Average Returns, B/M, and Share Issues

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Abstract

The book-to-market ratio (*B/M*) differs across stocks because of differences in expected cashflows and expected stock returns. Our hypothesis is that the evolution of *B/M*, in terms of past changes in price and book equity, contains information about expected cashflows that can be used to improve estimates of expected returns. For All but Tiny stocks, the evidence favors this prediction during 1927-1963, but not 1963-2005. For Tiny stocks, there is support for the prediction throughout the sample period. Stock issues and repurchases are also related to expected cashflows, so they can help improve estimates of expected returns. This prediction gets strong support during 1963-2005, but not 1927-1962.

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Firms with higher ratios of the book value of common stock to its market value have higher average stock returns (Rosenberg, Reid, and Lanstein 1985, Fama and French 1992, Lakonishok, Shleifer, and Vishny 1994). The book-to-market ratio, *B/M*, is, however, likely to be a noisy measure of expected returns because it also varies with expected cashflows (dividends). Vuolteenaho (2002) finds that differences in forecasts of cashflows loom large in the cross-section of B/M for individual stocks.

To absorb dispersion in the cross-section of *B/M* due to expected cashflows, Fama and French (2006) develop estimates of expected cashflows and use them along with *B/M* to explain the cross-section of average returns, with limited success. (They cite a large literature that uses variants of this approach.) We take a different approach here. We ask whether the evolution of *B/M* itself, in terms of past changes in book equity and price, contains independent information about expected cashflows that can enhance estimates of expected returns.

By way of motivation, the log of the time t book-to-market ratio, BM_t, is the log of the ratio at t-k, BM_{t-k}, plus the difference between the change in the log of book equity from t-k to t, $dB_{t-k,t}$, and the change in the log of price, $dM_{t-k,t}$,

$$BM_t = BM_{t-k} + dB_{t-k,t} - dM_{t-k,t}. \tag{1}$$

Our hypothesis is that the past changes in price and book equity in (1) contain information about expected cashflows and expected returns that can improve estimates of expected returns. The past and expected future economic outcomes that differentiate high book-to-market value stocks from low BM_t growth stocks are summarized in $dB_{t-k,t}$ and $dM_{t-k,t}$. Growth in book equity, $dB_{t-k,t}$, tends to be high for growth stocks and low to negative for value stocks, the result of high earnings and reinvestment by growth stocks and low earnings and reinvestment by value stocks (Fama and French 1995). This pattern in fundamentals persists in years after t. The change in price, $dM_{t-k,t}$, summarizes changes from t-k to t in expected future returns and expected cashflows, and $dM_{t-k,t}$ is high for growth stocks and low for value stocks. In short, using BM_t alone to forecast returns may bury independent information in its components about expected cashflows and expected returns. There is thus reason to expect that we can improve forecasts of expected returns by replacing BM_t with the three components in (1).

We proceed as follows. Section I further motivates the tests and presents the specifics of the (cross-section regression) approach. Section II discusses the results for All but Tiny (ABT) stocks, that is, NYSE, Amex, and Nasdaq stocks above the 20th percentile of market capitalization (market cap, price times shares outstanding) for NYSE stocks. The ABT tests for 1927-1963 support our prediction that jointly using the components of BM_t to predict returns provides better estimates of expected returns than BM_t alone. The ABT tests for 1963-2005 do not, however, confirm this prediction. Thus, for ABT stocks the breakdown of BM_t in (1) seems to produce independent information about expected cashflows that enhances estimates of expected returns for 1927-1963, but not thereafter.

Section III presents the results for Tiny stocks (below the 20th percentile of NYSE market cap). In contrast to ABT stocks, the evidence for Tiny stocks suggests that forecasting returns with the components of BM_t enhances explanatory power during 1963-2005 and 1927-1963. The marginal explanatory power seems to come mostly from lagged changes in price. Thus, for Tiny stocks the breakdown of BM_t into its components seems to capture information about expected cashflows that enhances estimates of expected returns throughout the sample period.

Our tests of the information in the components of the book-to-market ratio are similar to those of Daniel and Titman (2006), but their inferences are different. Based on tests for 1968-2003 and a sample of stocks like our ABT sample, they conclude that changes in BM_t due to changes in book equity (what they call tangible information) do not predict returns, but changes in price unrelated to changes in book equity (what they call intangible information) have marginal forecast power. This seems in conflict with our evidence that for ABT stocks and the 1963-2005 period, only BM_t matters; that is, the breakdown of BM_t into its components does not improve estimates of expected returns. We argue (Section IV) that their results are consistent with ours. Specifically, with their definitions of tangible and intangible information, all variation through time in BM_t is from intangible information. Thus, their conclusion that only intangible information matters is equivalent to our (simpler) conclusion that for ABT stocks and the 1963-2005 period, breaking BM_t into its components adds nothing to estimates of expected returns.

To examine how the book-to-market ratio evolves via changes in market and book values, either total or per share changes can be used. Total changes include net share issues (issues minus repurchases). Firms that issue stock tend to have large (past and future) investments relative to earnings, while the opposite is true for firms that repurchase (Fama and French 2005). Net share issues are thus a candidate to help isolate information about expected cashflows to better estimate expected returns. To disentangle the effects of net share issues from the effects of per share changes in market and book values, we include net share issues as a separate explanatory variable for returns. The results are discussed in Section V.

Existing work documents negative abnormal returns after stock issues (Loughran and Ritter 1995, Mitchell and Stafford 2000), and positive abnormal returns after repurchases (Ikenberry, Lakonishok, and Vermaelen 1995). Our 1963-2006 results are consistent with earlier work. With controls for the components of BM_t, we find a strong negative relation between net share issues and average returns. Like Pontiff and Woodgate (2006), however, we find that net issues do not predict returns during 1927-1963. In our framework, these results suggest that during 1963-2006, net share issues help disentangle expected cashflows from expected returns to improve estimates of expected returns, but this is not true for 1927-1963. The results for 1927-1963 also undermine the behavioral market timing stories commonly offered to explain the returns observed after stock issues and repurchases.

Section VI concludes, with emphasis on the interpretation of the results.

I. Motivation and Methods

Leaning on the framework of Fama and French (2006), this section begins by expanding the motivation for the tests, introduced above. We then discuss the cross-section regression setup that produces the empirical evidence of later sections.

A. Motivation

In the dividend discount valuation model, the market value of a share of a firm's stock is the present value of expected dividends per share,

$$M_t = \sum_{\tau=1}^{\infty} \mathrm{E}(D_{t+\tau})/(1+r)^{\tau}\ , \tag{2}$$

where M_t is the price at time t, $\mathrm{E}(D_{t+\tau})$ is the expected dividend for $t+\tau$, and r is (approximately) the long-term average expected stock return or, more precisely, the internal rate of return on expected dividends. With clean surplus accounting, the time t dividend, D_t, is equity earnings per share, Y_t, minus the change in book equity per share (retained earnings), $dB_{t-1,t} = B_t - B_{t-1}$. (Note that here and only here $dB_{t-1,t}$ is the change in levels, rather than logs.) The dividend discount model is then,

$$M_t = \sum_{\tau=1}^{\infty} \mathrm{E}(Y_{t+\tau} - dB_{t+\tau-1,t+\tau})/(1+r)^{\tau}, \tag{3}$$

or, dividing by time t book equity,

$$\frac{M_t}{B_t} = \frac{\sum_{\tau=1}^{\infty} \mathrm{E}(Y_{t+\tau} - dB_{t+\tau-1,t+\tau})/(1+r)^{\tau}}{B_t}. \tag{4}$$

Equation (4) says that, controlling for expected equity cashflows (earnings minus changes in book equity, measured relative to current book equity), a higher book-to-market equity ratio, B_t/M_t, implies a higher expected stock return, r. This is the motivation for using the book-to-market ratio as a proxy for expected returns. It is clear from (4), however, that dispersion across stocks in expected cashflows can act like noise that clouds the information in B_t/M_t about the cross-section of expected stock returns. Thus, using variables in addition to B_t/M_t to predict returns will improve estimates of expected returns if the additional variables help disentangle information about expected cashflows and expected returns. We argue that the evolution of the book-to-market ratio itself provides interesting candidates.

