Can Managers Forecast Aggregate Market Returns?

by

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Abstract

Previous studies have found that the share of equity in total new issues (*S*) is negatively correlated with future equity market returns (in-sample). Researchers have interpreted this finding as evidence that managers are able to predict the systematic component of their stock returns and to issue equity when the market is overvalued. In this paper we show that after controlling for "look-ahead bias", *S* does not provide real-time predictive power for forecasting market returns. Further, we show that even the in-sample predictive power of *S* appears to stem from aggregate pseudo market timing as in Schultz (2003) and not from any abnormal ability of managers to time the equity markets.

Introduction

Do managers accurately time the market when issuing new securities? This is an important and controversial issue among financial economists. In answering this question at the firm level, many researchers examine the long-run stock performance following equity issues. Consistent with a behavioral view, several studies find that firms conducting initial public offerings (IPOs) or seasoned equity offerings (SEOs) experience negative long-run abnormal returns (see Ritter (1991), Loughran and Ritter (1995), and Spiess and Affleck-Graves (1995)). These findings suggest that managers can time the equity market in choosing when to issue securities.[1]

Perhaps even more surprisingly, Baker and Wurgler (2000) find evidence supporting the idea that managers can predict not only the idiosyncratic portion of their stock returns but also the systematic component. Specifically, they find that the share of equity in total new issues, *S,* is strongly negatively correlated with future aggregate equity market returns. This finding is a potentially serious condemnation of capital market efficiency because it suggests that markets are unable to allocate capital in an efficient manner even in the aggregate.

While the findings in Baker and Wurgler (2000) are suggestive that managers time the aggregate market when issuing securities, those results are based on *in-sample* tests. However, a number of recent studies have raised concerns over in-sample methodology in predictive regressions and have shown that in-sample predictability is not necessarily inconsistent with market efficiency. As argued by Ferson and Sarkissian (2003), Stambaugh (1999), Goyal and

[1] In contrast to these long run underperformance findings, Brav, Geczy, and Gompers (2000) show that after controlling for size, book-to-market ratio, and momentum (for seasoned offerings), underperformance of equity issuers largely disappears. Eckbo, Masulis, and Norli (2000) show that equity issuing firms have lower systematic risk and greater subsequent liquidity, and after controlling for these things, equity issuing firms do not underperform their non-issuing counterparts.

Welch (2003), Brennan and Xia (2002), and Lewellen and Shanken (2002), among others, in-sample estimates may lead to a look-ahead bias since in-sample estimation does not account for the fact that managers and investors only have access to past data when they make their forecasts. Thus, it is not clear from the in-sample evidence in Baker and Wurgler (2000) whether managers can predict future aggregate returns in real time.

To address this issue, we employ out-of-sample methods to evaluate the forecasting ability of the equity share in total new issues. This analysis allows us to assess the predictive ability of *S*, explicitly accounting for the fact that managers only have access to historical data when they try to forecast future equity market returns. We show that after controlling for the look-ahead bias embedded in in-sample time-series regressions, *S* does not provide real-time predictive power for forecasting market returns. Further, we show that even the in-sample predictive power of *S* may stem from pseudo aggregate market timing as shown in Schultz (2003) and not from any abnormal ability of managers to time the equity markets.

Our results are inconsistent with managers being able to time the stock market. That is, we find no evidence that market participants are able to glean any useful predictive power from the aggregate equity share to predict future market returns in "real time" during the period 1927-2002 or any of the sub-periods we examine. We show that a model using *S* as a predictor of future market returns does not outperform a naïve model that includes only a constant term. This finding is robust to changes in pre-estimation period, out of sample estimation technique, and definition of market returns. In fact, we find evidence suggesting that in the last 30 years investors would have been better off not using *S* to predict future aggregate equity market returns but instead simply using the historical unconditional equity premium.

Consistent with a look-ahead bias, we find that parameter uncertainty is an important determinant of the difference between the in-sample and out-of-sample performance of *S*. We show that in our regressions using only past information, the estimated coefficient from regressing market returns on lagged *S* varies dramatically over time as more information is incorporated into the estimation. Intuitively, this means that a market participant trying to capitalize on a relation between *S* and future returns does not know how closely his estimate of the relation (based on past information) tracks what the future relation will be. Without peeking into the future, this uncertainty over the true value of the relation mitigates the usefulness of *S* as a predictive variable. As a result, the real-time economic value of such predictive regressions is limited at best. Our results show that there is sufficient variability of this coefficient estimate over time that market participants are unable to use equity share to predict future returns any better than if they always simply guessed that returns would be equal to the historical unconditional market premium.

Our work is related to Schultz (2003), who argues that underperformance of IPOs and SEOs is likely to be observed *ex post* even if capital markets are efficient. He finds that what appears to be prescient timing by managers may be a statistical illusion. Such *pseudo market timing* can occur if managers are more likely to issue equity when stock prices are high and less likely to issue equity when prices are low. In this case equity issues will appear to cluster before market downturns (*ex post*), even if managers have no forecasting ability at all (*ex ante*). Consistent with Schultz, we present evidence of pseudo *aggregate* market timing. That is, we find a strong positive correlation between market prices and the aggregate equity share of new issues surrounding the two structural breaks in U.S. economic activity identified by Perron (1989)—the Great Depression (1929-1931) and the Oil Crisis of the early 1970's (1973-1974).

