and book-to-market ratio, which produces a value of alpha of -0.54 with a significant p-value of 0.003. In comparison, when Fama and French perform regressions of the same 25 portfolios on their three-factor model, a total of three portfolios (including the "small-low" portfolio) have significant alphas.

In the following analysis, we explicitly separate Nasdaq issues from NYSE and Amex issues in our examination of the new issues puzzle. Moreover, to gauge the sensitivity of our conclusions to alternative model specifications, we report results using the original raw factors (without factor mimicking and in the form of factor shocks), factor-mimicking portfolios that exclude issuing firms, and conditionally updated expected returns that explicitly allow for time-varying factor loadings. Also, we provide alpha estimates based on factors extracted from the covariance matrix of asset returns used by Connor and Korajczyk (1988) as well as the Fama and French three-factor model.

[4]Let b_k be the kth row of B. The weighted least squares estimators in (5) are equivalent to choosing the 25 portfolio weights w_k for the kth mimicked factor in w so that they minimize $w_k'Vw_k$ subject to $w_k b_i = 0$, $\forall k \neq i$, and $w_k' b_k = 1$, and then normalizing the weights so that they sum to one. Lehmann and Modest (1988) review alternative factor mimicking procedures. As they point out, the normalization of the weights will generally produce own-factor loadings, as those listed in Panel C, that differ from one.

4.2 Performance estimates

Tables 6 and 7 list the factor model parameter estimates (factor loadings and Jensen's alpha) for industrial firms and public utilities, respectively, classified by stock exchange listing (NYSE/Amex vs. Nasdaq). We examine three basic portfolios: issuing firms, matched firms, and the zero-investment portfolios (long in matched firms and short in issuers). Both equal-weighted (EW) and value-weighted (VW) portfolios are presented, resulting in a total of six portfolios in each panel of the tables. The zero-investment portfolio is of particular interest because we can test the conjecture of Loughran and Ritter (1995) and others that the matched-firm technique adequately controls for risk, which if true should produce zero factor loadings on these portfolios. Conversely, if the matched-firm technique does not adequately control for risk, then we should find significant factor loadings on the zero-investment portfolios. Moreover, these factor loadings will directly identify the differences in risk exposures between the issuer and matched-firm portfolios.

Starting with the sample of industrial offerings in Panel A of Table 6, the alphas are insignificantly different from zero across all six portfolios, with estimates ranging from -0.10% for the EW matched-firm portfolio to -0.03% for the VW issuer portfolio. Focusing on the zero-investment portfolio, the model produces significant factor loadings for the market portfolio (RM), the corporate bond spread (BAA−AAA), and unanticipated inflation (UI). For all three factors, the factor loading is somewhat greater under equal weighting than value weighting. These factor loadings indicate that while issuing firms have slightly higher exposure to market risk, this is more than offset by lower post-issue exposure to unanticipated inflation and default spread, resulting in a negative value of Jensen's alpha for the zero-investment portfolio. Intuitively, as equity issuers lower leverage, their exposures to unexpected inflation and default risks decrease, thus decreasing their stocks' expected returns relative to matched firms.[5]

As seen from Panel B and C, separating out Nasdaq industrial issuers does not change the previous conclusions. In panel B, matched firms are drawn from the population of NYSE/Amex-listed firms only, while in Panel C, matches are drawn exclusively from the population of Nasdaq firms. The factor loadings on all six portfolios are stable across the three panels. Furthermore,

[5] Note that the issuer and matched-firm portfolios have very similar (and for EW portfolios significant) loadings on the consumption growth (ΔRPC) and the change in the slope of the yield curve (20y-1y), producing near-zero exposure of the zero-investment portfolio to these two risk factors. Thus, it appears that the matched-firm technique succeeds in controlling for these two risk factors.

Jensen's alpha is insignificant for Nasdaq firms (issuers and matches) as well as for NYSE/Amex firms and is of approximately equal value across the two exchange groupings when using VW portfolios. EW portfolios produce somewhat greater (but still insignificant) alphas for Nasdaq-listed issuers, -0.27% vs. -0.02% for NYSE/Amex issuers.

Turning to SEOs by public utilities shown in Table 7, the estimated alphas are all insignificant. (Table 7 does not single out Nasdaq issues because there are only 33 Nasdaq utility SEOs in the total sample.) Again, this contrasts with the result of the matched-firm technique for estimating abnormal performance reported earlier in Table 3. The factor loadings indicate that issuing firms have significantly higher positive exposure than matched firms to term structure risk (20y−1y and TBILLspr) and higher negative exposure to default risk (BAA−AAA). Moreover, utility issuers have lower exposure to market risk (RM). Comparing utility issuers with the portfolios of industrial issuers in Table 6, the former have greater exposure to unanticipated inflation (0.02 vs. -0.03 for EW portfolios) and term structure risk (0.36 vs. -0.22 for 20y−1y, 5.25 vs. -0.27 for TBILLspr), and lower exposure to market risk (0.49 vs. 1.40). This is consistent with the generally higher leverage of regulated utilities relative to industrial firms and the lower price sensitivity of regulated industries.

Overall, the results in Tables 6 and 7 fail to reject the hypothesis of zero abnormal performance following SEOs. Moreover, the estimated factor loadings indicate that during the post-issue period, issuer stocks are on average less risky—and thus require lower expected returns—than stocks of matched firms. As a result, the matched-firm technique is by itself likely to generate 'abnormal' performance.

4.3 Sensitivity analysis

We begin our sensitivity analysis by examining Jensen's alphas over holding periods of between one and five years for the samples in Panels B and C of Table 6. For example, with a two-year holding period, firms enter the SEO issuer portfolio as before, but exit after only two years (or at a subsequent security offer or delisting, whichever occurs earlier). This serves to check whether any subperiod abnormal performance is washed out in the averaging of returns over the five-year holding period used in the prior tables. The results for one-to-five-year holding periods are given in Table 8. None of the alphas are significantly different from zero at the 5% level. If anything, there is a weak tendency for *over*performance by issuing firms over the 12 months following an SEO (the alpha of the EW portfolio of NYSE/Amex issuers equals 0.36 with a p-value of 0.097). Overall, the results in Table 8 fail to reject the hypothesis of zero abnormal performance for all five holding periods and across all three stock exchange samples.

Second, returning to our five-year holding period, we reestimate the factor model for the portfolios in Panels B and C of Table 6, but with the sample period starting in 1977. This shortened sample period gives greater weight to SEOs that take place in the "hot" issue markets, which occur in the second half of the full sample period. This subperiod is also frequently studied in the long-term performance literature. Starting in January of 1977, the portfolios in Panel A of Table 9 include all firms that complete SEOs over the previous five-year period. As shown in Panel A, none of the alphas are significant at the 5% level. Moreover, the point estimates for the issuer portfolios are very close to the estimates in Table 6 for the full sample period.

Third, we reestimate Jensen's alpha using factor-mimicking portfolios that are continously updated. That is, the weights defined earlier in Eq. (5) are now constructed using a fixed time length but a rolling estimation period where the matrix B of factor loadings and covariance matrix V are reestimated every month. This rolling estimation procedure relaxes the stationarity assumption on the factor-mimicking weights underlying the earlier tables. As seen in Panel B of Table 9, the alphas are again all insignificant with rolling factor-mimicking portfolio weights.

Fourth, in Panel C of Table 9, we report alpha estimates when our factor mimicking portfolios have been purged of issuing firms. Loughran and Ritter (1999) argue that generating benchmark returns from factor-mimicking portfolios that include SEO issuers reduces the power of the tests to detect abnormal returns following SEOs. However, it should also be noted that, under the null hypothesis of zero abnormal performance, purging the factor-mimicking portfolios of all issuing firms biases the tests in favor of finding a significant positive alpha.[6] Conversely, failing to reject the null hypothesis even with purged factor portfolios provides additional information on the empirical relevance of the alternative, under-reaction hypothesis. At any time t, a firm is eliminated from the factor-mimicking portfolio if the firm issued equity (primary offerings) over the previous five years. The universe of issuing firms used for this purpose contains approximately 6,300 issues contained in the sample sources described at the beginning of Section 2. On average, 11.1% of the firms in

[6] We thank Wayne Ferson for making this point.

the factor-mimicking portfolios also make SEOs during the subsequent five-year holding period. As shown in Panel C of Table 9, we fail to reject the hypothesis of zero abnormal performance when our factor-mimicking portfolios are completely purged of issuing firms.

