

# SEO Cycles

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Public equity offerings by seasoned firms (SEOs) exhibit similar but less volatile cycles than initial public offerings of newly public firms. Our paper provides a comprehensive examination of the factors that cause variation in the number of firms issuing SEOs. Specifically, we use four factors from studies of IPOs as potential determinants of SEO cycles. We find that whether tested separately or collectively, only the demand for capital and market timing hypotheses receive strong empirical support in explaining SEO volume. Investor sentiment is not an important factor in explaining SEO volume, nor is information asymmetry.

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## **1. Introduction**

Many studies have reported cycles in initial public offerings (IPOs) and have examined the factors associated with the wide variation of those equity offering activities over time (e.g., Ibbotson and Jaffe, 1975; Ibbotson, Sindelar, and Ritter, 1988; Lowry and Schwert, 2002; among others). However, cycles in seasoned equity offerings (SEOs) have received less attention. Choe, Masulis, and Nanda (1993) and Bayless and Chaplinsky (1996) both report the variation of SEO volume over time, but they each focus on a single explanation for this variation. Ours is the first comprehensive study of SEO cycles, that is, the first to consider a wide range of explanations for the time-varying nature of SEOs.

Lowry (2003) tests three hypotheses that seek to explain the fluctuations in IPO volume: information asymmetry, demand for capital, and investor sentiment. She finds that all three are related to changes in IPO volume over time. However, the demand for capital and investor sentiment hypotheses receive stronger support than the information asymmetry hypothesis. Pástor and Veronesi (2005) develop a model of IPO market timing and predict that IPO waves should be preceded by high market returns and followed by low market returns. Although studies have reported the cyclical phenomenon of SEOs, no study has examined factors other than information asymmetry as the cause for the variation of SEOs.

We believe that the hypotheses tested in Lowry (2003) and Pástor and Veronesi (2005) apply to SEOs as well. Our primary objective is thus to investigate the determinants of SEO cycles in a comprehensive manner, that is, by considering the hypotheses of Lowry and Pástor and Veronesi. Because SEOs and IPOs are both equity-raising events, they can be influenced by common factors. Therefore, our second objective

is to compare SEO and IPO cycles to better understand the differences and similarities between the two.

The hypotheses include the following predictions about SEOs. First, the information asymmetry hypothesis predicts that SEO volume is negatively related to information asymmetry. Second, the demand for capital hypothesis predicts that the volume of SEOs is positively related to investment opportunities. Third, the investor sentiment hypothesis predicts that SEO volume is positively related to sentiment. Fourth, the market timing hypothesis predicts that the volume of SEOs is positively related to the market valuation of equity.

Descriptively, we find that there is significant variation in the monthly (quarterly) SEO volume, but this variation is smaller than that of monthly (quarterly) IPO volume. For example, there are months with no IPOs. However, seasoned firms issue equity every month in the 33 years from 1970 to 2002. Our main results concern the factors that influence SEO variation over time. Whether tested separately or collectively, only the demand for capital and market timing hypotheses receive strong empirical support in explaining SEO volume. Investor sentiment is not an important factor in explaining SEO volume, nor is information asymmetry.

Our results are mostly consistent with Pástor and Veronesi (2005) that market timing is an important consideration when firms raise equity. Similar to Lowry (2003), we also find that demand for capital is a significant factor for SEO cycles, and information asymmetry is not an important factor. However, seasoned firms appear to be less susceptible to investor sentiment and information asymmetry than newly public firms.

## **2. Literature review and hypotheses**

### *2.1. Information asymmetry*

Early studies on SEOs (e.g., Mikkelsen and Partch, 1986; Asquith and Mullins 1986; Masulis and Korwar, 1986) find that the market reacts negatively to the announcement of an SEO, an average decrease of two to three percent on or around the announcement date. The negative announcement effect is generally interpreted as consistent with the Myers and Majluf (1984) adverse selection model. Korajczyk, Lucas, and McDonald (1991) develop a time-varying information asymmetry model of equity issuance. An implication of their model is that more firms issue when the information asymmetry problem is less pronounced.