This strong positive correlation induces a pseudo market timing effect in *aggregate* returns. The reason of this is that *S* declines during these events making the pre-shock (post-shock) *S* look relatively high (low) just before (after) the market crashes. We find that excluding these event years from the sample causes even the in-sample predictive ability of *S* to vanish. These findings are important because they point out the problem posed by pseudo market timing even beyond what Schultz (2003) finds. Even when examining aggregate returns in calendar time, pseudo market timing may exist around significant systemic economic events.

Finally, we also investigate the predictive value of the aggregate equity share of new issues (*S*) after the introduction of the Nasdaq National Market System. Because the development of the Nasdaq market has enabled a significantly larger set of firms to issue equity at earlier stages in their life-cycle (see Fama and French (2003)), there may be a greater opportunity for managers to time equity markets during this period. Thus, we test the hypothesis that *S* has predictive value in the period 1975-2002. We find no evidence that *S* has in-sample predictive power during this period. In fact, in this sub-period, we find a *positive* relation between *S* and future equally-weighted equity returns (which are more sensitive to the stock returns of small firms) suggesting that managers issue equity when it is *under*valued, though this relation is not statistically significant.

Our findings are important because they shed light on whether capital markets are able to efficiently allocate capital. We underscore the evidence from the literature on predictive regressions that the existence of in-sample predictability does not provide *prima facie* evidence of inefficient markets. In our tests, we are unable to reject the null hypothesis that capital markets are efficient. Overall, our findings raise serious doubts that managers are able to predict market upturns and downturns and to time equity issues accordingly.

The remainder of the paper is organized as follows. Section 1 presents a description of our sample and a replication of previous in-sample tests. Section 2 presents the out-of-sample results. Section 3 explores different explanations for the difference between the in-sample and out-of-sample results. Section 4 concludes.

1. Sample

The primary data used in this study consist of aggregate new equity issues and debt issues over the period 1927-2001. This data is gathered from Jeffrey Wurgler's web page (http://pages.stern.nyu.edu/~jwurgler/data/equity%20share.xls) and the *Federal Reserve Bulletin*.[2] Following Baker and Wurgler (2000), we define the equity share in total new issues as:

$$S_t = \frac{e_t}{e_t + d_t} \tag{1}$$

where e_t is aggregate new equity issues, and d_t is aggregate new debt issues at time t. Aggregate annual equity returns through 2002 are collected from CRSP. VWCRSP is the annual return on the CRSP value-weighted portfolio and EWCRSP is the annual return on the CRSP equally-weighted portfolio. Nominal returns are converted to real returns using the Consumer Price Index from Ibbotson Associates (2003). Table 1 displays the characteristics of the variables used in our econometric analyses.

To ensure that the results in Baker and Wurgler (2000) hold in our extended sample, we replicate their main result by estimating the parameters of a regression model where the annual equity market returns at time t are a function of the share of equity issues in total issues at time

[2] We update some of the observations in Baker and Wurgler's (2000) sample to incorporate recent revisions made by the *Federal Reserve Bulletin*. We also extend the sample of equity share data to include the period 1997-2001.

t-1. For this analysis, *S* is standardized to have zero mean and unit variance. The results from this analysis are reported in Table 2. This table shows that, independently of whether we use VWCRSP or EWCRSP as a dependent variable, the coefficient of *S* is negative, significantly different from zero at the 1% confidence level, and economically large. Consistent with the evidence in Baker and Wurgler (2000), these results suggest that managers issue more (less) equity relative to debt when they perceive that aggregate equity market prices will decline (increase) in the future.

2. The Predictive Power of the Share of Equity Issues in Total Issues

It is important to notice that the regression parameters discussed above are estimated using the full sample (*in-sample* estimation). As discussed earlier, this raises the possibility that the findings in Baker and Wurgler (2000) may be driven by a look-ahead bias. The reason for this is that in-sample estimations do not take into account the fact that managers only have access to historical data when they make their forecasts.

To address this issue, we use out-of-sample methods to evaluate the forecasting ability of the equity share in total new issues. The main advantage of using these methods is that they help us assess the predictive ability of *S*, explicitly accounting for the fact that managers only have access to historical data when they try to forecast future equity market returns. Out-of-sample estimation is standard methodology in the literature to determine the forecasting ability of a variable (see for example, Meese and Rogoff (1983), Akgiray (1989), Keim and Stambaugh (1986), Pesaran and Timmermann (1995), and McCracken (2000)).

Following Goyal and Welch (2003), to assess the forecasting ability of *S* to predict future equity market returns we compare the out-of-sample forecasting ability of a model that uses *S* as a predictor (conditional model):

$$R_{Et} = \beta_0 + \beta_1 S_{t-1} + \mu_t \tag{2}$$

to the forecasting ability of a model that only contains a constant (unconditional model):

$$R_{Et} = \beta_0^{'} + \mu_t^{'} \tag{3}$$

where R_E is the annual return on the CRSP value-weighted (VWCRSP) or equally-weighted (EWCRSP) portfolio. To measure the forecasting ability of each model, we calculate the out-of-sample forecast error of each model using a recursive scheme. Under this scheme, the forecast at time t is based on the parameters estimated using observations 1 through t-1.[3]

Following McCracken (2000) and White (2000), to measure the forecasting ability of each model, we calculate the out-of-sample forecast error of each model using the following equations:

$$f_c = \left[R_{Et} - \beta_{0,t-1} - \beta_{1,t-1} S_{t-1} \right] \tag{4}$$

and

$$f_u = \left[R_{Et} - \beta_{0,t-1}^{'} \right] \tag{5}$$

where f_c and f_u are the out-of-sample forecast errors for the conditional model (Equation 2) and unconditional model (Equation 3), respectively, $\beta_{0,t-1}$ and $\beta_{1,t-1}$ are the estimated parameters from Equation 2 using only observations 1 through t-1, and $\beta_{0,t-1}^{'}$ is the estimated parameter from Equation 3 using only observations 1 through t-1.