Fifth, Panel D of Table 9 shows the alpha estimates when the time series of the demeaned, raw macroeconomic factors is used rather than factor-mimicking portfolios. As discussed earlier, use of factor-mimicking portfolios is convenient in terms of estimating factor realizations and risk premiums. However, factor-mimicking portfolios contain substantial measurement error vis-à-vis the true risk factors. Furthermore, one cannot determine a priori whether this measurement error is lower than the measurement error induced by the demeaned raw macroeconomic factors themselves. Interestingly, the alpha estimates in Panel D are all insignificantly different from zero, though somewhat larger in absolute value than those for regressions based on factor-mimicking portfolios. Also, although not reported in Table 9, the adjusted R^2s are somewhat smaller for the raw macro factor regressions than for regressions using factor-mimicking portfolios.

Overall, our main conclusion of zero long-run abnormal performance for SEO issuers is robust to a number of alternative approaches to partitioning the sample and defining the relevant set of risk factors. To provide a perspective on the sensitivity of our results to the specific factor model employed, we next turn to an examination of three alternative factor model specifications.

4.4 Alternative factor model specifications

Thus far, our analysis allows for some nonstationarity in the regression parameters through sample period partitioning, rolling estimation of factor-mimicking portfolios and, not the least, through our analysis of differences between the stock returns of issuing and nonissuing matched firms. However, in light of the growing evidence that expected returns are predictable using publicly available information, it is useful to reexamine our null hypothesis of zero abnormal performance in a conditional factor model framework. A survey of conditional factor model econometrics is found in Ferson (1995).

We follow Ferson and Schadt (1996) and assume that factor loadings are linearly related to a set of L known information variables Z_{t-1}:

$$\beta_{1pt-1} = b_{p0} + B_{p1} Z_{t-1}. \qquad (6)$$

Here, b_{p0} is a K-vector of "average" factor loadings that are time-invariant, B_{p1} is a $(K \times L)$ coefficient matrix, and Z_{t-1} is an L-vector of information variables (observables) at time $t-1$. The product $B_{p1}Z_{t-1}$ captures the predictable time variation in the factor loadings. After substituting Eq. (6) into Eq. (4), the return-generating process becomes

$$r_{pt} = b'_{p0} r_{Ft} + b'_{p1}(Z_{t-1} \otimes r_{Ft}) + e_{pt}, \tag{7}$$

where the KL-vector b_{p1} is vec(B_{p1}) and the symbol $\otimes$ denotes the Kronecker product.[7] Again, we estimate this factor model adding a constant term, α_p, that equals zero under the null hypothesis of zero abnormal returns.

The information variables in Z_{t-1} include the lagged dividend yield on the CRSP value-weighted market index, the lagged 30-day Treasury bill rate, and the lagged values of the credit and yield curve spreads, BAA−AAA and TBILLspr, respectively. The resulting estimates of alpha are given in Panel A of Table 10. Consistent with our prior findings, the estimates are all insignificantly different from zero. Thus, we cannot reject the null hypothesis of zero abnormal returns whether or not we explicitly condition the factor loadings on publicly available information.

Second, we reestimate alpha using factors extracted from the covariance matrix of returns using the principal components approach of Connor and Korajczyk (1988).[8] While these factors do not have intuitive economic interpretations, they are by construction consistent with APT theory. The resulting alpha estimates are reported in Panel B of Table 10. For NYSE/Amex issuers, none of the alphas are significantly different from zero. However, Nasdaq portfolios now produce significant underperformance by SEO issuers (-0.64% for EW and -0.54% for VW portfolios, with p-values of 0.005 and 0.042, respectively). The model also generates some degree of underpricing for the nonissuing matched firm, so that the zero-investment portfolio has a significant alpha only for the EW portfolio (alpha=0.39%, p-value of 0.038).

Finally, we examine Jensen's alpha using the three-factor model of Fama and French (1993).[9] The results, shown in Panel C of Table 10, are similar to the results for the Connor and Korajczyk (1988) model in Panel B. That is, NYSE/Amex issuers are associated with zero average abnormal

[7] The operator vec(·) vectorizes the matrix argument by stacking each column starting with the first column of the matrix.

[8] We thank Robert Korajczyk for providing us with the return series on these factors.

[9] We thank Ken French for providing us with the return series on these factors.

returns. Moreover, VW returns produce insignificant alphas across all portfolios. Nasdaq issuers produce a strongly significant Jensen's alpha of -0.42% for the EW portfolio (p-value of 0.009). Focusing on the EW zero-investment portfolio, however, this underperformance is reduced to an insignificant 0.32% (p-value of 0.10).[10] When reestimating the Fama-French model using the more recent sample period of 1977-1997 (not reported in the tables), the alpha estimate for the EW issuer portfolio is -0.38% for Nasdaq issuers and -0.36% for NYSE/Amex issuers, which are both highly significant. Brav, Geczy, and Gompers (1999) similarly find a significant Jensen's alpha of -0.37% for the EW issuer portfolio for the Fama-French model using pooled Nasdaq and NYSE/Amex issues. The EW zero-investment portfolio produces significant underperformance in this subperiod of 0.23% (p-value 0.000) and 0.25% (p-value 0.045) for NYSE/Amex and Nasdaq portfolios, respectively. Again, the VW portfolio eliminates all traces of significant Jensen's alpha in the Fama-French model.

In sum, while our six-factor model produces zero abnormal post-issue performance for both EW and VW portfolios, regardless of the exchange listing, the Connor and Korajczyk (1988) and Fama and French (1993) models both leave some evidence of abnormal performance by the EW Nasdaq issuer portfolios. Of course, our six-factor model has the added advantage that it can explain why issuing firms tend to underperform nonissuing matched firms by highlighting their differential exposures to exogenous macroeconomic risk factors.

4.5 SEOs and stock liquidity

Recent empirical work on asset pricing by Brennan and Subrahmanyam (1996), Datar, Naik, and Radcliffe (1998), and Brennan, Chordia, and Subrahmanyam (1998) find that stock expected returns are cross-sectionally related to stock liquidity measures. Brennan et al. and Datar et al. report that share turnover (measured by shares traded divided by shares outstanding) appears to be a priced asset attribute that lowers a stock's expected return. This result is obtained after controlling for various factors, including the Fama-French factors and the Connor-Korajczyk principal component factors used above. These studies interpret the negative relationship between mean stock returns and share turnover as a liquidity premium. In the context of examining stock returns around SEOs,

[10] While they do not report results for zero-investment portfolios, the evidence in **?** for issuing firms is comparable to those in Panel C of Table 10.

this negative relationship between returns and share turnover can have important implications, since share turnover is likely to rise after the public sale of new shares.

In Table 11, we examine the average monthly level of share turnover (trading volume as a percent of total shares outstanding) for issuers and their matched sample during a ten-year window centered on the SEO public offering date. In the pre-offering 5-year period, we find that SEO common stocks exhibit somewhat higher share turnover ratios than their risk-matched control sample. For example, monthly turnover for industrial NYSE/Amex issuers averages 5.72% compared to 4.37% for non-issuers. Differences in monthly turnover ratios are more striking on Nasdaq, with turnover averaging 12.44% for issuers and 9.33% for the nonissuing control sample. The p-values for the difference between issuer and nonissuing matched firms are statistically significant, indicating that issuing firms are more liquid. Moreover, the table shows that industrial firms are on average more liquid than regulated utilities (5.72% vs. 2.01%). The high percentage of industrial firms used in the matched sample for utility issuers results in higher liquidity (and lower liquidity premiums) for nonissuers than for issuers in the utility category (3.05% versus 2.01%)

Industrial NYSE/Amex-listed firms experience a large rise in the five-year average monthly share turnover ratio from 5.72% before the SEO to 7.08% following the SEO (statistically significant at the 1% level). In contrast, there is no substantive change in the matched sample over these pre- and post-SEO periods (4.37% versus 4.46%). A similar conclusion holds for industrial Nasdaq-listed issuers who experience an increase in average monthly turnover from 12.44% in the pre-SEO period to 14.48% in the post-SEO period. The matched-firm sample shows a slight decrease in turnover over the same pre- and post-SEO periods (from 9.33% to 8.29%). This evidence indicates that the change in share turnover is induced by the SEO itself, rather than being the result of a secular time trend. Thus, in the post-issue period, stocks of industrial SEO issuers have much higher liquidity both absolutely and relative to nonissuing matched firms. In contrast, there is little evidence of a liquidity change for utility issuers or their matches.

Given the evidence of positive liquidity premiums reported by Brennan, Chordia, and Subrahmanyam (1998), the evidence in Table 11 implies that stocks of industrial SEOs should have lower expected returns than their risk-matched control sample. Moreover, this difference in expected returns between the issuers and matches is more pronounced in the post-offering period, when on average SEO issuers' liquidity substantially improves. One result of this increasing issuer share turnover following SEOs is that portfolios that are short these issuer stocks and long matched stocks are likely to exhibit greater abnormal performance in this period. Thus, not only does the matched-firm technique fail to create portfolios with similar risk exposures in the post-offering period, it also fails to create portfolios with similar liquidity, again especially in the post-offering period.