Choe, Masulis, and Nanda (1993) argue that firms sell seasoned equity when they face lower adverse selection costs, which occurs in periods with more promising investment opportunities and with less uncertainty about assets in place. They find that adverse selection is significantly lower in expansionary periods and in periods with a relatively larger volume of equity financing.

Bayless and Chaplinsky (1996) find that the price reaction to equity issue announcements in high volume periods is smaller than in low equity volume periods. They interpret this evidence as supportive of the existence of “windows of opportunity” for equity issues that can be partially explained by reduced levels of information asymmetry. They use seasoned stock issue volume as a measure of market conditions but do not investigate why the SEO volume changes over time.

Based on these models, we expect SEO volume to be negatively related to proxies for information asymmetry.

## *2.2. Demand for capital*

The demand for capital hypothesis says that firms issue more equity when they have better investment opportunities. When overall economic conditions improve and all firms have better expected growth, financing activity increases. Although firms can finance by issuing securities other than equity, firms may prefer equity to debt in such periods (Baker and Wurgler, 2000). Lowry (2003) finds evidence that IPO volume is positively related to demand-for-capital proxies. Harjoto and Garen (2003) find that IPO firms with higher unanticipated positive growth are more likely to conduct an SEO during four years after their IPOs. Brau, Ryan, and DeGraw (2006) provide survey evidence from CFOs that funding for future growth and market timing, among others, are the most important decision when firms make IPO decisions.

We thus expect SEO volume to be positively related to future investment opportunities in the aggregate economy.

## *2.3. Investor sentiment*

The investor sentiment hypothesis predicts that changes in investor sentiment cause the costs of issuing equity, and thus SEO volume, to fluctuate over time. Baker and Wurgler (2006) study the effect of investor sentiment on a cross section of stock returns. Cornelli, Goldreich, and Ljungqvist (2006) find that overoptimistic sentiment among small retail investors is related to high initial returns and subsequent poor long-run performance. To our knowledge, no other study to date examines how investor sentiment affects seasoned equity offerings.

During periods when investors are especially optimistic and are willing to pay higher prices for equity, firms should try to issue more equity. Thus, we expect SEO volume to be positively related to investor sentiment.

#### *2.4. Market timing*

The market timing hypothesis predicts that firms time market conditions to issue securities and choose to issue equity when market valuation of equity is high. This hypothesis appears in studies of both IPOs and SEOs. For example, Lucas and McDonald (1990) present a model showing that stock issues should be preceded by positive market returns, and there is also a positive correlation between volume of issues and general market returns. Benninga, Helmantel, and Sarig (2005) develop a model explaining entrepreneurs' going public and reprivatizing decisions. The model predicts that when firm values are higher because of a better economic environment, more firms go public. Because of strong cross-correlation between cash flows generated by all firms, IPOs come in waves.

Baker and Wurgler (2000) find that the equity share in new issues has predictive power for aggregate stock market returns. High equity shares predict low market returns. They interpret this evidence as market timing by firms and as inconsistent with market efficiency. The variable of interest in their paper is the equity share, which is the total equity issue as a fraction of total equity and debt issues. They do not distinguish between issues by IPO firms and SEO firms.

Lowry and Schwert (2002) attribute the positive relation between IPO initial returns and future number of IPOs as evidence of firms timing market conditions. They find that more firms file for IPOs and fewer firms withdraw offerings after observing high

initial returns of recent IPOs. Graham and Harvey (2001) conduct a survey asking CFOs directly what they think to be the most important factors affecting their firms' stock issuance decisions. They report that firms are reluctant to issue common stock when they perceive that the stock is undervalued. Recent stock price performance is the third most popular factor affecting equity-issuance decisions, also supportive of the "windows of opportunity" argument.

Pástor and Veronesi (2005) develop a model of IPO timing and predict that IPO waves are caused by three broad market conditions: declines in expected returns, increases in expected profitability, and increases in a priori uncertainty. Thus, IPO waves should be preceded by high market returns and followed by low market returns.

In this paper, we test the market timing hypothesis as applied to SEOs: if firms time market valuations to issue more equity when the entire market valuation of equity is high, then SEO volume should be positively related to the market valuation of equity.