[3] We also replicate this analysis using a rolling, rather than recursive, scheme for parameter estimation. Using this alternative technique, the forecast at time t is based on parameters estimated using only a fixed window of the past 10, 20, 30, 40, or 50 observations. Our results are unaffected by this change.

Using these forecast errors we calculate the annual differences in squared errors:

$$d_{\text{SE}} = f_{\text{C}}^2 - f_{\text{U}}^2 \tag{5}$$

and the annual differences in absolute deviation:

$$d_{\text{AD}} = |f_{\text{C}}| - |f_{\text{U}}|. \tag{6}$$

We then calculate the differences in mean squared errors (MSE) and mean absolute deviation (MAD) between the conditional model and the unconditional model by calculating the time-series averages of d_{SE} and d_{AD}, respectively. If *S* is a good predictor of future returns, we would expect these difference equations to be negative. To assess the statistical significance of the differences in MSE and MAD, we calculate standard p-values and bootstrapped p-values. The bootstrapped p-values are calculated following these steps:

(1) We randomly select observations from the sample of annual differences in squared errors (d_{SE}) and absolute deviation (d_{AD}), with replacement.

(2) We calculate the time-series averages of the differences in MSE and the MAD from the bootstrapped sample.

(3) We repeat steps (1) and (2) ten thousand times.

(4) Using the simulated distribution, we calculate the p-value of the test statistics.

The results from this analysis are reported in Panels A and B of Table 3. Rejecting the idea that managers are able to predict aggregate market returns in real time, the results in this table indicate that *S* does not have any out-of-sample predictive power. Table 3 shows that the model that includes *S* (conditional model) does not outperform the naïve model having only a constant term (unconditional model), independently of the pre-estimation period that we use to calculate the initial values of the parameters and whether we use value-weighted or equally-weighted returns. Notice that the differences in MSE and MAD are not significantly different from zero, except in one case where the difference in MSE is *positive* and significant. That is, in the only situation where we find a significant difference, the naïve model with only a constant term outperforms the model that includes *S*. Overall, the evidence in Table 3 indicates that managers cannot forecast aggregate future returns in real time, raising serious doubts that managers can predict the systematic component of their returns.

Of course, any out-of-sample test based on a split sample or recursive methodology has less power to reject the null hypothesis of no predictability because we lose observations when we estimate the initial parameters. However, it is unlikely that the discrepancy between our in-sample and out-of-sample results is driven by a lack of power. First, even when we lose less than 14% of the total sample to estimate the initial parameters (pre-estimation period 1928-1937), we still do not find any evidence that *S* has out-of sample predictive power. Second, the bootstrapped p-values are calculated from a large number (ten thousand) of randomly generated differences in MSE and MAD and are therefore adjusted for any loss of power. Finally, even if our results were driven purely by the lack of power in our tests, consider the results for the pre-estimation periods 1928-1937 and 1928-1977. For both of these periods, we find that the model using *S* to predict future market returns makes such large errors that the mean-squared error of the naïve model is actually lower. In fact, using our bootstrapped standard errors, we find the naïve model significantly outperforms the conditional model using *S*. Given that we find the opposite results for these pre-estimation periods, the hypothesis that *S* improves our forecast can be rejected with high statistical power for a test of any reasonable size.

3. Why is there a difference between the in-sample and out-of-sample results?

The results presented in Sections 1 and 2 pose an interesting and important question: Why does such a seemingly strong in-sample result completely break down out-of-sample? In this section, we test a number of possible explanations for the discrepancy between the in-sample evidence of managerial timing and the out-of-sample real-time economic value of such behavior. In particular, we examine the role of look-ahead bias, parameter uncertainty, pseudo-market timing, and structural economic breaks which, taken together or individually, cast doubt on managers' ability to successfully time the equity market.

3.1 Parameter uncertainty and the look-ahead bias

A look-ahead bias can occur whenever data that is not currently available is used to make predictions about the future. In this sense, the econometrician is statistically "cheating" by peeking ahead to see what happens later in the sample, and then going back, armed with information about future data points, to make predictions in the past. In this sub-section we explore the possibility that the in-sample results (based on the full sample) suffer from such a bias and that this problem leads to the discrepancy between the in-sample and out-of-sample performance of *S*.

The look-ahead bias is of primary importance in assessing whether practitioners can detect the forecasting ability of a model in real-time. The hypothesis that managers can time the equity market suggests just such an economic phenomenon – that is, that managers can tell whether the market is over- or under- valued and strategically time their capital structure decisions in real time. As a result, under the null hypothesis that managers can time the market, the effect of managerial timing should be impervious to look-ahead bias because the hypothesis should be equally valid in out-of-sample tests. Since we find no out-of-sample evidence that is consistent with managerial timing, the in-sample results appear to be contaminated by look-ahead bias.