5 Performance following debt issues

In this section, we estimate abnormal performance using both the matched-firm technique and the factor-model procedure for samples of straight and convertible debt issues. The purpose is two-fold. First, given the hybrid debt/equity nature of convertibles, replicating the test procedures on a sample of issuers of convertible debt reduces the potential for data snooping bias that exists in the SEO literature, where several studies in effect examine similar samples of offerings. Second, straight debt issues are less likely than SEOs to be mispriced by the market. This follows because there is less ambiguity about the future cash flow rights to debtholders than to equityholders, and because bond returns exhibit lower idiosynchratic risk (return variance) than equity returns. As a result, bond issues are less likely to reflect opportunistic timing by management, lowering adverse selection risk as well.[11] The lower risk lowers the potential for true post-issue abnormal performance following debt issues.

Nevertheless, Table 12 indicates significantly negative post-issue abnormal performance for debt issues when matching on size and book-to-market ratio. In fact, as shown in Panel A of Table 12, the magnitudes of the abnormal returns following straight debt issues on NYSE/Amex are very similar to the abnormal returns following SEOs reported earlier in Table 3. For example, with EW portfolios and industrial issuers, the difference in buy-and-hold returns between issuers and matched firms is -11.2% for straight debt offerings versus -18.1% for SEOs. For utility issuers, the EW portfolio differences are -10.4% for straight debt offerings versus -15.7% for SEOs. Our finding of an underperformance of -11.2% for industrial straight debt issues is comparable to the average underperformance of -14.3% reported by Spiess and Affleck-Graves (1999). However, in light of

[11] There is substantial evidence that the negative market reaction to seasoned security issue announcements is a function of the type of security issued, as predicted by adverse selection arguments. See Eckbo and Masulis (1995) for a review.

the discussion above, the similarity in the magnitudes of the abnormal returns across straight debt issues and SEOs is unreasonable from an economic point of view and raises a concern about the effectiveness of the matched-firm technique itself.

Turning to convertible debt issues by NYSE/Amex listed firms in Panel B, the matched-firm technique again produces significant post-issue abnormal performance for issuer stocks of a magnitude similar to that of SEO issuers. Using EW portfolios of buy-and-hold returns, the average five-year abnormal performance of issuers is 16.1 percentage points lower than the corresponding performance of the control firms matched on size and book-to-market ratios. With VW portfolios, the difference is -28.2%. The latter result is substantially *greater* than the SEO issuer underperformance of -6.4% reported in Table 3. So, we again find evidence of abnormal performance for debt issuers similar in spirit to the Loughran and Ritter (1995) results for SEO issuers.

Table 13 shows Jensen's alpha estimates for our two debt issuer samples using the six-factor model to adjust for risk. Focusing first on the sample of 981 straight debt offerings by industrial firms in Panel A, none of the alpha estimates are significant at the 5% level. For utility firms, the issuer EW and VW portfolios also have insignificant alphas. However, the *matched-firm* portfolios now exhibit significantly positive alpha values, which in turn produces positive alphas for the two zero-investment portfolios. Note that the matched-firm portfolio for the straight debt offerings contains on average only 18 firms. Moreover, as pointed out earlier, the matched-firm procedure does not involve industry matching. In fact, 16 of these 18 firms are industrial companies. Thus, one interpretation of the positive alphas is that that our factor model tends to underprice relatively small portfolios of relatively large industrial issuers, but there is no evidence of underpricing or overpricing for utility issuers.

For the convertible debt sample, Panel B of Table 13 lists Jensen's alphas for portfolios of issuers and their matched firms. Only one of the six portfolios has an alpha estimate that is significantly different from zero at the 5% level; the VW issuer portfolio has an alpha of -0.33% and a p-value of 0.042. This portfolio represents 459 stocks of convertible debt issuers and contains on average 56 firms each month. The alpha of the matched-firm portfolio is an insignificant 0.08%, resulting in a statistically insignificant abnormal performance for the zero-investment portfolio of 0.41%.

Overall, while the matched-firm technique produces significant underperformance following straight and convertible debt issues, the factor model approach tends to eliminate this abnormal performance. Thus, our conclusions for the debt sample are similar to our earlier conclusions for SEOs. Evidence of abnormal performance following debt issuance is highly sensitive to the matched-firm procedure used. Furthermore, evidence of abnormal underperformance by debt using the issuers is equally likely to be the result of abnormal overperformance by the matched-firm sample.

6 Conclusions

Capital market participants react to security issue announcements by revaluing the issuer's stock price. This revaluation depends in part on the market's perception of the issuing firm's objectives and in part on the nature of the information asymmetry between investors and the firm concerning the true value of its securities. As surveyed Eckbo and Masulis (1995), substantial empirical research has established that the market reaction to SEOs is swift and consistent with the hypothesis that investors are concerned with adverse selection. The average two-day announcement-induced abnormal stock return to SEOs on the NYSE/Amex is -3%, a value reduction equal to approximately 20% of the proceeds of the average issue. However, Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995), who find that SEO firms substantially underperform a set of nonissuing control firms over the five-year post-issue period, question whether the initial market reaction is unbiased: "... if the market fully reacted to the information implied by an equity issue announcement, the average announcement effect would be -33%, not -3%." (Loughran and Ritter, 1995, p. 48).

This study raises doubts about the econometric foundation of the Loughran and Ritter (1995) "new issues puzzle." The puzzle represents the *joint* hypothesis that markets underreact to SEO announcements and that the nonissuing control firms capture the true risk characteristics of SEO firms. We examine the second part of this joint hypothesis using various factor model specifications to generate risk-adjusted expected returns. We focus in particular on zero-investment portfolios that are short the stocks of SEO firms and long the stocks of nonissuing control firms, with the control firms matched on both size and book-to-market ratio. Overall, the evidence shows that these zero-investment portfolios exhibit systematic risk that is reflected in the estimates of our multifactor model. Thus, the matched-firm technique of Loughran and Ritter (1995) and others does not adequately adjust for risk. Moreover, since we cannot reject the hypothesis that the zero-investment portfolios have zero abnormal returns over the post-SEO period, we conclude that the new issues puzzle is about proper risk adjustment rather than about market underreaction to the negative news released in security issue announcements.

Our factor model estimation, which uses prespecified macroeconomic variables as risk factors, offer some interesting insights into the nature of the risk differences between issuers and nonissuing control firms. While SEO firms have slightly higher exposure to market risk than their nonissuing control firms, this effect is more than offset by lower post-issue risk exposure to unanticipated inflation, default spread, and (for utility) issuers measures of term structure risk. Intuitively, as equity issuers lower leverage, their exposure to unexpected inflation and default risks decreases, thus decreasing their stocks' expected returns relative to matched firms. Interestingly, we also find that equity issues significantly increase stock liquidity (measured by share turnover), which could further lower their expected returns due to lower liquidity premiums relative to nonissuer stocks.

We perform a number of sensitivity analyses. Abnormal returns to the zero-investment portfolio are also found to be insignificant for the post-1977 subperiod, for return horizons shorter than five years, for alternative factor-mimicking procedures and when using the non-mimicked "raw" macroeconomic factors, and when all factor mimicking portfolios are purged of issuing firms.

Although we do not present a formal "horse race" between alternative factor models in this study, we do examine the impact of alternative model specifications. First, in the spirit of Ferson and Schadt (1996), we condition our six-factor model on publicly available information that generate changes in expected returns due to predictable changes in systematic risks. Abnormal returns generated with this conditional factor model are also statistically insignificant. Second, as in Connor and Korajczyk (1988), we employ a model in which the factors are extracted from the covariance matrix of returns using principal component estimation (as opposed to our prespecified factors). This model generates significant underperformance for equal-weighted portfolios of Nasdaq-listed seasoned equity issuers, while all value-weighted portfolios, as well as NYSE/Amex-listed seasoned equity issuers, exhibit zero abnormal returns. Third, we reestimate the results using the three-factor Fama-French model. This model also generates a negative Jensen's alpha for the equal-weighted portfolio of Nasdaq issuers. However, using the Fama-French model, the abnormal performance of the zero-investment portfolio is again statistically insignificant. In sum, our six-factor model with prespecified macroeconomic factors appears to perform somewhat better than the two commonly used alternative model specifications. More importantly, *none* of the models provide a statistically compelling basis for claiming that SEOs underperform their respective benchmark portfolios. This further strengthens the growing suspicion that the new issues puzzle is the result of poor risk controls when the analysis relies on the matched-firm technique.