### **3. Data and sample description**

#### *3.1. Data*

We use Thomson Financial Global New Issues data for our SEO and IPO samples. We obtain a total of 26,172 common stock offerings in the United States from 1970 to 2002. Among these, 14,575 are seasoned equity offerings and 11,597 are initial public offerings. We discard closed end funds, unit offerings, real estate investment trusts, and ADRs. We delete issues with an offer price less than three dollars or total proceeds of less than \$0.5 million. We also require that the issues have at least 25% primary shares. Using these criteria, we identify 8,250 SEOs and 8,136 IPOs. We measure monthly and quarterly

SEO volume and IPO volume by the number of issues ( $N_{SEO}$ ,  $N_{IPO}$ ).<sup>1</sup> Following Choe, Masulis, and Nanda (1993) and Lowry (2003), we also scale both monthly and quarterly series by the total number of public companies at the end of last year ( $N_{SEO,\%}$ ,  $N_{IPO,\%}$ ). The scaled monthly and quarterly number of offerings control for changes in economic activity over time.

To investigate how SEO cycles are affected by various economic and noneconomic factors, we also create proxies for the factors. As discussed earlier, there are four hypotheses that have been proposed to explain the variation in IPO market activity. We construct proxies for the factors in the four hypotheses, following Lowry (2003) and Pástor and Veronesi (2005), to examine their explanatory power for SEO cycles. We measure the variables at quarterly intervals for two reasons. The first is to be consistent with prior studies and to facilitate the comparisons of our results with other studies, and the second is that many variables are not available at monthly intervals.

To measure the effect of asymmetric information on equity issuance, we construct three proxies. The first is the standard deviation of abnormal returns around earnings announcement days ( $ABRET_{STD}$ ). For  $ABRET_{STD}$ , we first calculate the three-day cumulative abnormal returns for all firms making earnings announcement in a quarter, and then compute the standard deviation of all abnormal returns observed around the earnings announcement day in that quarter. The abnormal return is the difference between the stock return and the return of the market. We use equally weighted market returns.

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<sup>1</sup> Another way to measure monthly IPO or SEO volume is to use total proceeds raised each month deflated by the market capitalization. Lowry (2003) shows that the number of issues series and proceeds series are highly correlated with a correlation of 0.90 between 1970 and 1996. Thus, we only use the monthly number of issues as a measure of IPO and SEO volume.

Another measure of information asymmetry is the standard deviation of analysts' forecasts of long-term earnings growth for each quarter ( $IBES_{STD}$ ). This is the average standard deviation of analyst forecasts of long-term earnings growth for all companies during a quarter. The construction of these two variables follows Lowry (2003). Our third measure of information asymmetry is the standard deviation of daily market returns within a quarter ( $MRET_{STD}$ ). We expect these proxies to be negatively related to SEO volume.

We use five variables to test the demand for capital hypothesis: the one-year GDP growth rate following a quarter ( $GDP_{+1, +4}$ ), the one-year sales growth rate of all public companies ( $Sales_{+1, +4}$ ), the aggregate market-to-book ratio (MTB), the discount rate (T-bond rate), and expected future long-term earnings growth ( $\Delta IBES_{MEAN}$ ). We obtain quarterly GDP data from NBER. The sales growth rate is measured by aggregating the revenues of all public companies on Compustat for two consecutive quarters, computing the quarterly sales growth rate, then using the quarterly growth rate to find the one-year growth rate after each quarter. Firms should issue equity before rapid economic growth if the issues are driven by the demand for capital. Thus, we expect SEO issue volume to be positively related to future GDP and sales growth.

We also construct the quarterly aggregate market-to-book (MTB) ratio across all public firms available on CRSP and Compustat. We calculate the market value (number of shares outstanding multiplied by quarter-end closing price) for each firm each quarter for which we have market value at the end of the quarter and book value at the end of previous fiscal year. We aggregate market value and book value of all available firms and divide the aggregate market value by the aggregate book value. The market-to-book ratio is

widely used as a measure of investment opportunities. We expect SEO volume to be positively related to prior and concurrent MTB.