Recalling equation (1), the log of the book-to-market ratio at time t, BM_t, is the log ratio at t-k, BM_{t-k}, plus the difference between the change in the log of book equity, $dB_{t-k,t}$, and the change in the log of price, $dM_{t\text{-}k,t}$. The lagged growth in book equity, $dB_{t\text{-}k,t}$, is related to past and expected future cashflows. Past growth in book equity tends to be high for growth (low BM_t) stocks and low to negative for value high BM_t) stocks, the result of high earnings and reinvestment for growth stocks and low earnings and reinvestment for value stocks (Lakonishok, Shleifer, and Vishny 1994, Fama and French 1995). This behavior of fundamentals tends to persist in years after t, making $dB_{t\text{-}k,t}$ an interesting proxy for expected cashflows. Likewise, the logic of the dividend discount equation (2) is that the lagged change in price, $dM_{t\text{-}k,t}$, summarizes changes from t-k to t in expected future returns and expected cashflows.

The interplay between $dB_{t\text{-}k,t}$ and $dM_{t\text{-}k,t}$ is also important in explaining how stocks migrate between value and growth. Stocks typically move to high expected return value portfolios as a result of poor past profitability and low (often negative) growth in book equity accompanied by even sharper declines in stock prices (Fama and French 1995). Conversely, stocks that move to lower expected return growth portfolios typically have high past profitability and growth in book equity along with even sharper past increases in stock prices.

In short, using BM_t alone to forecast returns may bury independent information in its components about expected cashflows and expected returns. There is thus reason to expect that using the components of BM_t in (1) to predict returns provides better estimates of expected returns.

An extension of this logic suggests that more distant changes in book equity and price have less information about expected cashflows and returns than more recent changes; that is, old news is less relevant than new news. A simple way to test this prediction is to examine the forecasts of returns provided by the components of BM_t in (1) for different lags k. If old news is less relevant, the slopes in regressions of returns on the components of BM_t should decay as the lag k for changes in price and book equity is increased. Moreover, the slope for the lagged book-to-market ratio $BM_{t\text{-}k}$ (which summarizes the history of growth in book equity and price preceding $dB_{t\text{-}k,t}$ and $dM_{t\text{-}k,t}$) should be weaker than the slopes for one or both of $dB_{t\text{-}k,t}$ and $dM_{t\text{-}k,t}$.

The book-to-market ratio is the same whether we use price and book equity per share or total market cap and total book equity. The choice of total or per share growth rates of book equity and market value, however, does affect the decomposition of BM_t in (1) because total changes include net share issues (issues minus repurchases). But net share issues is itself an interesting candidate to capture variation in the cross-section of BM_t due to expected cashflows, to better estimate expected returns. Thus, prior work says that firms that issue stock tend to have large (past and future) investments relative to earnings, while the opposite is true for firms that repurchase (Fama and French 2005). To disentangle the effects of net share issues from the effects of per share changes in market and book values, we use per share growth rates and include net share issues as a separate explanatory variable for returns.

The success of our predictions is not guaranteed. For example, it is possible that the information about expected cashflows and returns in the components of BM_t is highly correlated, so decomposing BM_t into its components does not improve forecasts of returns. We shall see that the results on this score differ for different categories of stocks and different time periods.

Finally, it is worth emphasizing that in the framework of the valuation equation (4), the cross-section of BM_t is determined entirely by differences across stocks in expected cashflows and expected returns. Thus, when we later infer that a variable helps forecast returns because it helps disentangle expected cashflows and expected returns, we are not talking loosely, even though we do not present direct evidence about how the marginal information splits between expected cashflows and returns.

B. Regression Setup

Fama and French (1992) use cross-section regressions of individual stock returns on market cap and the book-to-market ratio to identify differences in average returns related to the size and value-growth characteristics of firms. Here we test whether the origins of the book-to-market ratio, in terms of past changes in price versus changes in book equity, can be used, along with net share issues, to improve estimates of expected returns. In the tradition of Fama and MacBeth (1973), our tests center on the average slopes from monthly cross-section regressions of stock returns on five variables,

$$R_{t+n} = a_{0,t+n} + a_{1,t+n}MC_t + a_{2,t+n}BM_{t-k} + a_{3,t+n}dM_{t-k,t} + a_{4,t+n}dB_{t-k,t} + a_{5,t+n}NS_{t-k,t} + e_{t+n}\,. \qquad (5)$$

In this regression, R_{t+n} is a stock's simple return for month t+n in excess of the one-month Treasury bill rate, MC_t is the stock's market cap at time t, BM_{t-k} is its book-to-market ratio for t-k (with k = 12, 36, or 60), and $dM_{t-k,t}$, $dB_{t-k,t}$, and $NS_{t-k,t}$ are the change in price per split-adjusted share, the change in book equity per split-adjusted share, and the change in split-adjusted shares outstanding for the preceding one, three, and five years. The explanatory variables in the regression are updated at the end of June each year, and they are used in the monthly regressions for July through the following June. Thus, the subscript n runs from 1 to 12 and the subscript t jumps in increments of 12, from one June to the next. The data start in June 1926, so when k = 12, t starts in June 1927 and the first regression explains returns for July 1927. For lags k = 36 and k = 60, t starts in June 1929 and June 1931. To simplify the notation, the subscript j (for stock j) that should appear on the dependent return and all the explanatory variables in (5) is omitted. MC_t and BM_{t-k} are natural logs of market cap and the book-to-market ratio, and the three change variables are changes in logs.

To ensure that book equity per share, B_t, is known in June (time t), it is the fiscal year value reported during the previous calendar year. As in Fama and French (1992), the stock price in MC_t is for the end of June (time t), but the price in BM_t is for the end of the preceding December. The three change variables line up with BM_t. Thus, $dB_{t-k,t}$ is the change in book equity per share for the preceding one, three, or five fiscal years, and $dM_{t-k,t}$ and $NS_{t-k,t}$ are the changes in price per share and split-adjusted shares outstanding for the k months that end in December. To be precise, $dM_{t-k,t}$ is the continuously compounded without dividend return, from CRSP, over the preceding one, three, or five calendar years. $NS_{t-k,t}$ is the difference between the continuously compounded growth in total market equity, computed using the price and shares outstanding reported by CRSP, and the continuously compounded capital gain ($dM_{t-k,t}$) over the same period. And $dB_{t-k,t}$ is the difference between the continuously compounded growth in total book equity over the preceding one, three, or five fiscal years and the matching $NS_{t-k,t}$ computed from fiscal year end to fiscal year end. Book equity data are from Compustat, with missing data for NYSE stocks filled in by us as in Davis, Fama, and French (2000).

Our null hypothesis is that breaking the book-to-market ratio into its components does not enhance the estimates of expected returns provided by BM_t. In terms of regression (5), the null is that the average slopes for BM_{t-k}, $dB_{t-k,t}$, and $dM_{t-k,t}$ have the same magnitude, with positive average slopes for BM_{t-k} and $dB_{t-k,t}$ and a negative slope for $dM_{t-k,t}$. The alternative hypothesis is that the components of BM_t help isolate information about expected cashflows, to improve estimates of expected returns. Under the alternative, the average slopes for the components of BM_t differ because the three components capture different mixes of information about expected cashflows and expected returns. For example, if old information is less relevant than new information, the average slopes on the components of BM_t should decline as the lag k for changes in price and book equity is increased. And the slope for BM_{t-k}, which summarizes older forecasts of cashflows and returns, should be closer to zero than the average slope for $dB_{t-k,t}$, and/or the average slope for $dM_{t-k,t}$.

In general, however, beyond predicting that the average slopes for the three components of BM_t do not have the same magnitude, the alternative hypothesis that breaking BM_t into its components improves expected return estimates does not make strong predictions about average slopes. The reason is that the three components of BM_t may each be a different mix of forecasts of cashflows and returns, so there are no clear predictions about marginal effects. On the other hand, if the average slopes for the components of BM_t are equal in magnitude, positive for BM_{t-k} and $dB_{t-k,t}$ and negative for $dM_{t-k,t}$, the unavoidable conclusion is that forecasts of returns from the components collapse to forecasts from BM_t, so there is no additional information in the origins of BM_t beyond that in BM_t alone.