Finally, we report additional results not presented in earlier research on seasoned security offerings, including abnormal performance estimates following SEOs by regulated utilities and following industrial/utility offerings of convertible and straight debt. The matched-firm technique produces underperformance for utility SEO issuers as well as for straight and convertible debt issues that is of a magnitude similar to that found for industrial SEOs. Since utility SEO issuers and issuers of straight debt have less potential for mispricing due to market timing, this finding is unreasonable on purely economic grounds. Again, our factor model estimation by and large eliminates traces of abnormal performance, and again raises suspicion that the abnormal return estimates produced by the matched-firm technique are biased.

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Table 1
Number of public offerings of seasoned common stock and debt.

The table reports annual number of public offerings of seasoned common stock and debt by NYSE/Amex/Nasdaq listed stocks classified by security offered, industry type (industrial/utility) and exchange listing over the 1964–1995 period. The sample period is 1964–1994 for debt issues. The first year of Nasdaq offerings is 1974. "Ind" indicates an industrial issuer while "utl" indicates that the issuer is a public utility. Utilities are firms with CRSP SIC codes in the interval $[4910, 4939]$.

			NYSE/Amex issuers						Nasdaq issuers					
	Security issue		Equity		Convertible Debt		Straight Debt		Equity		Convertible Debt		Straight Debt	
Year	Equity Total	Debt Total	Ind	Utl	Ind	Utl	Ind	Utl	Ind	Utl	Ind	Utl	Ind	Utl
1964	8	5	5	3	1	0	4	0	–	–	–	–	–	–
1965	6	16	5	1	4	2	3	7	–	–	–	–	–	–
1966	11	29	9	3	6	0	15	8	–	–	–	–	–	–
1967	10	44	8	2	12	2	16	14	–	–	–	–	–	–
1968	24	23	20	4	5	1	9	8	–	–	–	–	–	–
1969	35	38	14	11	4	1	11	21	–	–	–	–	–	–
1970	37	57	15	22	6	0	32	19	–	–	–	–	–	–
1971	64	50	44	22	9	0	17	22	–	–	–	–	–	–
1972	57	29	28	29	1	0	13	15	–	–	–	–	–	–
1973	55	20	10	45	2	0	7	11	–	–	–	–	–	–
1974	54	54	10	36	1	0	37	16	8	0	0	0	0	0
1975	94	46	22	56	1	0	32	13	16	0	0	0	0	0
1976	120	30	33	60	0	0	24	6	27	0	0	0	0	0
1977	81	28	7	55	0	0	18	10	19	0	0	0	0	0
1978	128	32	25	63	0	0	24	8	40	0	0	0	0	0
1979	113	132	23	59	13	0	86	30	31	0	0	0	3	0
1980	253	217	85	72	54	1	120	39	96	0	1	0	2	0
1981	251	167	71	80	45	2	77	42	100	0	0	0	1	0
1982	215	131	62	76	32	0	76	26	77	0	1	0	6	0
1983	495	166	218	54	56	2	90	15	223	1	1	0	2	0
1984	100	107	50	22	27	0	72	8	28	0	0	0	0	0
1985	254	142	96	24	47	1	79	9	134	1	2	0	3	1
1986	332	174	116	15	60	1	89	22	201	4	2	0	0	0
1987	206	83	95	7	39	1	31	9	104	3	2	0	1	0
1988	90	36	32	13	12	1	20	3	45	2	0	0	0	0
1989	154	25	48	17	7	0	11	6	89	4	1	0	0	0
1990	130	15	58	11	8	1	3	1	61	2	2	0	0	0
1991	337	62	118	27	29	1	22	5	192	3	5	0	0	0
1992	322	73	129	33	29	1	33	5	160	4	5	0	0	0
1993	442	88	141	36	28	0	41	6	265	4	11	0	2	0
1994	224	17	78	10	4	0	13	0	136	4	0	0	0	0
1995	132	–	29	8	–	–	–	–	95	1	–	–	–	–
Total	4860	2143	1704	976	542	18	1125	404	2147	33	33	0	20	1

Table 2
Issue characteristics for seasoned common stock and debt offerings.

Mean issue characteristics for seasoned common stock and debt offerings, classified by industry type (industrial/utilities) and exchange listing over the 1964–1995 period. "Ind" indicates an industrial issuer. Utilities ("Utl") are firms with CRSP SIC codes in the interval [4910, 4939]. Amount offered and market value of common stock are in 1995 dollars.

	NYSE/Amex						Nasdaq					
	Common Stock		Convertible Debt		Straight Debt		Common Stock		Convertible Debt		Straight Debt	
	Ind	Utl	Ind	Utl	Ind	Utl	Ind	Utl	Ind	Utl	Ind	Utl
Gross proceeds of security offers ($ millions)	101	108	157	201	321	293	37	27	99	–	152	72
Pre-offering market value of issuer common stock ($ millions)	1513	1502	1888	2780	7705	3515	238	228	656	–	785	315
Offering gross proceeds divided by pre-offering market value of issuer common stock	0.17	0.10	0.22	0.19	0.23	0.11	0.24	0.18	0.32	–	0.52	0.23

Table 3
Five-year buy-and-hold stock percent returns (BHR) to seasoned equity issuers and their matched control firms, classified by exchange listing, industry type (industrial/utility), type of matching procedure (size/size-and-book-to-market), and portfolio weights (equal-/value-weighted) over the 1964–1995 period.

Buy-and-hold percent returns are defined as

$$BHR \equiv \sum_{i=1}^{N} \omega_i \left[\prod_{t=\tau_i}^{T_i} (1 + R_{it}) - 1 \right] \times 100.$$

When equal-weighting (EW), $\omega_i \equiv \frac{1}{N}$, and when value-weighting (VW), $\omega_i = MV_i/MV$, where MV_i is the firms's common stock market value (in 1995 dollars) of the issuer in the month prior to the start of the holding period and $MV = \sum_i MV_i$. The p-values in the column marked $p(t)$ are p-values of the t-statistic using a two-sided test of no difference in average five-year buy-and-hold returns for issuer and matched firms. In panel B matches are drawn from the NYSE/Amex only, while in panel C matches are required to be listed on Nasdaq.The abnormal buy-and-hold returns shown in the columns marked "Difference" represent the difference between the average BHR in the "Issuer" and "Match" columns. The columns marked "Num obs." contain number of issues.

		Size matching					Size and book-to-market matching				
Industry	Weighting	Num obs.	Issuer	Match	Difference	$p(t)$	Num obs.	Issuer	Match	Difference	$p(t)$
A. All seasoned stock offerings (NYSE/Amex/Nasdaq)											
Ind	EW	3851	44.2	71.1	−26.9	0.000	3315	44.3	67.5	−23.2	0.000
Ind	VW	3851	50.6	71.8	−21.1	0.006	3315	51.6	62.2	−10.6	0.161
Utl	EW	1009	35.5	41.3	−5.8	0.110	880	36.6	55.7	−19.0	0.000
Utl	VW	1009	27.7	33.9	−6.2	0.105	880	27.9	46.5	−18.6	0.002
B. Seasoned stock offerings by NYSE/Amex listed firms											
Ind	EW	1704	53.0	73.7	−20.7	0.000	1485	52.7	70.8	−18.1	0.001
Ind	VW	1704	52.3	71.3	−19.0	0.033	1485	53.2	59.6	−6.4	0.468
Utl	EW	976	34.6	43.0	−8.4	0.021	847	35.6	51.3	−15.7	0.000
Utl	VW	976	27.3	35.3	−8.0	0.039	847	27.4	45.8	−18.4	0.002
C. Seasoned stock offerings by Nasdaq listed firms											
Ind	EW	2147	38.7	69.3	−30.6	0.000	1829	39.3	65.8	−26.6	0.000
Ind	VW	2147	47.3	72.4	−25.1	0.002	1829	48.7	66.8	−18.2	0.058

Table 4
Average differences in five-year buy-and-hold stock returns (%) grouped by equity size and book-to-market quintiles for seasoned common stock issuers and their matching control firms over the 1964–1995 period.

The matched firms are selected to have similar size and book-to-market ratios. The quintile breakpoints are created using NYSE listed firms only. The size quintiles are ordered from Small to Big, and the book-to-market quintiles are ordered from Low to High. The parentheses on the left panels contain *p*-values computed using the *t*-statistic for the return difference between issuer and matched firm. The parentheses on the right panels contain the percent of the cell represented by Nasdaq issuers.