A lower discount rate could result in more attractive corporate investment projects. We use the ten-year T-bond rate as a proxy for the discount rate. We obtain monthly T-bond rates from the Federal Reserve. We also use financial analysts' forecast of long-term earnings growth ( $ISEB_{MEAN}$ ) as another proxy for future investment opportunities. We obtain analysts' long-term earnings growth forecasts from IBES. For each quarter, we calculate the average forecasted long-term growth rate. SEO volume is expected to be negatively related to the discount rate and positively related to the long-term earnings growth rate.

To test the investor sentiment hypothesis, we use future market returns, as in Lowry (2003). We also use the consumer sentiment index (SINDEX) from the website of The Conference Board, Inc.

To test the market timing hypothesis, we construct an aggregate market return series. The market returns are equally weighted quarterly returns. For each quarter, we calculate issuing quarter market return ( $MRET$ ), previous quarter market return ( $MRET_{-1}$ ), one year prior market returns ( $MRET_{-4,-1}$ ), one quarter after market returns ( $MRET_{+1}$ ), and one year after market returns ( $MRET_{+1,+4}$ ). We use these market returns to test whether firms successfully time the market to sell shares when the overall market valuation is high. We expect past market returns to be positively related to SEO volume, and future market returns to be negatively related to SEO volume.

To control for seasonality in the equity issuance market, we use an indicator variable for the first quarter of the year (QTR1). Lowry (2003) reports that there are

significantly fewer IPOs and SEOs in the first quarter of the year. We also use a business cycle indicator EXPANSION, which has a value of one if two consecutive months in a quarter are in the expansionary phase of a cycle.

### 3.2. *SEO and IPO cycles*

Table 1 presents descriptive statistics of both monthly and quarterly SEO volume and IPO volume for comparison from 1970-2002. The average monthly numbers of IPOs and SEOs are similar, 20.83 for SEOs and 20.55 for IPOs. However, the standard deviation of monthly number of SEOs (12.27) is much lower than that of IPOs (18.44), which suggests that the IPO market is more volatile than the SEO market. The smallest monthly number of SEOs for the entire sample period is two. However, there are 32 months in the 33-year sample period without any IPOs. For the quarterly SEO and IPO series, the mean number is 62.5 for SEOs and 61.64 for IPOs. Again the standard deviation of the SEO quarterly series (32.98) is significantly lower than that of the IPO series (52.00).<sup>2</sup> The IPO market is more volatile than the SEO market and clustering during certain periods is more pronounced for unseasoned firms than for seasoned firms.

[Insert Table 1 Here]

The scaled monthly (quarterly) number of SEOs ranges between 0.03% (0.18%) and 1.34% (3.26%) with a mean of 0.33% (1.00%). The scaled number of monthly (quarterly) IPOs ranges between zero (zero) and 1.43% (3.40%) with a mean of 0.30% (0.91%). Again, the standard deviations of the monthly and quarterly scaled number of

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<sup>2</sup> Although not reported in Table 1, we conduct an F-test to determine whether the variances of monthly and quarterly SEO series are equal to those of monthly and quarterly IPO series. For the monthly series, the F value is 2.26, significant at 1% level. The F value is 2.48 for the quarterly test, also significant at the 1% level.

SEOs (0.21% and 0.59% respectively) are smaller than those of monthly and quarterly scaled number of IPOs (0.27% and 0.75% respectively).

### *3.3. Descriptive statistics of explanatory variables*

[Insert Table 2 Here]

Table 2 shows descriptive statistics for the explanatory variables used in our multiple regressions. The moving one-year GDP growth after each issuing quarter is 3.1% and the one-year sales growth of all public firms averages 9.4%. The aggregate market-to-book ratio of equity has a mean of 2.10 and varies between 1.02 and 4.45. The T-bond rate averages 7.95% over the sample period. We are only able to get 85 quarterly observations for the mean and standard deviation of analysts' long-term earnings growth forecasts because this variable is available only after December 1981. The average long-term earnings growth forecast made in a quarter across all firms is 17.2% with a standard deviation of 4.2%. The quarterly consumer confidence index has a mean of 85.7 and varies between 54.4 and 110.1. The average quarterly standard deviation of abnormal returns around earnings announcement day is 7.8%. The average quarterly market return is 3.7%, and the average standard deviation of daily market returns is 0.6%. Eighty-three percent of the quarters are designated as in an expansionary phase of business cycle.