To examine whether uncertainty about the relation between the equity share of new issues and future stock market returns may induce a look-ahead bias, we investigate the time-series properties of the estimated coefficients on *S* (β_1) from the regression results of equation 2. Figure 3 presents a time-series plot of β_1 estimated from the recursive regressions used to perform the out-of-sample tests. The coefficient varies substantially. This analysis suggests that that there is considerable uncertainty as to what the value of the parameter β_1 will be at any point in time. As a result, it may be difficult for the managers or investors to make use of *S* in forecasting market returns in real time. The variability in our time-series estimate of β_1 is a possible explanation for the discrepancy between the in-sample and out-of-sample performance.

While there appears to be considerable parameter uncertainty about the true relation between *S* and future market returns, this relation does not fluctuate randomly. Instead, there appears to be two distinct periods during which the parameter is notably different from the rest of the sample; namely, the period before 1940 and during the early 1970s. In both these periods, there appears to be a more significant negative relation between *S* and future returns. In the following sub-section, we investigate the economics behind these two particular periods and argue that the parameter uncertainty we observe may be driven by pseudo market timing around real macroeconomic events.

3.2 Pseudo market timing and structural economic events

Schultz (2003) argues that firms tend to issue equity more frequently at higher prices. As a result, *ex post* performance may be negative even though *ex ante* expected abnormal returns are zero. Schultz appropriately labels this phenomena "pseudo market timing" since the researcher observes a spurious relation between equity issues and future performance. However, Schultz's findings are particular to the equity offerings of *individual* firms and to the *event-time* measurement of future performance and returns. Schultz argues that pseudo market timing may be less of a concern in studies such as ours since we focus on aggregate market returns and all of our analysis is in calendar time, rather than event time.

However, we argue that pseudo *aggregate* market timing can still be found surrounding aggregate economic events that affect the entire economy. For example, the two largest negative shocks to economic activity in U.S. history identified by Perron (1989), the Great Depression and the Oil Crisis of the early seventies, were both periods that were (by definition, of course) preceded and followed by bull markets. Because managers tend not to issue stock when prices are low, we would expect to see an *ex post* relation between market returns and equity issues during these periods, much like the pseudo market timing described by Schultz (2003). That is, because *S* declines during negative economic shocks, *S* looks relatively high (low) just before (after) the market crashes.

To see how aggregate economic events affect the relation between equity issues and market returns in our sample, consider Figures 2 and 3 which plot the equity share of new issues and an equity price index for the years surrounding both the Great Depression (Figure 1) and the 1973 Oil Crisis (Figure 2). During these periods, notice that there is significant positive correlation between *S* and the equity price index (the correlation between the aggregate market index and *S* is 0.80 during the Great Depression and 0.45 during the Oil Crisis).[4]

Given this relation around these major economic events, such high and low periods of issuance appear to predict market returns, but this is simply an example of pseudo aggregate market timing. That is, since managers are more likely to issue equity when stock prices are high, and less likely to issue equity when prices are low, it is not surprising that *S* is relatively low (high) just after (before) the market crashes.

We test the hypothesis that pseudo aggregate market timing may affect the perceived ability of managers to time the equity market in two ways. First we replicate the in-sample analysis in Table 2 by excluding the market crashes that followed the Great Depression of 1929 (1929-1931) and the Oil Crisis of 1973 (1973-1974). The results of these alternative specifications, presented in Table 5, suggest that the predictive power of *S* depends critically on these two unique economic periods. While these five observations comprise only a small fraction of our sample, their absence completely removes the in-sample statistical significance of the predictive power of equity share of new issues for both equally- and value-weighted returns.[5] That is, for 96 percent of the observations in our sample, managers are not able to time the equity market, even based on in-sample tests. Our interpretation of this result is that managers may be able to time the equity market only to the extent that they are able to predict (in real time) catastrophic macroeconomic events. Such poor ability of *S* to predict future returns in most of our sample is one potential explanation for the drastic difference between the in-sample tests of Section 1 and the out-of-sample tests in Section 2.

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[4] Notice that the share of equity in total new issues declines after the first year of both economic shocks. The reason for this is that both events started late in the calendar year (October).

[5] We also test models that allow for time-varying expected returns during these periods as well as variation in the coefficient on *S*. In all of these specifications, we find no evidence that *S* has in-sample predictive power in non-crisis periods.

Second, we also estimate the in-sample performance of *S* for the sub-sample 1975-2002. We choose this period for two reasons. First, the period is free from the shocks to real economic activity identified by Perron (1989). Second, this period incorporates the introduction of the Nasdaq National Market System in 1973. The development of the Nasdaq market has allowed a much larger set of firms to issue equity at earlier stages in their life-cycle (see Fama and French 2003), so there may be a greater opportunity for managers to time equity markets during this period. Thus, we test the hypothesis that *S* has predictive value in the period 1975-2002. Table 5 presents the result of this analysis. During this sub-period, we find no evidence that *S* has predictive power, even in-sample. In fact, the adjusted R-squared is negative for regressions using either equally- or value-weighted returns. These results are consistent with our out-of-sample tests and suggest that the strong in-sample results for the full period are driven by outliers that are caused by pseudo aggregate market timing.[6]

It is, of course, unfair to criticize the in-sample results by simply eliminating particular observations since the researcher only knows *ex post* which observations in the full sample support or weaken the results. However, it is important to note that both the Great Depression and the Middle East oil shock of 1973 represent real economic events where the conditions are ripe for pseudo aggregate market timing. Both periods suffered from relatively low levels of equity shares and both periods were preceded (and, of course, followed) by bull markets. The fact that we find such weak in-sample evidence in all periods *except* for those where pseudo market timing is most likely should, at a minimum, suggest that the full-sample results be interpreted with some degree of caution.