	Abnormal five-year buy-and-hold stock returns (p-values in parentheses)					Number of observations (Percent Nasdaq firms in parentheses)				
Size:	Small	2	3	4	Big	Small	2	3	4	Big
A. Industrial issuers										
Book-to-market ratios										
Low	−19.3	−14.7	−23.5	1.8	−12.0	583	540	327	177	95
	(0.028)	(0.166)	(0.079)	(0.891)	(0.505)	(83.7)	(78.1)	(62.1)	(36.2)	(13.7)
2	−49.6	−26.2	−30.3	−39.3	−32.9	251	185	113	71	53
	(0.029)	(0.024)	(0.047)	(0.116)	(0.033)	(68.9)	(55.1)	(34.5)	(9.9)	(3.8)
3	−35.9	−46.5	−17.7	−25.9	−9.0	156	94	69	68	56
	(0.122)	(0.130)	(0.309)	(0.120)	(0.547)	(60.9)	(35.1)	(42.0)	(16.2)	(1.8)
4	−28.4	−37.8	−21.6	21.6	−14.9	87	56	40	53	57
	(0.239)	(0.141)	(0.397)	(0.280)	(0.367)	(56.3)	(35.7)	(35.0)	(11.3)	(0.0)
High	−30.3	−32.0	−15.3	−23.6	33.4	74	47	23	21	18
	(0.383)	(0.289)	(0.673)	(0.504)	(0.111)	(51.4)	(36.2)	(8.7)	(4.8)	(0.0)
B. Utility issuers										
Book-to-market ratios										
Low	–	–	−112.1	41.7	−14.7	–	–	1	2	2
	(–)	(–)	(–)	(0.467)	(0.625)	(–)	(–)	(0.0)	(0.0)	(0.0)
2	55.1	48.4	−14.9	−14.4	−2.9	–	1	5	20	36
	(0.080)	(–)	(0.343)	(0.452)	(0.474)	(–)	(0.0)	(0.0)	(0.0)	(0.0)
3	55.1	8.2	−39.1	−11.7	−6.4	4	19	33	74	64
	(0.080)	(0.763)	(0.023)	(0.057)	(0.580)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
4	−53.2	−23.2	−17.8	−24.3	−32.9	19	31	80	96	122
	(0.176)	(0.256)	(0.040)	(0.093)	(0.000)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
High	−20.8	0.6	−8.0	−9.3	−1.1	10	27	41	57	103
	(0.646)	(0.961)	(0.667)	(0.333)	(0.846)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)

Table 5
Factor-mimicking portfolios and macroeconomic variables used as risk factors over the 1964–1995 period.

A factor-mimicking portfolio is constructed by first regressing the returns on each of the 25 size and book-to-market sorted portfolios of Fama and French on the total set of six factors, i.e., 25 time-series regressions producing a (25×6) matrix B of slope coefficients against the factors. If V is the (25×25) covariance matrix of the error terms in these regressions (assumed to be diagonal), then the weights on the mimicking portfolios are $w = (B'V^{-1}B)^{-1}B'V^{-1}$ (See Lehmann and Modest, 1988). For each factor k, the return in month t for the corresponding mimicking portfolio is calculated from the cross-product of row k in w and the vector of month t returns on the 25 Fama-French portfolios. Seasonally adjusted real per capita consumption of nondurable goods is from the FRED database. Unanticipated inflation (UI) is generated using a model for expected inflation that involves running a regression of real returns (returns on 30-day Treasury bills less inflation) on a constant and 12 of its lagged values. The return difference on Treasury bonds (20y−1y) is the return spread between Treasury bonds with 20 years to maturity and Treasury bonds with one year to maturity. The short end of the term structure (TBILLspr) is measured as the return difference between 90-day and 30-day Treasury bills.

A. Economic variables

	N	Mean	Std Dev
Return on the CRSP value-weighted market index (RM)	420	0.0052	0.0431
Change in real per capita consumption of nondurable goods (ΔRPC)	420	0.0011	0.0073
Difference in BAA and AAA yield change (BAA−AAA)	420	-0.0002	0.0108
Unanticipated inflation (UI)	420	-0.0002	0.0024
Return difference on Treasury bonds (20y−1y)	420	0.0002	0.0257
Return difference on Treasury bills (TBILLspr)	420	0.0005	0.0011

B. Correlation coefficients for economic variables

	RM	ΔRPC	BAA−AAA	UI	20y−1y	TBILLspr
RM	1.000					
ΔRPC	0.135	1.000				
BAA−AAA	0.127	0.070	1.000			
UI	-0.113	-0.147	-0.166	1.000		
20y−1y	0.333	-0.034	0.293	-0.129	1.000	
TBILLspr	0.124	-0.001	0.328	-0.133	0.392	1.000

C. Mimicking factor portfolios regressed on economic variables

	Independent variables						
Mimicking factor	Intercept	RM	ΔRPC	BAA−AAA	UI	20y−1y	TBILLspr
ΔRPC	0.01 (.650)	0.46 (.460)	11.93 (.001)	−0.59 (.816)	1.40 (.896)	−0.39 (.734)	9.31 (.724)
BAA−AAA	0.05 (.339)	−0.25 (.826)	−2.71 (.675)	16.87 (.000)	−2.77 (.887)	0.67 (.748)	−7.59 (.875)
UI	0.02 (.002)	−0.04 (.805)	0.52 (.568)	−0.05 (.942)	13.03 (.000)	0.01 (.972)	0.76 (.910)

Table 6
Jensen's alphas and factor loadings for stock portfolios of industrial issuers of seasoned common stock and nonissuing firms matched on size and book-to-market ratios over the 1964–1997 and 1974–1997 periods.

The model is

$$r_{pt} = \alpha_p + \beta_1 \mathrm{RM}_t + \beta_2 \Delta\mathrm{RPC}_t + \beta_3(\mathrm{BAA} - \mathrm{AAA})_t + \beta_4 \mathrm{UI}_t + \beta_5(20\mathrm{y} - 1\mathrm{y})_t + \beta_6 \mathrm{TBILLspr}_t + e_t$$

where r_{pt} is either a portfolio excess return or a return on a zero investment portfolio that is long the stock of the matched firm and short the stock of the issuer, RM is the excess return on the market index, RPC is a factor mimicking portfolio for the percent change in the real per capita consumption of nondurable goods, BAA−AAA is a factor mimicking portfolio for the difference in the monthly yield changes on bonds rated BAA and AAA by Moody's, UI is a factor mimicking portfolio for unanticipated inflation, 20y−1y is the return difference between Treasury bonds with 20 years to maturity and one year to maturity, and TBILLspr is the return difference between 90-day and 30-day Treasury bills. In the panel headings, T is the number of months in the time series regression, N is the average number of firms in the portfolio, and I is the number of issues used to construct the portfolio. In Panel B, matched firms are drawn from the population of NYSE/Amex-listed firms only, while in Panel C, matches are drawn exclusively from the population of Nasdaq firms. The coefficients are estimated using ordinary least squares. Standard errors are computed using the heteroskedasticity consistent estimator of White (1980). The numbers in parentheses are p-values.

		Factor betas						
Portfolio	$\hat{\alpha}$	RM	ΔRPC	BAA−AAA	UI	20y−1y	TBILLspr	Rsq
A. SEOs by NYSE/Amex/Nasdaq-listed industrials (1964–1997, T=406, N=361, I=3315)								
EW-Issuer	−0.05 (.769)	1.40 (.000)	0.02 (.000)	−0.00 (.018)	−0.03 (.020)	−0.22 (.000)	−0.27 (.814)	0.817
EW-Match	−0.10 (.447)	1.22 (.000)	0.02 (.000)	−0.00 (.436)	0.02 (.088)	−0.25 (.000)	0.67 (.593)	0.825
EW-zero	−0.05 (.718)	−0.18 (.000)	0.00 (.661)	0.00 (.043)	0.05 (.000)	−0.03 (.528)	0.94 (.323)	0.120
VW-Issuer	−0.03 (.818)	1.09 (.000)	−0.00 (.376)	−0.00 (.000)	−0.03 (.000)	0.06 (.164)	−1.94 (.081)	0.845
VW-Match	−0.10 (.298)	1.02 (.000)	−0.00 (.029)	0.00 (.044)	−0.00 (.733)	0.04 (.203)	−0.32 (.732)	0.880
VW-zero	−0.08 (.625)	−0.07 (.032)	−0.00 (.462)	0.01 (.000)	0.03 (.011)	−0.02 (.763)	1.62 (.335)	0.063
B. SEOs by NYSE/Amex-listed industrials (1964–1997, T=406, N=165, I=1485)								
EW-Issuer	−0.02 (.902)	1.32 (.000)	0.02 (.000)	−0.00 (.014)	−0.02 (.046)	−0.17 (.000)	0.32 (.769)	0.827
EW-Match	−0.16 (.172)	1.18 (.000)	0.02 (.000)	−0.00 (.633)	0.02 (.075)	−0.20 (.000)	2.68 (.022)	0.842
EW-zero	−0.14 (.321)	−0.14 (.000)	0.00 (.625)	0.00 (.018)	0.04 (.000)	−0.03 (.476)	2.36 (.011)	0.090
VW-Issuer	−0.02 (.843)	1.05 (.000)	−0.00 (.692)	−0.00 (.001)	−0.02 (.008)	0.07 (.115)	−1.59 (.179)	0.829
VW-Match	−0.13 (.207)	1.00 (.000)	−0.00 (.117)	0.00 (.006)	0.00 (.715)	0.06 (.116)	0.19 (.860)	0.866
VW-zero	−0.11 (.502)	−0.05 (.182)	−0.00 (.433)	0.01 (.000)	0.02 (.031)	−0.01 (.852)	1.78 (.310)	0.051
C. SEOs by Nasdaq-listed industrials (1974–1997, T=287, N=284, I=1829)								
EW-Issuer	−0.27 (.258)	1.58 (.000)	0.02 (.001)	−0.00 (.853)	−0.04 (.026)	−0.32 (.000)	−3.17 (.153)	0.791
EW-Match	−0.04 (.870)	1.33 (.000)	0.02 (.000)	−0.00 (.814)	0.02 (.304)	−0.34 (.000)	−2.70 (.206)	0.753
EW-zero	0.23 (.262)	−0.25 (.000)	0.00 (.362)	−0.00 (.975)	0.06 (.000)	−0.02 (.777)	0.47 (.741)	0.151
VW-Issuer	−0.01 (.977)	1.49 (.000)	−0.01 (.161)	−0.00 (.183)	−0.09 (.000)	−0.12 (.283)	−4.83 (.050)	0.759
VW-Match	−0.07 (.693)	1.27 (.000)	0.00 (.414)	−0.00 (.023)	−0.04 (.004)	−0.16 (.005)	−1.26 (.488)	0.796
VW-zero	−0.07 (.813)	−0.23 (.012)	0.02 (.124)	−0.00 (.588)	0.06 (.014)	−0.04 (.731)	3.57 (.161)	0.100