## **4. Multiple regression analysis of SEO cycles**

We use multiple regressions to investigate which theories best explain SEO volume. The dependent variable is the quarterly number of SEOs ( $N_{SEO, \%}$ ) scaled by the

number of public firms at the prior year-end. In all regressions, we control for seasonality using a first quarter indicator, QTR1.

When we use OLS to estimate the relation between SEO volume and explanatory variables, we find strong evidence of first-order serial correlation of the error terms; the Durbin-Watson D statistics are very close to zero. Thus, we use AR (1) feasible GLS or the Cochrane-Orcutt procedure (Greene, 2003) to correct for serial correlation.

[Insert Table 3 Here]

#### *4.1. Information asymmetry*

Model 1 of Table 3 shows the effect of information asymmetry on SEO volume. The average standard deviation of financial analysts' forecast ( $IBES_{STD}$ ) shows a positive sign while the standard deviation of abnormal return around earning announcement day during the quarter ( $ABRET_{STD}$ ) and the standard deviation of analyst long-term earnings forecast ( $IBES_{STD}$ ) both have their expected negative signs, but none is significant. The EXPANSION indicator is positive but only marginally significant at the 10% level, and the first quarter indicator is significant at the 5% level. Thus, information asymmetry variables are not related to SEO volume after controlling for business cycles. This evidence is in contrast to Choe, Masulis, and Nanda (1993) that information asymmetry affects SEO cycles.

#### *4.2. Demand for capital*

Model 2 of Table 3 shows tests of the effect of future investment opportunities on SEO volume. GDP growth, change in analysts' long-term earnings forecast ( $\Delta IBES_{MEAN}$ ), and prior one-year change of long-term T-bonds are all significant with the expected signs. The coefficient for GDP growth is 0.18, significant at the 5% level; the coefficient for

change in analysts' long-term earnings forecast ( $\Delta \text{IBES}_{\text{MEAN}}$ ) is 0.40, significant at the 5% level; and the coefficient for prior one-year change of long-term T-bond is -0.16, also significant at the 5% level. The EXPANSION dummy is not significant in Model 2. The change of aggregate market-to-book ratio ( $\Delta \text{MTB}$ ) has the expected positive sign but is not significant, while sales growth is marginally significant at the 10% level with the wrong sign.

Thus, not all proxies for the demand for capital are individually significant with the expected signs. However, this result is likely caused by multicollinearity among the explanatory variables. We conclude that SEO volume is related to demand for capital.

#### *4.3. Investor sentiment*

Model 3 of Table 3 tests the investor sentiment hypothesis. SINDEXT has the expected positive sign but is not significant, and future market return has the expected negative sign (-0.007) and is significant at the 5% level. Because the future one-year market return can also be considered a market timing proxy, we conclude that we do not find reliable evidence that investor sentiment affects SEO cycles.

#### *4.4. Market timing*

Model 4 of Table 3 shows tests of the timing hypothesis. Both the past and future one-year market returns are significant with the expected signs. In addition, the past quarterly return has a coefficient of 0.006 and is significant at 5%, and the future quarterly return has the expected sign but is not significant. Thus, seasoned firms issue equity after market run-ups and prior to market declines, consistent with the market timing hypothesis.

#### *4.5. The horse race*

So far, when we test the four hypotheses individually with their respective proxy variables, we find the demand for capital and market timing to be significantly related to SEO volume. Whether the demand for capital and market timing remain significant after controlling for competing hypotheses is uncertain. Thus, we estimate a multiple regression with all explanatory variables.

Six variables in Model 5 of Table 3 have the expected sign and are significant at the 5% level. The standard deviation of daily market return, the future one-year GDP growth, the change in analyst long-term earnings growth, the prior one-year T-bond rate change, and the prior one-year and one-quarter market returns are all significant with the expected signs. The results are consistent with all hypotheses except investor sentiment. However, many variables have unexpected signs. Joint F-tests for groups of variables, not reported in detail, support the demand for capital and timing hypotheses at the 1% level. The information asymmetry variables as a group are not significant, and the investor sentiment variables are significant but of the wrong sign.