There is a simple way to test the hypothesis that the average slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$ in regression (5) are equal in magnitude to the slope for BM_{t-k}. Consider an alternative regression that substitutes the most recent book-to-market ratio, BM_t, for the lagged BM_{t-k} in (5),

$$R_{t+n} = a_{0,t+n} + a_{1,t+n}MC_t + a_{2,t+n}BM_t + a_{3,t+n}dM_{t-k,t} + a_{4,t+n}dB_{t-k,t} + a_{5,t+n}NS_{t-k,t} + e_{t+n}\,. \qquad (6)$$

Since $BM_t = BM_{t-k} + dB_{t-k,t} - dM_{t-k,t}$, the slopes in (6) link directly to those in (5). The slopes for MC_t and $NS_{t-k,t}$ do not change in going from (5) to (6). Similarly, the slope for BM_{t-k} in (5) is the slope for

BM_t in (6). Intuitively, the slope for BM_t in (6) is the marginal effect of BM_t, given the lagged changes in price and book equity, $dM_{t-k,t}$ and $dB_{t-k,t}$, but this is also the marginal effect of BM_{t-k} in (5). The slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$ are, however, different in (5) and (6). The slope for $dB_{t-k,t}$ in (6) is the slope for $dB_{t-k,t}$ in (5) minus the slope for BM_{t-k}. And the slope for $dM_{t-k,t}$ in (6) is the slope for $dM_{t-k,t}$ in (5) plus the slope for BM_{t-k}.[2] The average slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$ in (6) thus provide a formal test of whether the average slopes for the two changes in (5) have the same magnitude as the average slope for BM_{t-k}. More directly, if the average slopes on $dM_{t-k,t}$ and $dB_{t-k,t}$ in (6) are zero, the origins of BM_t in terms of lagged changes in price and book equity add nothing to forecasts of returns from BM_t.

We estimate regressions (5) and (6) monthly for July 1927 to December 2006 (henceforth 1927-2006). The tables below show results for the full sample period and for two periods that split in July 1963, the start date in many previous studies. We present separate results for All but Tiny (ABT) stocks (market cap above the 20th percentile of market cap for NYSE stocks) and for Tiny stocks (market cap below the 20th NYSE percentile). Before 1963 the tests cover only NYSE stocks, and there are on average just 141 Tiny stocks. Amex stocks are added in 1963, Nasdaq stocks in 1973.

Amex and Nasdaq stocks are mostly Tiny. In the estimates of (5) and (6) that use one-year (k = 12) versions of $dM_{t-k,t}$ and $dB_{t-k,t}$, the All but Tiny (ABT) sample on average has 1274 stocks during July 1963 to December 2006 (henceforth 1963-2006). There are on average 1709 Tiny stocks, but they account for only about 3% of the market cap of NYSE-Amex-Nasdaq stocks. Because they are so numerous and their returns and explanatory variables in (5) and (6) have more dispersion, Tiny stocks are influential in regressions that use all stocks. Estimating the regressions on ABT stocks thus provides a more reliable view of the cross-section of average returns for the stocks that account for the lion's share of stock market wealth. And we shall see that Tiny stocks do produce a different story.

[2] The links between the slopes in (1) and (3) do not hold exactly in the results reported below. The violations (always trivial) are caused by differences in the winsorized versions of BM_{t-k} and BM_t. (We winsorize the explanatory variables in (1) and (3) at the 0.005 and 0.995 levels each month.) Without winsorization, the links between the slopes in (1) and (3) hold exactly.

We have also examined regressions that break the ABT sample between Big stocks (market cap above the 50th NYSE percentile) and Small stocks (market cap between the 20th and 50th NYSE percentiles). Skipping the details, we can report that the average slopes in (5) and (6) are similar for Big and Small stocks. Several readers have suggested that we split ABT stocks into even finer groups, such as the top four NYSE market cap quintiles. The problem here is small sample sizes that would destroy any power to identify differences in average slopes across size quintiles. Moreover, the fact that average regression slopes are similar for Big and Small stocks, but different for Tiny stocks, suggests that the split of stocks into the ABT and Tiny samples captures the main differences in results for size groups.

Finally, the results for net share issues in the estimates of (5) and (6) are interesting, but we do not comment on them until Section V, where they are examined in detail.

C. Baseline Regressions

As a baseline for the estimates of regressions (5) and (6), Table 1 summarizes average slopes from a regression that, as in Fama and French (1992), uses just MC_t and BM_t to describe the cross section of stock returns. For ABT stocks, the average slope for BM_t for 1927-2006 is strongly positive (t = 3.29), and the average slopes for 1927-1963 (July 1927 to June 1963) and 1963-2006 are similar to the full-period slope (0.21). Thus, like earlier work, we find that high book-to-market (value) stocks have higher average returns than low book-to-market (growth) stocks.

Also as in earlier work, Table 1 shows that ABT stocks with lower market cap have higher average returns. The negative average MC_t slopes for the subperiods are close to (within 0.01 of) the full-period slope (-0.07), but it takes the power of the full sample period to push the t-statistic for the average MC_t slope close to -2.0. The full regressions (5) and (6), with their enhanced explanatory power, will typically produce more reliable evidence of a size effect in ABT average returns.

A striking result in Table 1 is that the size effect is stronger among Tiny stocks. The negative average slopes for MC_t in the regressions for Tiny stocks are more than six times those from the ABT sample. The MC_t slopes for Tiny stocks in Table 1 are more than three standard errors from zero, and they are strong in the full regressions (5) and (6), presented later. The positive relation between average return and BM_t is also somewhat stronger for Tiny stocks than for ABT stocks when only MC_t and BM_t are used to predict returns, but this will not be true in the full regressions (5) and (6).

II. Regressions (5) and (6) for ABT Stocks

Part A of Table 2 summarizes estimates of regression (5) for All but Tiny (ABT) stocks. Recall that if the origins of the book-to-market ratio BM_t are irrelevant for predicting returns (the null hypothesis that only BM_t counts), then the average slopes for the three components of BM_t in (5) should be equal in magnitude (positive for BM_{t-k} and $dB_{t-k,t}$ and negative for $dM_{t-k,t}$). The estimates of (5) for ABT stocks support this hypothesis, at least with respect to the average slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$. Thus, the average slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$ are generally two or more standard errors from zero, the negative average slopes for $dM_{t-k,t}$ are about the same magnitude as the positive average slopes for $dB_{t-k,t}$, and there is no clear pattern in which slope is further from zero.

In our Fama-MacBeth approach, the average value of the sum of the monthly slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$ in the estimates of (5) for a given lag k provides a simple formal test of whether the average slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$ (always opposite in sign) have the same magnitude. For the overall 1927-2006 period and for 1927-1963 and 1963-2006, the t-statistics for the means of the sum of the slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$, in the last column of Part A of Table 2, are within 1.2 standard errors of zero, and all but one (for lag k = 36 for 1927-1963) are within one standard error of zero. In short, changes in BM_t due to changes in book equity are about as relevant as changes in price for forecasts of ABT expected returns.

If changes in book equity are about as relevant as changes in price, then information about the origins of the book-to-market ratio does not enhance estimates of expected returns if the average slope for the lagged book-to-market ratio BM_{t-k} in (5) is equal in magnitude to the average slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$. The interesting alternative hypothesis here is that the slope for BM_{t-k} is closer to zero than the slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$; in other words, the old information about changes in book equity and price in BM_{t-k} is less relevant than the more recent information in $dM_{t-k,t}$ and $dB_{t-k,t}$. There is suggestive evidence in favor of this alternative hypothesis in Part A of Table 2. In the estimates of (5) for 1927-2006, the average slopes for changes in price and book equity over the last k months, $dM_{t-k,t}$ and $dB_{t-k,t}$, are two or more times the magnitude of the average slope for the book-to-market ratio of k months ago, BM_{t-k}. But the greater importance of new news may be specific to 1927-1963. The average $dM_{t-k,t}$ and $dB_{t-k,t}$ slopes for 1963-2006 are closer in magnitude to the slope for BM_{t-k}, except perhaps for the longest lag (k = 60).

The estimates of regression (6) in Part B of Table 2 provide formal tests of whether the average slope for BM_{t-k} in (5) differs in magnitude from the average slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$. The estimates of (6) for 1963-2006 say that when the most recent book-to-market ratio, BM_t, is used as an explanatory variable in place of BM_{t-k}, the lagged changes in price and book equity, $dM_{t-k,t}$ and $dB_{t-k,t}$, show no reliable explanatory power. The absence of explanatory power for $dM_{t-k,t}$ and $dB_{t-k,t}$ in the face of competition from BM_t suggests that at least for 1963-2006, information about the origins of BM_t does not improve estimates of ABT expected returns. And this implies that old news from changes in price and book equity is as relevant for expected returns as new news.