Table 7
Jensen's alphas and factor loadings for stock portfolios of utility issuers of seasoned common stock and nonissuing firms matched on size and book-to-market ratios over the 1964–1997 period, classified by exchange listing and portfolio weights.

The model is

$$r_{pt} = \alpha_p + \beta_1 \mathrm{RM}_t + \beta_2 \Delta\mathrm{RPC}_t + \beta_3(\mathrm{BAA} - \mathrm{AAA})_t + \beta_4 \mathrm{UI}_t + \beta_5(20\mathrm{y} - 1\mathrm{y})_t + \beta_6 \mathrm{TBILLspr}_t + e_t$$

where r_{pt} is either a portfolio excess return or a return on a zero investment portfolio that is long the stock of the matched firm and short the stock of the issuer, RM is the excess return on the market index, RPC is a factor mimicking portfolio for the percent change in the real per capita consumption of nondurable goods, BAA−AAA is a factor mimicking portfolio for the difference in the monthly yield changes on bonds rated BAA and AAA by Moody's, UI is a factor mimicking portfolio for unanticipated inflation, 20y−1y is the return difference between Treasury bonds with 20 years to maturity and one year to maturity, and TBILLspr is the return difference between 90-day and 30-day Treasury bills. In the panel headings, T is the number of months in the time series regression, N is the average number of firms in the portfolio, and I is the number of issues used to construct the portfolio. In Panel B, matched firms are drawn from the population of NYSE/Amex-listed firms only, while in Panel C, matches are drawn exclusively from the population of Nasdaq firms. The coefficients are estimated using ordinary least squares. Standard errors are computed using the heteroskedasticity consistent estimator of White (1980). The numbers in parentheses are p-values.

		Factor betas						
Portfolio	$\hat{\alpha}$	RM	ΔRPC	BAA−AAA	UI	20y−1y	TBILLspr	Rsq
A. SEOs by NYSE/Amex/Nasdaq-listed utilities (1964–1997, T=406, N=57, I=880)								
EW-Issuer	−0.13 (.409)	0.49 (.000)	0.01 (.003)	−0.01 (.000)	0.02 (.059)	0.36 (.000)	5.25 (.001)	0.558
EW-Match	0.00 (.985)	1.00 (.000)	0.02 (.000)	−0.00 (.035)	0.02 (.015)	−0.06 (.139)	2.59 (.009)	0.855
EW-zero	0.13 (.451)	0.51 (.000)	0.00 (.446)	0.01 (.001)	−0.00 (.923)	−0.42 (.000)	−2.66 (.088)	0.333
VW-Issuer	−0.17 (.313)	0.49 (.000)	0.01 (.007)	−0.01 (.000)	0.01 (.439)	0.46 (.000)	4.48 (.004)	0.521
VW-Match	0.12 (.272)	0.99 (.000)	0.01 (.003)	−0.00 (.205)	0.01 (.171)	0.05 (.244)	0.18 (.866)	0.820
VW-zero	0.29 (.163)	0.50 (.000)	−0.00 (.451)	0.01 (.003)	0.00 (.918)	−0.41 (.000)	−4.31 (.023)	0.255
B. SEOs by NYSE/Amex-listed utilities (1964–1997, T=406, N=54, I=847)								
EW-Issuer	−0.12 (.445)	0.48 (.000)	0.01 (.007)	−0.01 (.000)	0.01 (.211)	0.39 (.000)	5.04 (.002)	0.556
EW-Match	−0.02 (.834)	1.00 (.000)	0.01 (.000)	−0.00 (.020)	0.02 (.036)	−0.06 (.101)	2.76 (.007)	0.855
EW-zero	0.10 (.579)	0.51 (.000)	0.00 (.459)	0.01 (.001)	0.00 (.846)	−0.45 (.000)	−2.29 (.153)	0.323
VW-Issuer	−0.18 (.298)	0.48 (.000)	0.01 (.007)	−0.01 (.000)	0.01 (.458)	0.46 (.000)	4.49 (.004)	0.518
VW-Match	0.12 (.293)	0.99 (.000)	0.01 (.003)	−0.00 (.221)	0.01 (.162)	0.05 (.276)	0.19 (.854)	0.819
VW-zero	0.29 (.164)	0.51 (.000)	−0.00 (.434)	0.01 (.004)	0.00 (.887)	−0.41 (.000)	−4.30 (.023)	0.255

Table 8
Jensen's alphas for stock portfolios of industrial issuers of seasoned common stock and nonissuing firms matched on size and book-to-market ratios, for one-year to five-year holding periods over the 1964–1997 and 1974–1997 sample periods, classified by exchange listing and portfolio weights.

The model is

$$r_{pt} = \alpha_p + \beta_1 \text{RM}_t + \beta_2 \Delta\text{RPC}_t + \beta_3(\text{BAA} - \text{AAA})_t + \beta_4 \text{UI}_t + \beta_5(20\text{y} - 1\text{y})_t + \beta_6 \text{TBILLspr}_t + e_t$$

where r_{pt} is either a portfolio excess return or a return on a zero investment portfolio that is long the stock of the matched firm and short the stock of the issuer, RM is the excess return on the market index, RPC is a factor mimicking portfolio for the percent change in the real per capita consumption of nondurable goods, BAA−AAA is a factor mimicking portfolio for the difference in the monthly yield changes on bonds rated BAA and AAA by Moody's, UI a factor mimicking portfolio for is unanticipated inflation, 20y−1y is the return difference between Treasury bonds with 20 years to maturity and one year to maturity, and TBILLspr is the return difference between 90-day and 30-day Treasury bills. Rows labeled 'T' show the number of months in the time series regression while rows labeled 'average N' contain the average number of firms in the portfolio. In panel A, matched firms are drawn from the population of NYSE/Amex-listed firms only, while in Panel B, matches are drawn exclusively from the population of Nasdaq firms. The coefficients are estimated using ordinary least squares. Standard errors are computed using the heteroskedasticity consistent estimator of White (1980). The numbers in parentheses are p-values.