## **5. Summary**

We empirically examine the cycles of seasoned equity offerings. We find hot and cold markets over the last three decades and report several new findings. Using the monthly number of SEOs as a measure of volume, we find that there is significant variation in monthly SEO volume but that this variation is smaller than that of monthly IPO volume. It appears that in certain periods, private firms simply find the cost of going public to be prohibitively high.

We further test how economic and noneconomic factors affect SEO cycles. These factors are suggested by four hypotheses: information asymmetry, demand for capital, investor sentiment, and market timing. When tested separately or collectively, only the demand for capital and market timing hypotheses receive strong empirical support in explaining SEO volume. Investor sentiment is not an important factor in explaining SEO volume, nor is information asymmetry.

Our results are consistent with Pástor and Veronesi (2005) that market timing is an important consideration when firms raise equity although they do not control for investor sentiment in their models. Similar to Lowry (2003), we also find that demand for capital is a significant factor for SEO cycles and that information asymmetry is not an important factor. However, contrary to Lowry (2003), we do not find evidence that investor sentiment affects SEO cycles. After controlling for competing hypotheses, we do not find evidence that information asymmetry affects SEO cycles in our sample period, which is in contrast to Choe, Masulis, and Nanda (1993). Seasoned firms are less susceptible to investor sentiment and information asymmetry than newly public firms.

## References

- Asquith, Paul and David W. Mullins, Jr., 1986. Equity issues and offering dilution, *Journal of Financial Economics* 15, 61-89.
- Baker, Malcolm and Jeffrey Wurgler, 2000. The equity share in new issues and aggregate stock returns, *Journal of Finance* 55, 2219-2257.
- Baker, Malcolm and Jeffrey Wurgler, 2006. Investor sentiment and the cross-section of stock returns, *Journal of Finance* 61, 1645-1680.
- Bayless, Mark and Susan Chaplinsky, 1996. Is there a window of opportunity for seasoned equity issuance? *Journal of Finance* 51, 253-278.
- Benninga, Simon, Mark Helmantel, and Oded Sarig, 2005. The timing of initial public offerings, *Journal of Financial Economics* 75, 115-132.
- Brau, James C., Patricia A. Ryan, and Irv DeGraw, 2006. Initial public offerings: CFO perceptions, *The Financial Review* 41, 483-511.
- Choe, Hyuk, Ronald W. Masulis, and Vikram Nanda, 1993. Common stock offerings across the business cycle, *Journal of Empirical Finance* 1, 3-31.
- Cornelli, Francesca, David Goldreich, and Alexander P. Ljungqvist, 2006. Investor sentiment and Pre-IPO markets, *Journal of Finance* 61, 1187-1216.
- Graham, John R. and Campbell R. Harvey, 2001. The theory and practice of corporate finance: Evidence from the field, *Journal of Financial Economics* 60, 187-243.
- Greene, William H., 2003. *Econometric Analysis*, 5th edition. (Pearson Education, Inc., Upper Saddle River, New Jersey).
- Harjoto, Maretno and John Garen, 2003. Why do IPO firms conduct primary seasoned equity offerings? *The Financial Review* 38, 103-125.
- Ibbotson, Roger G. and Jeffrey F. Jaffe, 1975. "Hot issue" markets, *Journal of Finance* 30, 1027-1042.
- Ibbotson, Roger G., Jody L. Sindelar, and Jay R. Ritter, 1988. Initial public offerings, *Journal of Applied Corporate Finance* 1 (Summer), 37-45.
- Korajczyk, Robert A., Deborah J. Lucas, and Robert L. McDonald, 1991. The effect of information releases on the pricing and timing of equity issues, *Review of Financial Studies* 4, 685-708.

- Lowry, Michelle, 2003. Why does IPO volume fluctuate so much? *Journal of Financial Economics* 67, 3-40.
- Lowry, Michelle and G. William Schwert, 2002. IPO market cycle: Bubbles or sequential learning? *Journal of Finance* 57, 1171-1200.
- Lucas, Deborah J. and Robert L. McDonald, 1990. Equity issues and stock price dynamics, *Journal of Finance* 45, 1019-1043.
- Masulis, Ronald W. and Ashok N. Korwar, 1986. Seasoned equity offerings, *Journal of Financial Economics* 15, 91-118.
- Mikkelson Wayne H. and M. Megan Partch, 1986. Valuation effects of security offerings and the issuance process, *Journal of Financial Economics* 15, 31-60.
- Myers, Stewart C. and Nicholas Majluf, 1984. Corporate financing and investment decisions when firms have information the investors do not have, *Journal of Financial Economics* 13, 187-221.
- Pástor, Ľuboš and Pietro Veronesi, 2005. Rational IPO waves, *Journal of Finance* 60, 1713-1757.