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[6] We also test the predictive power of *S* during the "internet bubble" years of the late 1990s. For the seven observations between 1996 and 2002 there is a *positive* and statistically significant relation between *S* and future market returns. This analysis suggests that managers, at least during this period, prefer equity finance prior to periods of high returns and avoid equity before periods of low returns. This result stands in sharp contrast to the behavioral view put forth by Baker and Wurgler (2000).

These findings are important because they point out how pseudo market timing may affect inferences about market efficiency beyond what Schultz (2003) demonstrates. Even when measuring aggregate returns in calendar time, the possibility of pseudo-market timing exists around significant economic events. Our results serve as a reminder that structural breaks or other significant economic phenomena can seriously affect the properties of time-series data over long horizons.

4. Conclusion

We document that the proportion of annual new security issues that are equity, *S*, does not provide real time predictive power for forecasting market returns. During the 1927-2002 sample period, regression models using *S* as a predictor fare no better than a naïve model with only a constant term. This result contrasts with findings of previous researchers that *S* is a strong in-sample predictor of aggregate market returns. We show that the difference between the out-of-sample and in-sample results is largely due to pseudo market timing and parameter uncertainty. As a result, market participants are unable to capitalize on a relation between *S* and future returns because they do not know how accurately their real-time *ex ante* estimate of the relation predicts what the future relation will be *ex post*. Our results reinforce the idea that the existence of in-sample predictability does not provide *prima facie* evidence of inefficient markets.

Our results are consistent with market efficiency. The findings in our paper complement a number of recent empirical studies on the ability of managers to forecast the idiosyncratic part of their stock returns. Studies by Brav and Gompers (1997), Brav, Geczy and Gompers (2000), Eckbo, Masulis and Norli (2000), Mitchell and Stafford (2000), Gompers and Lerner (2003), and Li and Zhao (2003) question the underperformance of individual stocks following equity issues. These studies find no (or weak) underperformance after IPOs or SEOs. These results, combined with our findings, cast doubt on the notion that managers can systematically sell overpriced equity.

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Table 1
Summary Statistics

This table reports summary statistics for the equity share in total new issues and equity market returns over the period 1927-2001. *S* is the equity share in total new issues. VWCRSP is the annual return on the CRSP value-weighted portfolio. EWCRSP is the annual return on the CRSP equally-weighted portfolio. VWCRSP and EWCRSP are converted to real returns using the Consumer Price Index from Ibbotson Associates (2003).

	Mean	Std. Dev.	5^{th} Percentile	Median	95^{th} Percentile
$S_t = e_t/(e_t+d_t)$	0.21	0.11	0.07	0.19	0.40
$VWCRSP_{t+1}$	0.0812	0.2046	-0.2526	0.1066	0.4057
$EWCRSP_{t+1}$	0.1334	0.3085	-0.3419	0.1595	0.5818

Table 2
The In-Sample Predictive Power of the Share of Equity Issues in Total Issues

This table reports estimates of regressions relating equity market returns to the equity share in total new issues (*S*). The sample spans the period 1927-2001. VWCRSP is the annual return on the CRSP value-weighted portfolio. EWCRSP is the annual return on the CRSP equally-weighted portfolio. VWCRSP and EWCRSP are converted to real returns using the Consumer Price Index from Ibbotson Associates (2003). *S* is standardized to have zero mean and unit variance. The standard errors of the coefficients have been adjusted for heteroskedasticity. a, b, and c denote significantly different from zero at the 1%, 5%, and 10% level, respectively.

Panel A

$$VWCRSP_t = \beta_0 + \beta_1 S_{t-1} + \mu_t$$

β_0	$t(\beta_0)$	β_1	$t(\beta_1)$	$\bar{R}^2$
0.0812[a]	3.63	-0.0640[a]	-3.11	0.085

Panel B

$$EWCRSP_t = \beta_0 + \beta_1 S_{t-1} + \mu_t$$

β_0	$t(\beta_0)$	β_1	$t(\beta_1)$	$\bar{R}^2$
0.1334[a]	4.07	-0.1183[a]	-3.55	0.135

Table 3
The Out-of-Sample Predictive Power of the Share of Equity Issues in Total Issues

This table compares the out-of-sample forecasting ability of the following conditional model:

$$R_{Et} = \beta_0 + \beta_1 S_{t-1} + \mu_t$$

to the forecasting ability of the following unconditional model:

$$R_{Et} = \beta_0' + \mu_t'$$

where R_E is the annual return on the CRSP value weighted (VWCRSP) or equally-weighted (EWCRSP) portfolio, and *S* is the equity share in total new issues. To measure the forecasting ability of each model, we calculate the out-of-sample forecast error of each model using a recursive scheme. Under this scheme, the forecast at time t is based on the parameters estimated using observations 1 through t-1. Using the forecast errors, we calculate the annual differences in mean squared error (MSE) and mean absolute deviation (MAD) between the model that includes *S* (conditional model) and the model that excludes *S* (unconditional model). MSE_C (MAD_C) is the average annual mean squared error (mean absolute deviation) of the model that includes *S*. MSE_U (MAD_U) is the average annual mean squared error (mean absolute deviation) of the model that excludes *S*.