	Jensen's alpha				
	12 months	24 months	36 months	48 months	60 months
A. SEOs by NYSE/Amex-listed industrials (1964–1997)					
EW-Issuer	0.36 (0.097)	0.08 (0.606)	−0.01 (0.949)	0.01 (0.966)	−0.02 (0.902)
EW-Match	−0.06 (0.709)	−0.08 (0.576)	−0.13 (0.295)	−0.15 (0.217)	−0.16 (0.172)
EW-zero	−0.42 (0.085)	−0.16 (0.375)	−0.12 (0.442)	−0.16 (0.288)	−0.14 (0.321)
VW-Issuer	0.34 (0.118)	−0.06 (0.676)	−0.19 (0.174)	−0.08 (0.522)	−0.02 (0.843)
VW-Match	0.27 (0.125)	0.02 (0.904)	−0.03 (0.814)	−0.08 (0.488)	−0.13 (0.207)
VW-zero	−0.07 (0.794)	0.08 (0.686)	0.16 (0.373)	0.01 (0.973)	−0.11 (0.502)
T	388	400	406	406	406
Average N	44	81	113	141	165
B. SEOs by Nasdaq-listed industrials (1974–1997)					
EW-Issuer	−0.01 (0.963)	−0.34 (0.158)	−0.34 (0.165)	−0.30 (0.215)	−0.27 (0.258)
EW-Match	−0.20 (0.401)	−0.14 (0.518)	−0.14 (0.537)	−0.08 (0.718)	−0.04 (0.870)
EW-zero	−0.19 (0.496)	0.20 (0.392)	0.20 (0.363)	0.22 (0.299)	0.23 (0.262)
VW-Issuer	0.36 (0.293)	0.07 (0.813)	−0.07 (0.801)	−0.04 (0.890)	−0.01 (0.977)
VW-Match	−0.15 (0.525)	−0.19 (0.369)	−0.17 (0.379)	−0.11 (0.556)	−0.07 (0.693)
VW-zero	−0.50 (0.153)	−0.26 (0.407)	−0.10 (0.733)	−0.08 (0.788)	−0.07 (0.813)
T	269	281	287	287	287
Average N	79	144	199	247	284

Table 9
Jensen's alphas for stock portfolios of industrial SEOs and nonissuing firms matched on size and book-to-market ratio, estimated using a recent sample period, continuously updated mimicking factors, mimicking factors purged of issuers, and raw macroeconomic factors, classified by exchange listing and portfolio weights for sample periods between 1964–1997.

The model in Panels A through C is

$$r_{pt} = \alpha_p + \beta_1 \text{RM}_t + \beta_2 \Delta\text{RPC}_t + \beta_3(\text{BAA} - \text{AAA})_t + \beta_4 \text{UI}_t + \beta_5(20\text{y} - 1\text{y})_t + \beta_6 \text{TBILLspr}_t + e_t$$

where r_{pt} is either a portfolio excess return or a return on a zero investment portfolio that is long the stock of the matched firm and short the stock of the issuer, RM is the excess return on the market index, RPC is a factor mimicking portfolio for the percent change in the real per capita consumption of nondurable goods, BAA−AAA is a factor mimicking portfolio for the difference in the monthly yield changes on bonds rated BAA and AAA by Moody's, UI is a factor mimicking portfolio for unanticipated inflation, 20y−1y is the return difference between Treasury bonds with 20 years to maturity and one year to maturity, and TBILLspr is the return difference between 90-day and 30-day Treasury bills. In panel D, the factor mimicking portfolios are replaced with the corresponding raw macroeconomic variables. The last column labeled 'N' contains the average number of firms in the portfolio. In rows labeled 'NYSE/Amex,' issuers and matched firms are from the population of NYSE/Amex-listed firms only, while in rows labeled 'Nasdaq', issuers and matches are exclusively from the population of Nasdaq firms. The coefficients are estimated using ordinary least squares. Standard errors are computed using the heteroskedasticity consistent estimator of White (1980). The numbers in parentheses are p-values.

	Equally weighted portfolios			Value-weighted portfolios			
Exchange	Issuer	Match	zero-investment	Issuer	Match	zero-investment	N
A. Alpha estimates for the subperiod 1977–1997							
NYSE/Amex	−0.22 (0.087)	−0.14 (0.187)	0.07 (0.380)	−0.05 (0.675)	−0.18 (0.076)	−0.13 (0.442)	267
Nasdaq	−0.30 (0.175)	−0.06 (0.751)	0.24 (0.073)	0.12 (0.634)	−0.00 (0.999)	−0.12 (0.580)	376
B. Alpha estimates with continuous updating of factor-mimicking portfolio weights (1974–1997)							
NYSE/Amex	0.02 (.929)	0.08 (.581)	0.06 (.670)	0.07 (.720)	−0.11 (.459)	−0.18 (.438)	209
Nasdaq	−0.14 (.522)	0.19 (.380)	0.33 (.136)	−0.03 (.904)	−0.04 (.839)	−0.01 (.978)	284
C. Alpha estimates when factor-mimicking portfolios are purged of issuers (1964–1997 for NYSE/Amex, 1974–1997 for Nasdaq)							
NYSE/Amex	−0.11 (0.450)	−0.21 (0.067)	−0.10 (0.487)	−0.05 (0.687)	−0.11 (0.288)	−0.06 (0.693)	165
Nasdaq	−0.42 (0.066)	−0.15 (0.449)	0.27 (0.199)	−0.16 (0.552)	−0.16 (0.375)	0.00 (0.991)	284
D. Alpha estimates using the original raw factors series (1964–1997 for NYSE/Amex, 1974–1997 for Nasdaq)							
NYSE/Amex	−0.12 (0.451)	−0.17 (0.176)	−0.04 (0.773)	−0.10 (0.393)	−0.13 (0.215)	−0.02 (0.883)	165
Nasdaq	−0.40 (0.118)	−0.01 (0.964)	0.39 (0.116)	−0.32 (0.232)	−0.23 (0.243)	0.09 (0.762)	284

Table 10
Jensen's alphas for stock portfolios of industrial issuers of seasoned common stock and nonissuing firms matched on size and book-to-market ratios, estimated using a conditional factor model, principal component factors, and the Fama-French three-factor model, classified by exchange listing and portfolio weights for sample periods between 1964–1997.

The conditional factor model in Panel A is

$$r_{pt} = b'_{p0} r_{Ft} + b'_{p1}(Z_{t-1} \otimes r_{Ft}) + e_{pt},$$

where the information variables in Z_{t-1} include the lagged dividend yield on the CRSP value-weighted market index, the lagged 30-day Treasury bill rate, and the lagged values of BAA−AAA and TBILLspr. The model used in Panel B is the five-factor model of Connor and Korajczyk (1988) in which factors are extracted from the covariance matrix of asset returns. The model in Panel C is the Fama and French (1993) three-factor model

$$r_{pt} = \alpha_p + b\mathrm{RM}_t + s\mathrm{SMB}_t + h\mathrm{HML}_t + e_{pt},$$

where r_{pt} is either a portfolio excess return or a return on a zero investment portfolio that is long the stock of the matched firm and short the stock of the issuer, RM is the excess return on the market index, SMB is the return on a portfolio of small firms minus the return on a portfolio of large firms, and HML is the return on a portfolio of firms with high book-to-market ratio minus the return on a portfolio of firms with low book-to-market ratio. The last column labeled 'N' contains the average number of firms in the portfolio. In rows labeled 'NYSE/Amex,' issuers and matched firms are from the population of NYSE/Amex-listed firms only, while in rows labeled 'Nasdaq,' issuers and matches are exclusively from the population of Nasdaq firms. The coefficients are estimated using OLS. Standard errors are computed using the heteroskedasticity consistent estimator of White (1980). The numbers in parentheses are p-values.

	Equally weighted portfolios			Value-weighted portfolios			
Exchange	Issuer	Match	zero-investment	Issuer	Match	zero-investment	N
A Alpha estimates using a conditional factor model with time-varying betas (1964–1997 for NYSE/Amex, 1974–1997 for Nasdaq)							
NYSE/Amex	−0.05 (0.749)	−0.15 (0.300)	−0.09 (0.575)	−0.05 (0.713)	−0.18 (0.094)	−0.13 (0.422)	165
Nasdaq	−0.09 (0.726)	0.25 (0.330)	0.34 (0.156)	0.10 (0.732)	0.22 (0.301)	0.13 (0.693)	284
B Alpha estimates using Connor and Korajczyk (1988) principal component factors extracted from the covariance of asset returns (1964–1997 for NYSE/Amex, 1974–1997 for Nasdaq)							
NYSE/Amex	−0.14 (0.302)	−0.08 (0.485)	0.07 (0.604)	−0.21 (0.158)	−0.14 (0.328)	0.07 (0.617)	165
Nasdaq	−0.64 (0.005)	−0.25 (0.210)	0.39 (0.038)	−0.54 (0.042)	−0.23 (0.288)	0.31 (0.197)	284
C Alpha estimates using the Fama and French (1993) three-factor model (1964–1997 for NYSE/Amex, 1974–1997 for Nasdaq)							
NYSE/Amex	−0.12 (0.257)	−0.13 (0.110)	−0.01 (0.967)	−0.17 (0.132)	−0.11 (0.231)	0.06 (0.686)	165
Nasdaq	−0.42 (0.009)	−0.10 (0.548)	0.32 (0.100)	−0.12 (0.520)	−0.12 (0.427)	0.00 (0.999)	284

Table 11
Average monthly stock turnover for issuers of seasoned common stock and size and book-to-market matched firms

The table shows average monthly stock turnover (shares traded divided by pre-offering shares outstanding) for the five-year periods prior to and following seasoned common stock offerings for sample periods 1964–1995 and 1974–1995, classified by exchange listing. The p-values are for differences in mean turnover between issuers and matched firms.