Table 1  
**Descriptive statistics of SEOs and IPOs from 1970-2002**

This table shows descriptive statistics of SEOs and IPOs from 1970-2002. We report the mean, median, standard deviation (STD), minimum (Min), maximum (Max), and number of observations (N) for each variable.  $N_{SEO, M}$  ( $N_{IPO, M}$ ) denotes the number of SEOs (IPOs) in a month from January 1970 to December 2002.  $N\%_{SEO, M}$  ( $N\%_{IPO, M}$ ) denotes the number of SEOs (IPOs) as a percentage of the number of total public firms at the end of last year in a month from January 1970 to December 2002.  $N_{SEO, Q}$  ( $N_{IPO, Q}$ ) denotes the number of SEOs (IPOs) in a quarter from 1970 to 2002.  $N\%_{SEO, Q}$  ( $N\%_{IPO, Q}$ ) denotes number of SEOs (IPOs) as a percentage of the number of total public firms at the end of last year in a quarter from 1970 to 2002.

Variable	Mean	Median	STD	Min	Max	N
$N_{SEO, M}$	20.83	18.50	12.27	2	74	396
$N_{SEO, Q}$	62.50	55.00	32.98	13	180	132
$N_{IPO, M}$	20.55	17.00	18.44	0	83	396
$N_{IPO, Q}$	61.64	50.00	52.00	0	202	132
$N\%_{SEO, M}$	0.334	0.283	0.213	0.028	1.340	396
$N\%_{SEO, Q}$	1.002	0.884	0.586	0.182	3.260	132
$N\%_{IPO, M}$	0.303	0.253	0.266	0	1.431	396
$N\%_{IPO, Q}$	0.909	0.779	0.749	0	3.404	132

Table 2  
**Descriptive statistics of explanatory variables**

GDP<sub>+1, +4</sub> is the one-year GDP growth rate after an issuing quarter. Sales<sub>+1, +4</sub> is the one-year sales growth rate for all public firms after an issuing quarter. MTB is the average market-to-book ratio of all firms available on CRSP and Compustat in a quarter. IBES<sub>MEAN</sub> is the average analyst forecast of long-term earnings growth for all firms made in a quarter. IBES<sub>STD</sub> is the average of standard deviations of analysts' forecast of long-term earnings growth for all firms made in a quarter. T-bond is the one-year T-bond rate at the end of a quarter. SINDEXT is the consumer confidence index published by The Conference Board Inc. ABRET<sub>STD</sub> is the standard deviation of abnormal returns around earnings announcements across all firms which made earnings announcements in a quarter. MRET is the market return for an issuing quarter, and MRET<sub>STD</sub> is the standard deviation of daily market returns during that quarter. MRET<sub>-4, -1</sub> (MRET<sub>+1, +4</sub>) is the one-year market return prior to (after) an issuing quarter. EXPANSION is a business cycle indicator variable with a value of 1 if NBER defines a quarter is in an expansionary phase of a business cycle.

Variable	Mean	Median	STD	Min	Max	N
GDP <sub>+1, +4</sub>	3.096	3.444	2.323	-2.861	8.646	129
Sales <sub>+1, +4</sub>	9.408	10.158	6.401	-9.117	19.858	132
MTB	2.100	1.939	0.828	1.024	4.449	132
IBES <sub>MEAN</sub>	17.198	16.339	2.519	14.291	23.631	85
IBES <sub>STD</sub>	4.214	3.850	0.809	3.371	6.263	85
T-bond	7.953	7.460	2.373	3.870	15.320	132
SINDEXT	85.748	88.800	12.539	54.400	110.100	132
ABRET <sub>STD</sub>	7.815	7.324	2.169	4.570	13.516	126
MRET	3.697	3.253	12.772	-29.415	48.085	132
MRET <sub>STD</sub>	0.641	0.549	0.334	0.250	2.484	132
MRET <sub>-4, -1</sub>	14.560	16.206	25.114	-38.469	107.089	132
EXPANSION	0.826	1.000	0.381	0.000	1.000	132