A skeptical reader could suggest a more nuanced inference about the ABT results for 1963-2006, at least with respect to old versus new news. The average slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$ in the estimates of (5) for 1963-2006 (Part A of Table 2) are always further from zero than the average slope for BM_{t-k}. Moreover, the average slopes for BM_t in the estimates of (6) for 1963-2006 in Part B of Table 2 are below the BM_t slope in the Table 1 regressions that use just MC_t and BM_t to explain returns. Finally, the average slopes for BM_{t-k} for 1963-2006 in Table 2 decline as the lag k increases from 12 to 60. In short, there are hints in the ABT regressions for 1963-2006 that more recent changes in the book-to-market ratio have more information about expected returns than more distant changes. But the fact that the 1963-2006 average slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$ in the estimates of (5) do not move toward zero as the lag k increases leans against this conclusion.

The hypothesis that the origins of the book-to-market ratio matter, specifically, that more recent changes in book equity and price have more information about expected returns, gets more support in the ABT results for 1927-1963. In the estimates of (5) for 1927-1963 (Part A of Table 2), the average slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$ move toward zero as the lag k increases, and the slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$ are three or more times the magnitude of the average slopes for BM_{t-k}. Unlike the estimates of (6) for 1963-2006, the estimates for 1927-1963 (Part B of Table 2) formally confirm that $dM_{t-k,t}$ and $dB_{t-k,t}$ continue to have marginal explanatory power (average slopes near or beyond two standard errors from zero) when the most recent book-to-market ratio, BM_t, is used as an explanatory variable in place of BM_{t-k}. All this is evidence that for 1927-1963, more recent changes in the book-to-market ratio have more information about ABT expected returns.[3]

In sum, the estimates of (5) and (6) for 1963-2006 produce no reliable evidence that the origins of the book-to-market ratio, BM_t, in terms of past changes in price versus past changes in book equity, can be used to improve the estimates of expected returns from BM_t alone. There is, however, solid evidence that during 1927-1963, breaking BM_t into its components enhances forecasts of returns. The reason is not that changes in book equity during 1927-1963 are more or less informative about expected returns than changes in price, but rather that more recent changes in book equity and price are more informative than more distant changes. In terms of our valuation framework, the results suggest that during 1927-1963 breaking the book-to-market ratio into the three components of equation (1) unlocks information about expected cashflows that improves forecasts of ABT returns, but during 1963-2006 BM_t alone captures all the information about expected cashflows and expected returns in its components.

III. Regressions (5) and (6) for Tiny Stocks

The results for Tiny stocks from regressions (5) and (6), in Table 3, differ from those for ABT stocks in Table 2. For Tiny stocks, the regressions for 1927-1963 and 1963-2006 reject the hypothesis that the average slopes for BM_{t-k}, $dB_{t-k,t}$, and $dM_{t-k,t}$ in (5) are equal in magnitude. This implies that for Tiny stocks the breakdown of BM_t into its components improves expected return estimates for 1963-2006

[3]The average slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$ in (6) test whether the two variables individually have explanatory power relative to the most recent book-to-market ratio BM_t. We have also tested whether $dM_{t-k,t}$ and $dB_{t-k,t}$ jointly have explanatory power relative to BM_t. Skipping the details, we can report that the results support the inferences above; that is $dM_{t-k,t}$ and $dB_{t-k,t}$ jointly have explanatory power relative to BM_t during 1927-1963, but not 1963-2006.

as well as for 1927-1963. A systematic result, observed in both periods, is that the lagged price change, $dM_{t-k,t}$, has strong explanatory power in (5) (average slopes from -2.42 to -6.42 standard errors from zero). More interesting, the average slopes for $dM_{t-k,t}$ in (5) are much further from zero than the slopes for $dB_{t-k,t}$ or BM_{t-k}. These results suggest that for Tiny stocks $dM_{t-k,t}$ has more explanatory power than either the change in book equity, $dB_{t-k,t}$, or the lagged book-to-market ratio, BM_{t-k}.

Formal tests confirm this inference. The tests on the mean of the sum of the slopes for $dB_{t-k,t}$ and $dM_{t-k,t}$ in (5), in the last column of Part A of Table 3, confirm that for Tiny stocks the average slopes for $dM_{t-k,t}$ are further from zero than the slopes for $dB_{t-k,t}$. In the estimates of (6), which substitutes the most recent BM_t for the lagged ratio in (5), only one of the average slopes for $dM_{t-k,t}$ (Part B of table 3) is within two standard errors of zero, and the rest are more than -2.3 standard errors below zero. The estimates of (6) thus formally confirm that for Tiny stocks, the averages slopes for $dM_{t-k,t}$ in (5) are also further from zero than the average slopes for BM_{t-k} (or more directly, $dM_{t-k,t}$ improves forecasts of returns from BM_t).

The remaining issue is whether $dB_{t-k,t}$ and BM_{t-k} add anything to return predictions for Tiny stocks. In the 1927-1963 estimates of (5) for Tiny stocks, the average slopes for $dB_{t-k,t}$ and BM_{t-k} are within 1.0 standard error of zero. Thus, for 1927-1963 we cannot reject the hypothesis that the news about book equity in $dB_{t-k,t}$ and the older news about book equity and price in BM_{t-k} are irrelevant for expected returns. Inferences about the average slopes for $dB_{t-k,t}$ and BM_{t-k} for 1927-1963 are, however, clouded by the fact that there are few Tiny stocks (on average 141) during this (NYSE only) period. In the estimates of (5) for 1963-2006, when there are lots of (Amex and Nasdaq) Tiny stocks, the average slopes for BM_{t-k} are near or beyond two standard errors from zero, and the average slopes for $dB_{t-k,t}$ are close to the slopes for BM_{t-k}, at least for the three- and five-year lags. The absence of reliable marginal explanatory power for $dB_{t-k,t}$ in the estimates of regression (6) for 1963-2006 formally confirms that the average slopes for $dB_{t-k,t}$ in (5) are not distinguishable from the average slopes for BM_{t-k}. Thus, during 1963-2006, when inferences are more reliable, it appears that $dB_{t-k,t}$ and BM_{t-k} help predict returns on Tiny stocks, they do so with about equal force, but with less force than past price changes.

Tiny stocks are similar to ABT stocks on one score: more recent news about book equity and price seems to be more relevant than old news for 1927-1963, but old and new news are about equally relevant for 1963-2006. For Tiny stocks the 1927-1963 average slopes for $dM_{t-k,t}$, $dB_{t-k,t}$, and BM_{t-k} in (5) are all less extreme for longer lags, and the average slopes for BM_{t-k} tend to be closer to zero than the slopes for $dB_{t-k,t}$ and especially $dM_{t-k,t}$ (Part A of Table 3) This suggests that during 1927-1963 more recent changes in book equity and price have more information about expected returns than more distant changes, a result also observed for ABT stocks (Part A of Table 2). In contrast, the average slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$ in the 1963-2006 estimates of (5) for Tiny stocks do not decay as the lag k increases, so old and new news seem about equally relevant for describing average returns for this period, a result again observed for ABT stocks.

In sum, the regressions for Tiny stocks for 1927-1963 and 1963-2006 say that using the components of the book-to-market ratio to forecast returns provides better estimates of expected returns than BM_t alone. In terms of our valuation framework, the results for Tiny stocks say that breaking BM_t into its components indeed helps isolate information about expected cashflows that enhances estimates of expected returns. For Tiny stocks, the heavy lifting in terms of marginal explanatory power seems to come from lagged changes in price. The tests for 1927-1963 also suggest that new news improves estimates of expected returns more than old news, but as in the case of ABT stocks, this result does not show up for Tiny stocks in the tests for 1963-2006.

IV. Daniel and Titman (2006)

Focusing on five-year lagged changes in book equity, price, and shares outstanding, Daniel and Titman (2006) estimate regression (5) for July 1968 to December 2003, for a sample of stocks similar to our ABT sample, and with results similar to our ABT results for 1963-2006 (Table 2). Their inferences, however, center on a different regression in which the lagged change in price, $dM_{t-60,t}$, is replaced by the residual from the regression of $dM_{t-60,t}$ on BM_{t-60} and $dB_{t-60,t}$. They call the change in book equity, $dB_{t-60,t}$, tangible information and they call the residual from their $dM_{t-60,t}$ regression intangible information. In their return regressions, BM_{t-60} and the orthogonalized version of $dM_{t-60,t}$ show explanatory power, but the average slope on $dB_{t-60,t}$ is close to zero. They conclude that changes in the book-to-market ratio from t-60 to t due to intangible information that arises during the period are important for predicting returns, but changes due to the tangible information in the change in book equity have no role. This conclusion seems in conflict with our inference that for ABT stocks and the 1963-2006 period, changes in book equity (old and new) are as relevant for expected returns as changes in price, and the breakdown of BM_t into its components adds nothing to estimates of ABT expected returns.