	5-year period prior to SEO offer date					5-year period following SEO offer date				
	Issuers		Matches			Issuers		Matches		
Industry	Mean	Std Dev	Mean	Std Dev	p-value	Mean	Std Dev	Mean	Std Dev	p-value
A. Seasoned stock offerings by NYSE/Amex listed firms (1964-1995)										
Ind	5.72	4.46	4.37	3.43	0.000	7.08	4.70	4.46	3.27	0.000
Utl	2.01	1.47	3.05	2.69	0.000	2.63	1.85	3.66	2.94	0.000
B. Seasoned stock offerings by Nasdaq listed firms (1974-1995)										
Ind	12.44	45.58	9.33	8.96	0.010	14.48	11.42	8.29	8.75	0.000

Table 12
Five-year buy-and-hold stock returns (%) for all firms undertaking seasoned bond offerings with NYSE- or Amex-listed stock and their control sample matched on exchange listing, size, and (optionally) book-to-market ratios for the 1964–1995 period. The sample is classified by portfolio weights, industry type, and debt category.

Matched firms are required to have stocks listed on NYSE/Amex, and are chosen using size matching alone or size and book-to-market matching. The size-matching is done using the equity market value of the issuer. Book-to-market matching involves first selecting all companies that have an equity market value within 30% of that of the issuer and then choosing the company with the closest book-to-market value. Numbers in the columns marked "Issuer" and "Match" are computed using

$$\sum_{i=1}^{N} \omega_i \left[\prod_{t=\tau_i}^{T_i} (1 + R_{it}) - 1 \right] \times 100,$$

where the weights are $\omega_i \equiv 1/N$ for equal-weighted averages and $\omega_i = MV_i/MV$ for value-weighted averages , where MV_i is the market value (in 1995 dollars) of the issuer in the month prior to the start of the holding period and $MV = \sum_i MV_i$. The p-values in the column marked $p(t)$ are p-values of the t-statistic using a two-sided test of no difference in average five-year buy-and-hold returns for issuer and matched firms.

		Size matching					Size and book-to-market matching				
Industry	Weighting	Num obs.	Issuer	Match	Difference	p(t)	Num obs.	Issuer	Match	Difference	p(t)
A. Straight debt offerings by NYSE/Amex-listed firms											
Ind	EW	1125	52.1	55.1	-3.0	0.556	981	51.7	62.9	-11.2	0.064
Ind	VW	1125	29.2	29.8	-0.6	0.902	981	31.1	32.3	-1.1	0.832
Utl	EW	404	25.3	30.7	-5.5	0.238	348	24.5	35.0	-10.4	0.022
Utl	VW	404	15.0	18.9	-3.9	0.206	348	16.1	26.3	-10.2	0.007
B. Convertible bond offerings by NYSE/Amex-listed firms											
Ind	EW	542	49.3	78.8	-29.5	0.000	459	51.7	67.7	-16.1	0.050
Ind	VW	542	45.0	72.9	-28.0	0.012	459	45.2	73.4	-28.2	0.058

Table 13
Jensen's alphas for stock portfolios of debt issuers and control firms matched on size and book-to-market ratio for stocks listed on NYSE/Amex over the 1964–1997 period, classified by industry type and debt category.

The model is

$$r_{pt} = \alpha_p + \beta_1 \text{RM}_t + \beta_2 \Delta\text{RPC}_t + \beta_3(\text{BAA} - \text{AAA})_t + \beta_4 \text{UI}_t + \beta_5(20\text{y} - 1\text{y})_t + \beta_6 \text{TBILLspr}_t + e_t$$

where r_{pt} is either a portfolio excess return or a return on a zero investment portfolio that is long the stock of the matched firm and short the stock of the issuer, RM is the excess return on the value-weighted CRSP NYSE/Amex/Nasdaq market index, RPC is a factor mimicking portfolio for the percent change in the real per capita consumption of nondurable goods, BAA−AAA is a factor mimicking portfolio for the difference in the monthly yield changes on bonds rated BAA and AAA by Moody's, UI is a factor mimicking portfolio for unanticipated inflation, 20y−1y is the return difference between Treasury bonds with 20 years to maturity and one year to maturity, and TBILLspr is the return difference between 90-day and 30-day Treasury bills. In the panel headings, T is the number of months in the time series regression, N is the average number of firms in the portfolio, and I is the number of issues used to construct the portfolio. The coefficients are estimated using ordinary least squares. Standard errors are computed using the heteroskedasticity consistent estimator of White (1980). The numbers in parentheses are p-values.

		Factor betas						
Portfolio	$\hat{\alpha}$	RM	ΔRPC	BAA−AAA	UI	20y−1y	TBILLspr	Rsq
A. Straight debt offerings by NYSE/Amex listed firms								
Industrials (1964–1997, T=406, N=86, I=981)								
EW-Issuer	−0.10 (.301)	1.11 (.000)	0.01 (.004)	−0.00 (.014)	0.02 (.078)	−0.10 (.019)	0.87 (.309)	0.867
EW-Match	0.12 (.187)	0.97 (.000)	−0.00 (.782)	−0.00 (.217)	−0.01 (.156)	0.00 (.857)	1.24 (.130)	0.888
EW-zero	0.22 (.069)	−0.14 (.000)	−0.01 (.008)	0.00 (.130)	−0.03 (.013)	0.10 (.014)	0.37 (.679)	0.096
VW-Issuer	−0.07 (.420)	0.96 (.000)	−0.00 (.325)	−0.00 (.476)	0.03 (.000)	0.02 (.407)	−0.36 (.576)	0.865
VW-Match	0.14 (.137)	0.93 (.000)	−0.01 (.000)	0.00 (.000)	−0.02 (.021)	0.09 (.005)	−0.05 (.946)	0.854
VW-zero	0.21 (.118)	−0.03 (.223)	−0.01 (.000)	0.01 (.000)	−0.05 (.000)	0.07 (.128)	0.30 (.790)	0.144
Utilities (1965–1997, T=395, N=18, I=348)								
EW-Issuer	−0.22 (.183)	0.55 (.000)	0.01 (.007)	−0.01 (.000)	0.01 (.382)	0.33 (.000)	5.23 (.003)	0.569
EW-Match	0.25 (.043)	0.85 (.000)	0.00 (.130)	−0.00 (.007)	0.01 (.415)	0.15 (.000)	0.45 (.640)	0.778
EW-zero	0.48 (.015)	0.30 (.000)	−0.01 (.072)	0.01 (.003)	−0.00 (.855)	−0.18 (.031)	−4.78 (.017)	0.169
VW-Issuer	−0.29 (.085)	0.51 (.000)	0.01 (.006)	−0.01 (.000)	0.01 (.570)	0.40 (.000)	4.71 (.005)	0.534
VW-Match	0.41 (.004)	0.82 (.000)	−0.00 (.932)	−0.00 (.070)	0.00 (.863)	0.20 (.000)	−1.70 (.150)	0.717
VW-zero	0.71 (.001)	0.31 (.000)	−0.01 (.034)	0.01 (.005)	−0.00 (.752)	−0.20 (.029)	−6.42 (.003)	0.172
B. Convertible bond offerings by NYSE/Amex listed firms								
Industrials (1964–1997, T=407, N=56, I=459)								
EW-Issuer	−0.31 (.066)	1.27 (.000)	0.01 (.002)	−0.00 (.398)	−0.01 (.248)	−0.19 (.000)	0.41 (.704)	0.779
EW-Match	−0.23 (.065)	1.12 (.000)	−0.00 (.761)	−0.00 (.277)	0.01 (.260)	−0.18 (.016)	0.71 (.605)	0.824
EW-zero	0.08 (.673)	−0.15 (.001)	−0.01 (.005)	−0.00 (.939)	0.02 (.079)	0.00 (.970)	0.31 (.847)	0.060
VW-Issuer	−0.33 (.042)	1.14 (.000)	−0.00 (.323)	0.00 (.284)	−0.02 (.016)	−0.08 (.066)	1.28 (.316)	0.776
VW-Match	0.08 (.550)	1.06 (.000)	−0.01 (.000)	0.00 (.961)	0.01 (.321)	−0.01 (.901)	−3.23 (.038)	0.801
VW-zero	0.41 (.064)	−0.07 (.215)	−0.01 (.063)	−0.00 (.416)	0.03 (.020)	0.07 (.406)	−4.51 (.037)	0.043