Panel A
Dependent Variable: VWCRSP

Pre-Estimation Period		Mean	p-value	Bootstrapped p-value
1928-1937	$MSE_C - MSE_U$	0.00077	0.7594	0.3790
	$MAD_C - MAD_U$	0.00045	0.9443	0.4752
1928-1947	$MSE_C - MSE_U$	-0.00125	0.6211	0.3091
	$MAD_C - MAD_U$	-0.00419	0.5142	0.2536
1928-1957	$MSE_C - MSE_U$	-0.00114	0.7100	0.3529
	$MAD_C - MAD_U$	-0.00365	0.6310	0.3118
1928-1967	$MSE_C - MSE_U$	-0.00112	0.7704	0.3843
	$MAD_C - MAD_U$	-0.00198	0.8331	0.4085
1928-1977	$MSE_C - MSE_U$	0.00379	0.3522	0.1694
	$MAD_C - MAD_U$	0.00317	0.7832	0.3955

Table 3 (continued)

Panel B
Dependent Variable: EWCRSP

Pre-Estimation Period		Mean	p-value	Bootstrapped p-value
1928-1937	$MSE_C - MSE_U$	0.00239	0.7509	0.3798
	$MAD_C - MAD_U$	-0.00289	0.8286	0.4072
1928-1947	$MSE_C - MSE_U$	-0.00349	0.6071	0.3038
	$MAD_C - MAD_U$	-0.01031	0.4379	0.2157
1928-1957	$MSE_C - MSE_U$	-0.00212	0.7970	0.3941
	$MAD_C - MAD_U$	-0.00460	0.7734	0.3834
1928-1967	$MSE_C - MSE_U$	-0.00093	0.9260	0.4607
	$MAD_C - MAD_U$	-0.00919	0.6387	0.3151
1928-1977	$MSE_C - MSE_U$	0.01667	0.1280	0.0536
	$MAD_C - MAD_U$	0.01681	0.4920	0.2364

Table 4
The Relation between Equity Market Returns and the Share of Equity in Total New Issues Excluding the Effect of Large Economic Shocks

This table reports estimates of regressions relating equity market returns to the equity share in total new issues (*S*), excluding the market crashes that followed the Great Depression of 1929 and the Oil Crisis of 1973. The sample spans the period 1927-2001, excluding the periods 1929-1931 and 1973-1974. VWCRSP is the annual return on the CRSP value-weighted portfolio. EWCRSP is the annual return on the CRSP equally-weighted portfolio. VWCRSP and EWCRSP are converted to real returns using the Consumer Price Index from Ibbotson Associates (2003). *S* is standardized to have zero mean and unit variance. The standard errors of the coefficients have been adjusted for heteroskedasticity. a, b, and c denote significantly different from zero at the 1%, 5%, and 10% level, respectively.

Panel A

$$VWCRSP_t = \beta_0 + \beta_1 S_{t-1} + \mu_t$$

β_0	$t(\beta_0)$	β_1	$t(\beta_1)$	$\bar{R}^2$
0.1068[a]	4.99	-0.0202	-0.86	-0.003

Panel B

$$EWCRSP_t = \beta_0 + \beta_1 S_{t-1} + \mu_t$$

β_0	$t(\beta_0)$	β_1	$t(\beta_1)$	$\bar{R}^2$
0.1687[a]	5.04	-0.0641	-1.59	0.036

Table 5
The Relation between Equity Market Returns and the Share of Equity in Total New Issues after the Oil Crisis of 1973

This table reports estimates of regressions relating equity market returns to the equity share in total new issues (*S*) over the period 1975-2001. VWCRSP is the annual return on the CRSP value-weighted portfolio. EWCRSP is the annual return on the CRSP equally-weighted portfolio. VWCRSP and EWCRSP are converted to real returns using the Consumer Price Index from Ibbotson Associates (2003). *S* is standardized to have zero mean and unit variance. The standard errors of the coefficients have been adjusted for heteroskedasticity. a, b, and c denote significantly different from zero at the 1%, 5%, and 10% level, respectively.

Panel A

$$VWCRSP_t = \beta_0 + \beta_1 S_{t-1} + \mu_t$$

β_0	$t(\beta_0)$	β_1	$t(\beta_1)$	$\bar{R}^2$
0.0945[a]	3.10	-0.0035	-0.13	-0.0379