In fact there is no conflict. To see the point, consider a simplified version of the Daniel-Titman model that captures the essence of their story.[4] Suppose the change in book equity, $dB_{t-k,t}$, captures the tangible information that arises between t-k and t. Suppose the change in price from t-k to t includes both tangible and intangible information, $dM_{t-k,t} = dB_{t-k,t} + I_{t-k,t}$, so intangible information is the difference between the change in price and the change in book equity, $I_{t-k,t} = dM_{t-k,t} - dB_{t-k,t}$. If we substitute $I_{t-k,t}$, for $dM_{t-k,t}$ in regression (5), nothing changes except the slope for $dB_{t-k,t}$, which becomes the sum of the slopes for $dB_{t-k,t}$ and $dM_{t-k,t}$ in (5). For ABT stocks, the average slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$ for 1963-2006 are close in magnitude and opposite in sign, so the average slope for $dB_{t-k,t}$ disappears in the new regression (see the last column of Part A of Table 3). This leads to the inference of Daniel and Titman (2006) that tangible information that arises between t-k and t is irrelevant for future expected returns.

In our terms, there is a simpler interpretation of the regression that substitutes $I_{t-k,t}$ for $dM_{t-k,t}$ in (5). From equation (1) and the definition of intangible information as $I_{t-k,t} = dM_{t-k,t} - dB_{t-k,t}$, the change in the book-to-market ratio from t-k to t is,

$$BM_t - BM_{t-k} = dB_{t-k,t} - dM_{t-k,t} = -I_{t-k,t}\,. \tag{7}$$

In words, the book-to-market ratio changes only because of intangible information, the excess of the change in price over the change in book equity. Thus, the conclusion that expected returns change only because of intangible information is equivalent to our more direct conclusion that for ABT stocks

[4] We thank a referee for suggesting this simplification of the model of Daniel and Titman (2006).

and the 1963-2006 period, only the current book to market ratio counts; the origins of BM_t in terms of past changes in book equity and past changes in price do not enhance estimates of expected returns.

There is another way to see the point. Suppose we substitute $I_{t-k,t}$ for $dM_{t-k,t}$ in regression (6). The regression then provides a direct test of whether the tangible and intangible information that arise from t-k to t add to the estimates of expected returns provided by the most recent book-to-market ratio, BM_t. There is, however, no need to run this regression. The average slopes for $dM_{t-k,t}$ and $dB_{t-k,t}$ are close to zero in the 1963-2006 estimates of (6) for ABT stocks (Table 2), so the slope for $I_{t-k,t} = dM_{t-k,t} - dB_{t-k,t}$ must be close to zero. In short, the simple story told by the 1963-2006 estimates of regressions (5) and (6) for ABT stocks (that breaking BM_t into its components seems to add nothing to estimates of expected returns) can be obscured by linear transformations of the variables, but it cannot be changed.

V. Share Issues and Repurchases

Earlier studies typically identify stock issues and repurchases via public announcements. With this approach, many events are missed and sample periods are limited. Like Daniel and Titman (2006) and Pontiff and Woodgate (2006), we measure net share issues via CRSP, using the change over k months in split-adjusted shares outstanding, $NS_{t-k,t}$ (k = 12, 36, 60), which is negative when firms on balance repurchase during the k-month period and positive when on balance they issue. This approach allows us to cover all issues and repurchases, including those not publicized. It also allows us to examine the relation between average returns and net issues for 1927-1963 as well as for 1963-2006.

Before examining the results for net share issues, it is worth emphasizing that, like other variables in regressions (5) and (6), $NS_{t-k,t}$ is measured long before the returns it is used to explain. Specifically, $NS_{t-k,t}$ is the change in shares outstanding for the k months ending in December of year t-1, so the *last* month of share changes in $NS_{t-k,t}$ is at least six months before the monthly returns $NS_{t-k,t}$ is used to explain (July of t through June of t+1). Thus, pure announcement effects associated with net share issues should have played out when we use $NS_{t-k,t}$ to predict returns, and any forecast power can be attributed to longer-term information about expected returns.

Confirming Daniel and Titman (2006), Tables 2 and 3 show that net share issues help predict stock returns during 1963-2006. In the 1963-2006 regressions for All but Tiny stocks (Table 2), the average slopes for $NS_{t-k,t}$ are negative, more than -5.0 standard errors from zero, and $NS_{t-k,t}$ is the most powerful explanatory variable. In the 1963-2006 regressions for Tiny Stocks (Table 3), the average slopes for $NS_{t-k,t}$ are more than -3.5 standard errors from zero, and the strong forecast power of $NS_{t-k,t}$ is similar to that of the past price change, $dM_{t-k,t}$. Thus, like earlier work, our results for 1963-2006 say that larger net share issues are associated with lower long-term subsequent returns. (See Mitchell and Stafford 2000 and Ritter 2003 for summaries of previous work and references.)

The earlier 1927-1963 period produces a startling turnabout, at least for the ABT stocks that account for the lion's share of stock market wealth. Confirming Pontiff and Woodgate (2006), we find that the forecast power of net share issues observed for ABT stocks for 1963-2006 is absent in the earlier period. The average $NS_{t-k,t}$ slopes for ABT stocks for 1927-1963 (Table 2) are small relative to their standard errors, and two of three are positive. (Difference of means tests, not shown in Table 2, confirm that the average $NS_{t-k,t}$ slopes for 1963-2006 for k = 12, 36, and 60 are 2.16, 3.57, and 3.74 standard errors below the corresponding slopes for 1927-1963.)

In contrast, the average $NS_{t-k,t}$ slopes for Tiny stocks for 1927-1963 (Table 3) are all negative, and they are not typically closer to zero than the slopes for 1963-2006. But small sample sizes and high return volatility render the 1927-1963 regression results for Tiny stocks unreliable. The portfolio tests below suggest that, for Tiny stocks and ABT stocks alike, there is no pattern in the relation between average returns and $NS_{t-k,t}$ during 1927-1963.

The 1927-1963 results for net share issues are so contrary to the results for later periods that have so stirred the literature, they warrant further study. We first examine how the cross-section of net issues changes through time, for clues as to why predictions of returns from net issues might change. We then use a portfolio approach to provide a more direct perspective on stock returns after net issues.

A. The Cross-Section of Net Share Issues

Table 4 summarizes the cross-section of $NS_{t-k,t}$ for All but Tiny stocks for 1, 3, and 5 year issuing intervals (k = 12, 36, 60). Results are shown for 1927-1963, 1963-2006, and for periods that split in 1963 and (except for the first and last) are ten years long. The table shows the average percents of ABT firms and ABT total market cap, with negative, zero, and positive $NS_{t-k,t}$. The table also shows averages of the annual quintile breakpoints for positive net issues (called issues) by ABT firms and the 50th percentile of negative net issues (repurchases). Issues outnumber repurchases more than three to one, so we show a finer grid for issues. Finally, $NS_{t-k,t}$ is the change from t-k to t in the log of shares outstanding, but the breakpoints in Table 4 are simple percent changes.

Viewed on a yearly basis ($NS_{t-12,t}$), most ABT firms do not issue or repurchase stock during the early years of 1927-2006. In more recent years, most firms issue or repurchase every year. The fraction of firms with zero $NS_{t-12,t}$ peaks at 92.2% for 1933-1943 and declines rather steadily to 2.6% for 1993-2006 (Table 4). The percent of ABT firms that issue ($NS_{t-12,t} > 0$) jumps from 6.1% in 1933-1943 and 18.4% in 1943-1953 to 51.6% in 1953-1963. It reaches a maximum of 73.4% for 1993-2006. Similarly, the fraction of ABT firms that repurchase ($NS_{t-12,t} < 0$) increases from a low of 1.7% in 1933-1943 to 24.0% in 1993-2006. Confirming Bagwell and Shoven (1989), there is a surge in repurchases after 1982, from 13.6% of ABT firms in 1973-1983 to 23.0% in 1983-1992. The clear inference from these results is that the costs associated with issues and repurchases decline through time and/or the benefits increase.