Table 3

**Multiple regression analysis of SEO volume ( $N_{\text{SEO}, \%}$ )**

We use the AR (1) feasible GLS (Cochrane-Orcutt procedure) to correct for autocorrelation in error terms. The dependent variable is the quarterly number of SEOs ( $N_{\text{SEO}, \%}$ ) scaled by the number of public firms at the prior year-end.  $\text{IBES}_{\text{STD}}$  is the average of standard deviations of analysts' forecast of long-term earnings growth for all firms made in a quarter.  $\text{ABRET}_{\text{STD}}$  is the standard deviation of abnormal returns around earnings announcements across all firms who made earnings announcements in a quarter.  $\text{MRET}_{\text{STD}}$  is the standard deviation of daily market returns during a quarter.  $\text{GDP}_{+1, +4}$  is the one-year GDP growth rate after an issuing quarter.  $\text{Sales}_{+1, +4}$  is the one-year sales growth rate for all public firms after an issuing quarter.  $\text{IBES}_{\text{MEAN}}$  is the average analysts' forecast of long-term earnings growth for all firms made in a quarter.  $\text{MTB}$  is the average market-to-book ratio of all firms available on CRSP and Compustat in a quarter.  $\text{T-Bond}_{-4, -1}$  is the one-year T-bond rate change at the prior quarter-end.  $\text{T-Bond}_{+1, +4}$  is the one-year T-bond rate change after an issuing quarter.  $\text{INDEX}$  is the consumer confidence index published by The Conference Board Inc.  $\text{MRET}_{-1}$  ( $\text{MRET}_{+1}$ ) is the quarterly market return prior to (after) an issuing quarter.  $\text{MRET}_{-4, -1}$  ( $\text{MRET}_{+1, +4}$ ) is the one-year market return prior to (after) an issuing quarter.  $\text{EXPANSION}$  is a business cycle indicator variable with a value of 1 if NBER defines a quarter is in an expansionary phase of a business cycle. We report the number of observations (OBS), adjusted R-squared (Adj.  $R^2$ ), and F-value for each model.

Table 3 continued

Variables	1		2		3		4		5	
	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat
IBES <sub>STD</sub>	0.211	1.66							0.042	0.70
ABRET <sub>STD</sub>	-0.020	-0.54							0.023	1.07
MRET <sub>STD</sub>	-0.201	-1.56							-0.250	-2.02**
GDP <sub>+1, +4</sub>			0.177	4.77**					0.141	4.83**
Sales <sub>+1, +4</sub>			-0.020	-1.99					-0.015	-2.01**
$\Delta$ IBES <sub>MEAN</sub>			0.401	2.91**					0.264	2.38**
$\Delta$ MTB			0.190	1.32					0.210	1.30
T-Bond <sub>4, -1</sub>			-0.164	-4.68**					-0.107	-3.99**
T-Bond <sub>+1, +4</sub>			-0.012	-0.30					-0.009	-0.30
SINDEX					0.001	0.14			-0.013	-2.81**
MRET <sub>4, -1</sub>							0.005	2.69**	0.006	2.91**
MRET <sub>-1</sub>							0.006	2.70**	0.014	5.11**
MRET <sub>+1</sub>							-0.001	-0.60	-0.003	-0.99
MRET <sub>+1, +4</sub>					-0.007	-3.91**	-0.006	-3.22**	0.001	0.46
EXPANSION	0.310	1.68	0.084	0.53					-0.002	-0.01
QTR1	-0.254	-3.73**	-0.182	-2.39**	-0.264	-5.11**	-0.239	-4.71**	-0.083	-1.30
N	84		80		130		130		80	
Adj. R <sup>2</sup>	0.43		0.85		0.45		0.58		0.95	
F	11.51		52.12		27.93		30.47		82.96	

\*\* denotes significance at the 5% level.