Panel B

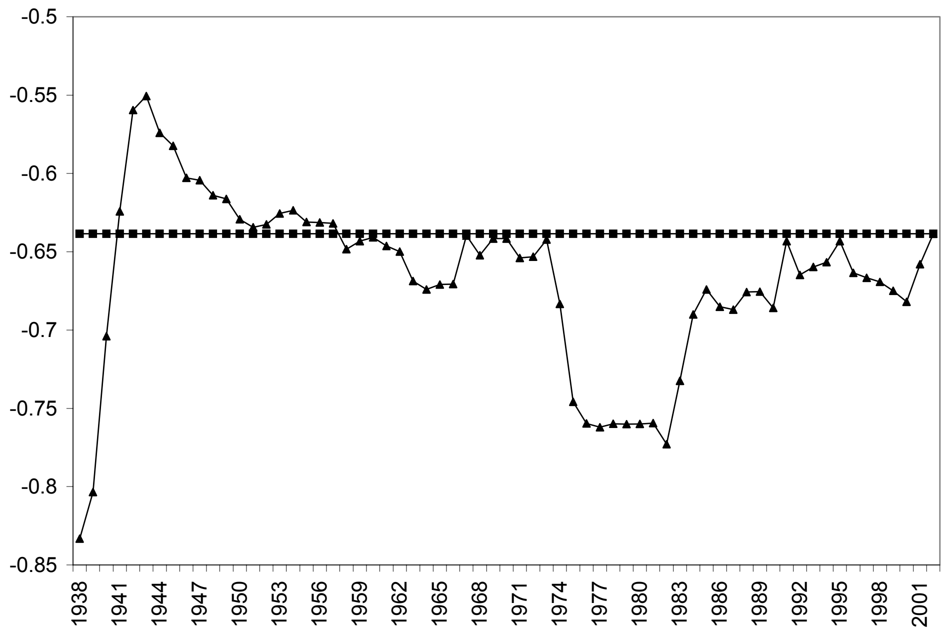
$$EWCRSP_t = \beta_0 + \beta_1 S_{t-1} + \mu_t$$

β_0	$t(\beta_0)$	β_1	$t(\beta_1)$	$\bar{R}^2$
0.1380[a]	3.76	0.0007	0.02	-0.0384

Figure 1
The Behavior of the Coefficient of the Share of Equity in Total New Issues over Time

These figures depict the behavior of the coefficient of the share of equity in total new issues over the period 1938-2002.

Coefficient of *S* when the dependent variable is VWRET



Coefficient of *S* when the dependent variable is EWRET

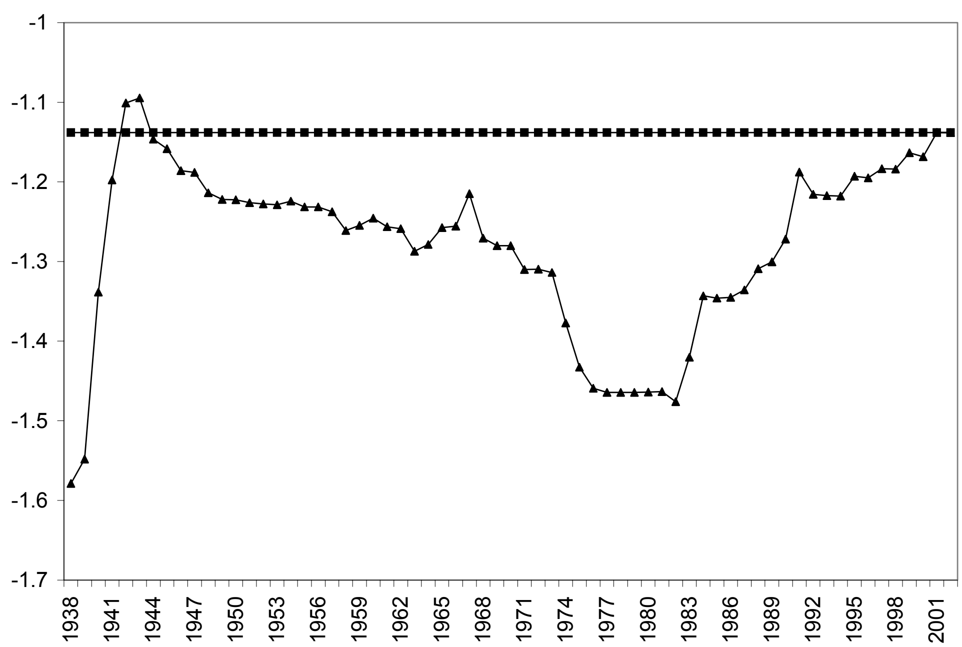
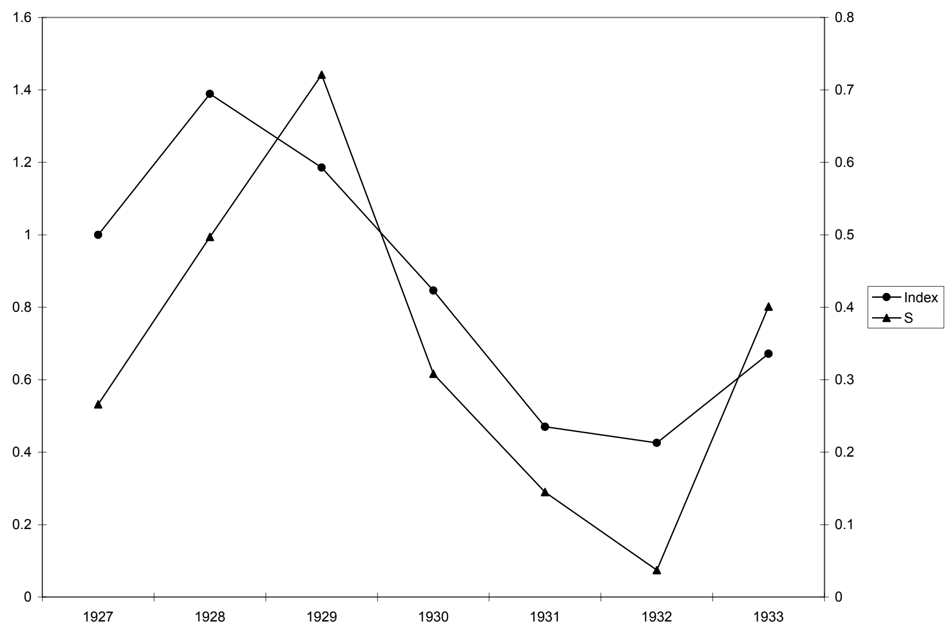