On average, only 24.0% of ABT firms are net issuers during any given year of 1927-1963. When the issue interval is extended to five years, the average increases to 44.5%. Thus, even during the early years of the sample, large fractions of ABT firms issue stock at some point during any five-year period, a result of some import for evaluating the return evidence of early years. In contrast, during 1963-2006 an impressive 68.1% of ABT firms issue in any given year, but the hit rate rises only to 75.8% for five-year intervals. We conclude that during later years, firms that issue tend to issue frequently, but this is less true in earlier years.

A similar result holds for repurchases. During 1927-1963, on average 6.1% of ABT firms repurchase (or otherwise reduce shares outstanding) in any given year, and the fraction almost doubles to 11.5% for five-year intervals. More than 23% of ABT firms repurchase during any given year of the 1983-2006 peak period, but the fraction rises only to about 27% for five year intervals. Thus, during the later years of the sample, ABT firms that repurchase tend to repurchase often.

Stock issues are less frequent during the early years of 1927-2006, but when they occur, they tend to be larger than in later years. For example, among ABT firms with positive $NS_{t-12,t}$, the 60th percentile of annual issues averages 8.53% of stock outstanding for 1927-1963, versus 2.55% for 1963-2006. A likely explanation is that many stock issues of later years are to employees via options, grants, and other benefit programs that, on a year-to-year basis, involve rather small fractions of shares outstanding. Such benefit programs are rare during the early years of the sample. Stock issues via seasoned equity offerings (SEOs) or as payment in mergers tend to be larger. They are relatively infrequent throughout the sample period, but they are a larger fraction of issue events earlier in the period.

The differences between the ABT cross-sections of share issues for early and later years of the sample shrink when we expand the interval for measuring issues from one to five years. In fact, the average quintile breakpoints for five-year issues ($NS_{t-60,t}$) are similar for 1931-1963 and 1963-2006. This is in contrast to the large differences between the 1927-1963 and 1963-2006 breakpoints for one-year issues ($NS_{t-12,t}$). For five-year intervals, issues are large even at lower percentiles of the cross-section. For example, the 40th percentile of five-year issues is 9.48% of stock outstanding for 1931-1963 and 9.24% for 1963-2006. In contrast, the 40th percentile of one-year issues is 2.89% of stock outstanding for 1927-1963 and a puny 0.94% for 1963-2006.

Why do the cross-sections of issues for early and later years converge when we extend the issuing interval from one to five years? Later in the sample, many firms make relatively small issues of stock, primarily in employee compensation plans (Fama and French 2006). Except at the high end, these small issues dominate the cross-section of one-year issues. Over five-year intervals, however, firms are more likely to engage in one or more large issues (SEOs and stock financed mergers). These large events play a big role in the entire cross-section of five-year issues. As a result, the distribution of five-year issues for later years looks much like that of earlier years, where large issues always dominate the cross-section.

Repurchases are more frequent after 1982, and they increase in size. In the ten-year periods before 1983, the median repurchase of ABT firms that retire shares in any given year averages less than 0.6% of shares outstanding. During 1983-2006, the median repurchase is about 2.0% of outstanding shares. The median repurchase size for five-year changes also jumps after 1982, from 1.09% of shares for 1931-1963 and 2.70% for 1973-1983, to a substantial 6.40% for 1983-1993 and 6.66% for 1993-2006.

Unfortunately, there are no clear clues in all this about why net share issues have more information about ABT expected returns later in the sample period. Issues and repurchases are more common in later years. If market timing is the story, intuition suggests that net issues should be less informative when they are more humdrum, the opposite of what we observe. On the other hand, if net issues help isolate information about expected cashflows that improves estimates of expected returns, the higher frequency and more complete spectrum of net issues in later years may enhance the role of $NS_{t-k,t}$. The problem with this story is that there are plenty of large net stock issues throughout the sample period, and it is difficult to explain why large issues add nothing to the explanation of ABT expected returns during the early years of the sample period but (as we see next) they play a big role later on.

B. The Cross-Section of Average Returns

Table 5 shows average residuals, sorted on $NS_{t-k,t}$, from the regressions in Table 1, which use MC_t and BM_t to predict returns. Table 5 allows us to examine how average returns vary with $NS_{t-k,t}$ after adjusting for market cap and book-to-market effects. We call these adjusted average returns abnormal returns. To have comparable results for ABT and Tiny stocks, the breakpoints for $NS_{t-k,t}$ in Table 5 are those for ABT stocks summarized in Table 4.

The portfolio results in Table 5 confirm the regressions in Tables 2 and 3. For all issuing horizons, net share issues (repurchases and issues) do not reliably predict returns during 1927-1963. For All but Tiny stocks, the 1927-1963 abnormal returns following the extreme 50% of repurchases of the last year and the last three years (k = 12 and 36) are positive and similar to those for 1963-2006, but the small repurchase samples of the early years make for unreliable inferences. There is no pattern in the 1927-1963 abnormal returns following the more numerous stock issues of ABT firms. Thus, like the regressions in Table 2, the sorts for 1927-1963 in Table 5 fail to produce the negative relation between ABT average returns and net share issues observed in existing papers that focus on the subsequent period.

For Tiny stocks, there are no patterns in 1927-1963 abnormal returns after repurchases or issues (Table 5). Thus, the fact that the 1927-1963 average $NS_{t-k,t}$ slopes for Tiny stocks in the regressions (Table 3) are negative is apparently less important than the fact that they are statistically unreliable. In any case, like the sorts for ABT stocks, the 1927-1963 $NS_{t-k,t}$ sorts for Tiny stocks fail to produce the negative relation between average returns and net share issues observed in the subsequent period.

Like the regressions, the $NS_{t-k,t}$ sorts for 1963-2006 produce strong evidence that net share issues predict returns. For ABT stocks, the action in the 1963-2006 returns from the sorts is in the extremes of net issues. The abnormal return for the extreme 50% of repurchases of the preceding year is 0.25% per month (t = 4.66), the abnormal return for the extreme 20% of last year's issues is -0.41% per month (t = -5.57), and abnormal returns outside the extremes are much closer to zero (Table 5). These results are not surprising since much of the action in $NS_{t-k,t}$ itself during 1963-2006 is in the extremes (Table 4).

Earlier studies find that the negative abnormal returns following stock issues and the positive abnormal returns following repurchases persist for years. Like the regressions (Table 2), the sorts of ABT abnormal returns for 1963-2006 (Table 5) support this conclusion. The extreme 50% of repurchases of the last five years are good news for ABT monthly returns (the abnormal return is more than four standard errors above zero), and returns following these large repurchases do not decline as the repurchase horizon is extended from one to five years. Abnormal returns after stock issues fall a bit when the issuing horizon is extended beyond a year, but the extreme 20% of the issues of the last one, three, and five years are nevertheless bad news for ABT returns (abnormal returns more than -4.5 standard errors from zero).

The 1963-2006 abnormal returns for Tiny firms that issue stock ($NS_{t-k,t} > 0$) are similar to the ABT results. Again, we observe strong negative abnormal returns for the largest quintile of issues. And the abnormal returns of Tiny firms that issue do not change a lot as the horizon for issues is extended from one to five years. The 1963-2006 results for repurchases are, however, different for Tiny stocks. In particular, the strong positive abnormal returns observed in the year after extreme repurchases by Tiny firms disappear for repurchases over the last three or five years. This is in contrast to the persistence of repurchase returns for ABT stocks.

Finally, we caution against reading too much into the full cross-section of abnormal returns in Table 5. The abnormal returns are averages across months of regression residuals that average to zero every month. Thus, large abnormal returns in the extremes must be absorbed by the remaining cells in the sorts. Patterns in the way abnormal returns vary across the cells of the sorts are, however, meaningful. For example, the decline in 1963-2006 ABT abnormal returns across the sort cells from extreme repurchases to extreme issues is meaningful (and consistent with the negative average regression slopes for $NS_{t-k,t}$ in Table 2), but the fact that the average residuals for less extreme issues are mostly positive is probably misleading. There is, however, nothing mechanical in the finding that abnormal returns for 1927-1963 bounce about rather randomly across the cells of the $NS_{t-k,t}$ sorts (which is consistent with the weak average regression slopes for $NS_{t-k,t}$ observed for this period in Tables 2 and 3).