Figure 2
The Relation between an Equity Market Index and the Share of Equity in Total New Issues around the Great Depression of 1929

These figures depict the relation between an equity market index and the share of equity in total new issues around the Great Depression of 1929. The price index is set equal to 1 at the beginning of the period.

VWCRSP



EWCRSP

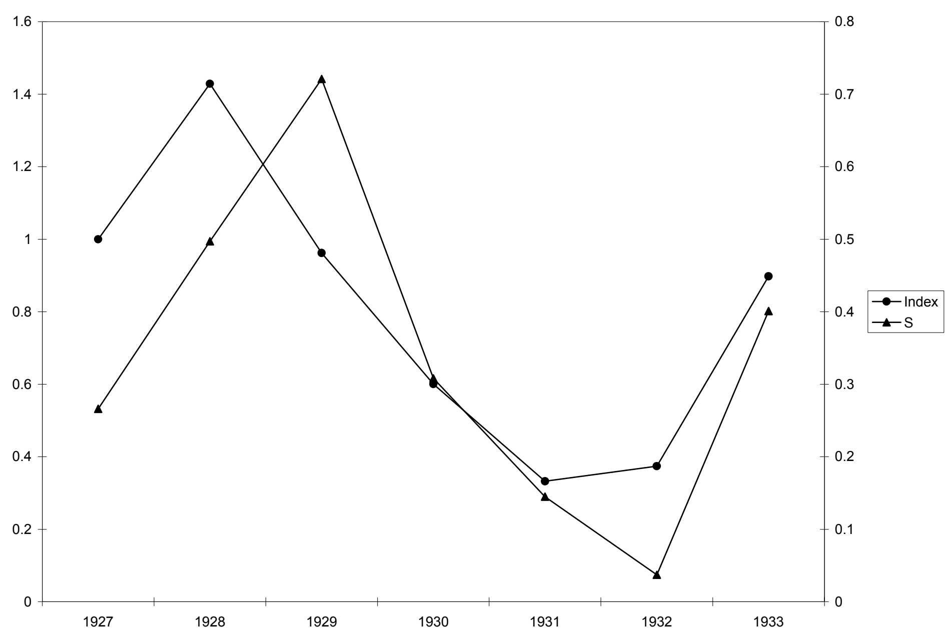
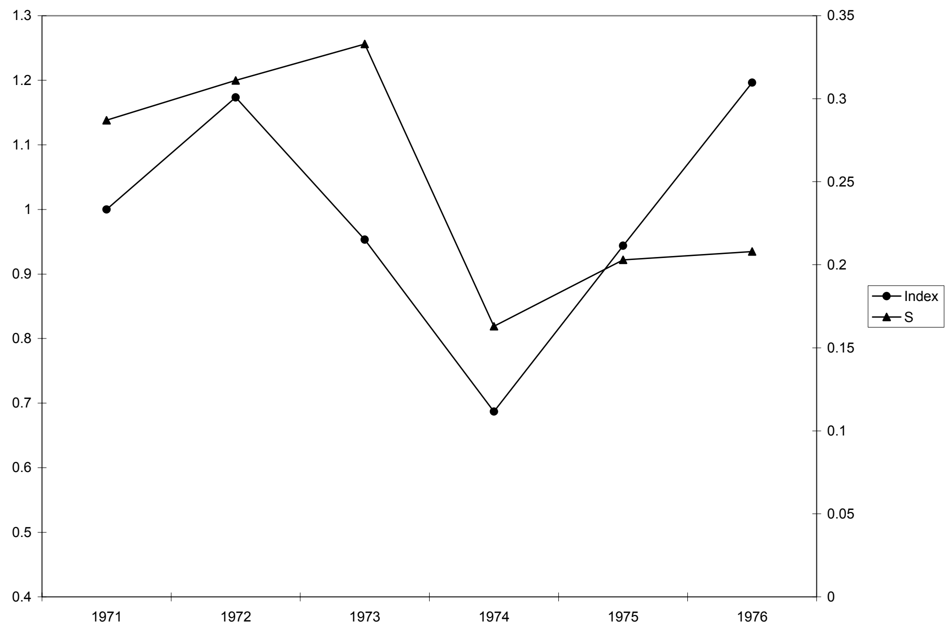


Figure 3
The Relation between Equity Market Returns and the Share of Equity in Total New Issues around the Oil Crisis of 1973

These figures depict the relation between an equity market index and the share of equity in total new issues around the Oil Crisis of 1973. The price index is set equal to 1 at the beginning of the period.

VWCRSP



EWCRSP