VI. Conclusions

We examine whether the origins of the book-to-market ratio, BM_t, in terms of past changes in price and book equity, $dM_{t-k,t}$ and $dB_{t-k,t}$, and the more distant changes in price and book equity summarized by BM_{t-k}, can be used to provide better estimates of expected returns than BM_t alone. Our hypothesis is that past changes in price and book equity help disentangle the information in BM_t about expected cashflows and expected returns, to enhance estimates of expected returns.

The tests for 1963-2006 on All but Tiny stocks produce little evidence in favor of our hypothesis. During 1963-2006, using the components of BM_t (that is, $dM_{t-k,t}$, $dB_{t-k,t}$, and BM_{t-k}) to predict ABT returns provides estimates of expected returns that are not reliably better than the estimates from BM_t alone. During 1927-1963, however, breaking BM_t into its components improves forecasts of ABT returns. The reason is not that changes in book equity during 1927-1963 have more or less information about expected returns than changes in price, but rather that more recent changes in book equity and price have more information than more distant changes.

For Tiny stocks, using the components of BM_t to forecast returns improves estimates of expected returns for 1963-2006 as well as for 1927-1963. In terms of marginal explanatory power, the heavy lifting for Tiny stocks is done by lagged changes in price. The tests for 1927-1963 also say that new news improves estimates of expected returns more than old news, but as in the case of ABT stocks, this result does not show up in the tests on Tiny stocks for 1963-2006.

In the valuation framework of equation (4), the results suggest that during 1927-1963 breaking the book-to-market ratio into its components unlocks information about expected cashflows that improves estimates of ABT expected returns, but during 1963-2006 BM_t alone captures all the information about expected cashflows and expected returns in its components. For Tiny stocks, breaking BM_t into its components unlocks information about expected cashflows that leads to better estimates of expected returns throughout the sample period.

Why do past changes in price contribute more than changes in book equity to estimates of expected returns on Tiny stocks, but not to estimates for ABT stocks? The valuation framework of equation (4) tells us that past variables contribute to expected returns because they have information about expected cashflows and/or expected returns. The high volatility of fundamentals for Tiny stocks may mean that past changes in fundamentals like book equity have more noise and thus less information about the future than is the case for ABT stocks.

A caveat is, however, in order. Our tests hinge on the proposition that past changes in book equity and price contain different mixes of information about expected cashflows and expected returns, but there are no clear predictions about how this plays out in terms of marginal explanatory power. And there is no particular reason that the story should be the same for different types of stocks and different time periods.

Indeed, the more surprising evidence is that for ABT stocks, the origins of BM_t seem to add nothing to the description of expected returns for 1963-2006. Before doing the tests, our presumption was rather strong that $dM_{t-k,t}$, $dB_{t-k,t}$, and BM_{t-k} contain different mixes of information about expected cashflows and returns that would lead to better estimates of expected returns. The ABT results suggest, however, that during 1963-2006 BM_t captures all the information in its components.

Another variable that can enhance estimates of expected returns because it is related to expected cashflows is net share issues, $NS_{t-k,t}$. To separate the effects of net issues from the effects of per share changes in the market and book values of stocks, we include $NS_{t-k,t}$ as a separate forecasting variable in our return regressions. During 1963-2006, $NS_{t-k,t}$ has a powerful role in return forecasts. For ABT stocks $NS_{t-k,t}$ is more powerful than BM_t or any of its components, and for Tiny stocks $NS_{t-k,t}$ is as powerful as past price changes. The average regression slopes for $NS_{t-k,t}$ are negative, which is in line with earlier evidence that long-term returns are strong after stock repurchases and weak after stock issues. Like Pontiff and Woodgate (2006), however, we find that 1927-1963, which is out-of-sample with respect to most previous work, produces no reliable evidence that net issues predict returns.

The existing literature leans almost uniformly toward a mispricing story for the long-term abnormal returns after the stock issues and repurchases of 1963-2006. (Firms issue when stock prices are too high, repurchase when prices are too low, and prices respond only slowly to these actions.) The results for 1927-1963 render this story suspect, unless one is willing to argue that managers only learned through time to recognize when their stocks are mispriced, and investors never learned.

In terms of our valuation framework, the results say that $NS_{t-k,t}$ helps isolate information about expected cashflows to improve estimates of expected returns for 1963-2006, but (for whatever reason) this is not true for 1927-1963. We do not have a story, but it is interesting that net share issues improve estimates of expected returns for 1963-2006 (when the breakdown of BM_t into its components seems to add nothing at least to the description of ABT expected returns), but $NS_{t-k,t}$ adds nothing during 1927-1963 (when splitting BM_t into its components enhances estimates of expected returns).

Finally, there is an issue on which our results are silent: whether the cross-section of expected stock returns is the result of rational or irrational pricing. Equation (4) is a tautology that defines the internal rate of return, r (Campbell and Shiller 1988), and (4) holds whether the price in B_t/M_t (on the left hand side of (4)) is rational or irrational. As Fama and French (2006) emphasize, equation (4) accommodates both rational and irrational explanations for differences in expected returns and cannot in itself distinguish between them. Moreover, whether or not breaking BM_t into its components enhances estimates of expected returns produces no light on the now timeworn conundrum of whether expected returns are the result of rational or irrational pricing.

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Table 1 – Regressions that use market cap (*MC_t*) and the book-to-market ratio (*BM_t*) to predict monthly excess returns for All but Tiny and Tiny stocks

The table shows average slopes and their t-statistics from cross-section regressions to predict monthly returns (in excess of the one-month Treasury bill rate) for individual All but Tiny stocks (those above the 20th percentile of market cap for NYSE stocks) and Tiny stocks (below the 20th NYSE market cap percentile). Here and in the tables that follow, the t-statistics for the average slopes use the time-series standard errors of the average slopes, as in Fama and Macbeth (1973). The regressions, estimated monthly, use variables that are updated at the end of June each year to explain monthly returns from July through June of the following year. Results are shown for July 1927 to December 2006 (1927-2006), July 1927 to June 1963 (1927-1963), and July 1963 to December 2006 (1963-2006). Stocks is the average number of stocks in the regressions. MC_t is the natural log of market cap (price times shares outstanding) at the end of June, and BM_t is the log of the ratio of book and market equity per share. Book equity in BM_t is for the fiscal year ending in the preceding calendar year, and market equity is for the end of December of the preceding calendar year. The monthly regressions for July of year t to June of t+1 include NYSE, Amex (after 1962), and Nasdaq (after 1972) stocks with positive book equity for the fiscal yearend in the preceding calendar year, t-1. Book equity for 1962 to 2006 is Compustat's total assets (data item 6), minus liabilities (181), plus deferred taxes and investment tax credit (35) if available, minus (as available) liquidating (10), redemption (56), or carrying value (130) of preferred stock. Book equity for NYSE stocks for years before 1962, and for NYSE firms missing from Compustat after 1962, is hand collected from Moody's manuals. The regression R^2 is adjusted for degrees of freedom.

	Stocks	Intercept	MC_t	BM_t	R^2
			All but Tiny Stocks		
1927-2006					
Slope	958	1.15	-0.07	0.21	0.03
t-statistic		3.69	-1.98	3.29	
1927-1963					
Slope	579	1.18	-0.08	0.16	0.03
t-statistic		2.62	-1.56	1.66	
1963-2006					
Slope	1272	1.12	-0.06	0.25	0.03
t-statistic		2.60	-1.26	2.95	
			Tiny Stocks		
1927-2006					
Slope	1000	1.97	-0.53	0.30	0.02
t-statistic		5.68	-4.77	4.17	
1927-1963					
Slope	141	1.45	-0.68	0.23	0.02
t-statistic		2.53	-3.00	1.82	
1963-2006					
Slope	1710	2.40	-0.40	0.36	0.01
t-statistic		5.71	-5.33	4.46	

Table 2 – Estimates of regressions (5) and (6) for All but Tiny stocks

The table shows average slopes and their t-statistics from cross-section regressions to predict monthly returns (in excess of the one-month bill rate) for All but Tiny stocks (those with market cap above the 20th percentile for NYSE stocks). The regressions are estimated monthly, using variables updated annually at the end June to explain returns for July through the following June. The date ranges shown correspond to the k = 12 period for monthly returns. Thus, 1927-1963 starts in July 1927 (k = 12), July 1929 (k = 36), or July 1931 (k = 60), and ends in June 1963. 1963-2006 is July 1963 to December 2006 for k = 12, 36, and 60. Stocks is the average number of stocks in the regressions. MC_t is the natural log of market cap at the end of June, and BM_t is the log of the ratio of book and market equity per share. Book equity in BM_t is for the fiscal year ending in the preceding calendar year, and market equity is for the end of December of the preceding calendar year. The changes in the logs of price and book equity per share, $dM_{t-k,t}$ and $dB_{t-k,t}$, are for the k months preceding the price and book equity in BM_t. The change in the log of split-adjusted shares outstanding, $NS_{t-k,t}$, covers the same period as $dM_{t-k,t}$. The regression R^2 is adjusted for degrees of freedom. The last column of Part A shows the average value of the sum of the slopes for $dB_{t-k,t}$ and $dM_{t-k,t}$ along with the t-statistic for the average value.

Part A: Estimates of regression (5), which uses BM_{t-k} as an explanatory variable

	Stocks	Intercept	MC_t	BM_{t-k}	$dM_{t-k,t}$	$dB_{t-k,t}$	$NS_{t-k,t}$	R^2	$dB_{t-k,t} + dM_{t-k,t}$
1927-2006									
k = 12									
Slope	958	1.17	-0.08	0.15	-0.33	0.41	-0.98	0.05	0.08
t-statistic		4.17	-2.36	2.65	-2.41	3.61	-4.39		0.41
k = 36									
Slope	878	1.17	-0.09	0.15	-0.29	0.38	-0.41	0.05	0.09
t-statistic		4.34	-2.82	2.39	-3.06	4.71	-3.49		0.98
k = 60									
Slope	810	1.34	-0.09	0.12	-0.28	0.25	-0.31	0.05	-0.03
t-statistic		5.01	-3.21	1.95	-3.56	3.64	-3.66		-0.40
1927-1963									
k = 12									
Slope	579	1.13	-0.08	0.12	-0.46	0.66	-0.43	0.05	0.20
t-statistic		2.88	-1.73	1.31	-1.90	3.22	-1.14		0.71
k = 36									
Slope	547	1.02	-0.09	0.13	-0.38	0.60	0.07	0.06	0.22
t-statistic		2.70	-2.08	1.32	-2.23	4.13	0.36		1.20
k = 60									
Slope	520	1.38	-0.11	0.09	-0.31	0.30	0.05	0.06	-0.01
t-statistic		3.53	-2.58	0.88	-2.11	2.39	0.43		-0.03
1963-2006									
k = 12									
Slope	1272	1.21	-0.07	0.19	-0.22	0.20	-1.42	0.04	-0.02
t-statistic		3.04	-1.62	2.40	-1.48	1.71	-5.63		-0.13
k = 36									
Slope	1137	1.29	-0.08	0.16	-0.21	0.21	-0.77	0.04	-0.00
t-statistic		3.40	-1.93	2.03	-2.12	2.38	-5.17		-0.04
k = 60									
Slope	1024	1.31	-0.08	0.14	-0.27	0.22	-0.57	0.04	-0.05
t-statistic		3.60	-2.04	1.87	-3.05	2.82	-5.08		-0.68

Table 2, Part B: Estimates of regression (6), which uses BM_t as an explanatory variable

	Stocks	Intercept	MC_t	BM_t	$dM_{t\text{-}k,t}$	$dB_{t\text{-}k,t}$	$NS_{t\text{-}k,t}$	R^2
1927-2006								
k = 12								
Slope	958	1.17	-0.07	0.16	-0.17	0.25	-0.98	0.05
t-statistic		4.18	-2.35	2.75	-1.38	2.31	-4.41	
k = 36								
Slope	878	1.17	-0.09	0.15	-0.14	0.24	-0.41	0.05
t-statistic		4.35	-2.83	2.34	-1.77	3.42	-3.49	
k = 60								
Slope	810	1.34	-0.09	0.12	-0.16	0.13	-0.30	0.05
t-statistic		5.02	-3.21	1.92	-2.64	2.32	-3.60	
1927-1963								
k = 12								
Slope	579	1.13	-0.08	0.12	-0.34	0.54	-0.45	0.05
t-statistic		2.88	-1.71	1.39	-1.59	2.72	-1.18	
k = 36								
Slope	547	1.02	-0.10	0.12	-0.26	0.48	0.06	0.06
t-statistic		2.72	-2.10	1.22	-1.77	3.94	0.30	
k = 60								
Slope	520	1.39	-0.11	0.09	-0.22	0.21	0.06	0.06
t-statistic		3.55	-2.60	0.84	-1.91	2.12	0.51	
1963-2006								
k = 12								
Slope	1272	1.21	-0.07	0.19	-0.03	0.02	-1.42	0.04
t-statistic		3.04	-1.62	2.46	-0.23	0.14	-5.60	
k = 36								
Slope	1137	1.29	-0.08	0.17	-0.05	0.05	-0.77	0.04
t-statistic		3.40	-1.92	2.06	-0.58	0.61	-5.15	
k = 60								
Slope	1024	1.31	-0.08	0.14	-0.12	0.08	-0.57	0.04
t-statistic		3.59	-2.02	1.88	-1.84	1.11	-5.07	

Table 3 – Estimates of regressions (5) and (6) for Tiny stocks

The table shows average slopes and their *t*-statistics from cross-section regressions to predict monthly returns (in excess of the one-month bill rate) on Tiny stocks (those with market cap below the 20th percentile for NYSE stocks). The regressions are estimated monthly using variables that are updated annually at the end June to explain returns for July through the following June. The date ranges shown correspond to the k = 12 period for monthly returns. Thus, 1927-1963 starts in July 1927 (k = 12), 1929 (k = 36), or 1931 (k = 60), and ends in June 1963. 1963-2006 is July 1963 to December 2006 for k = 12, 36, and 60. Stocks is the average number of stocks in the regressions. MC_t is the natural log of market cap at the end of June, and BM_t is the log of the ratio of book and market equity per share. Book equity in BM_t is for the fiscal year ending in the preceding calendar year, and market equity is for the end of December of the preceding calendar year. The changes in the logs of price and book equity per share, $dM_{t-k,t}$ and $dB_{t-k,t}$, are for the k months preceding the price and book equity in BM_t. The change in the log of split-adjusted shares outstanding, $NS_{t-k,t}$, covers the same period as $dM_{t-k,t}$. The regression R^2 is adjusted for degrees of freedom. The last column of Part A shows the average value of the sum of the slopes for $dB_{t-k,t}$ and $dM_{t-k,t}$ along with the t-statistic for the average value.

Part A: Estimates of regression (5), which uses BM_{t-k} as an explanatory variable

	Stocks	Intercept	MC_t	BM_{t-k}	$dM_{t-k,t}$	$dB_{t-k,t}$	$NS_{t-k,t}$	R^2	$dB_{t-k,t} + dM_{t-k,t}$
1927-2006									
k = 12									
Slope	1000	1.97	-0.51	0.21	-0.62	0.19	-2.21	0.02	-0.43
t-statistic		6.21	-4.88	2.83	-3.76	1.02	-1.71		-1.70
k = 36									
Slope	803	1.67	-0.44	0.13	-0.54	0.17	-0.78	0.03	-0.36
t-statistic		5.05	-3.77	1.66	-4.80	1.57	-2.57		-2.67
k = 60									
Slope	650	1.62	-0.41	0.10	-0.53	0.12	-0.34	0.03	-0.40
t-statistic		5.02	-3.42	1.20	-5.00	1.22	-1.70		-3.07
1927-1963									
k = 12									
Slope	141	1.53	-0.66	0.12	-0.81	0.29	-3.17	0.03	-0.52
t-statistic		2.88	-3.10	0.95	-2.42	0.75	-1.12		-1.01
k = 36									
Slope	138	1.01	-0.59	0.06	-0.65	0.19	-0.77	0.03	-0.47
t-statistic		1.70	-2.37	0.47	-2.85	0.86	-1.16		-1.65
k = 60									
Slope	134	1.28	-0.65	0.01	-0.54	0.05	-0.15	0.04	-0.50
t-statistic		2.18	-2.48	0.05	-2.43	0.22	-0.34		-1.72
1963-2006									
k = 12									
Slope	1710	2.33	-0.38	0.28	-0.46	0.11	-1.42	0.02	-0.35
t-statistic		6.18	-5.42	3.32	-4.02	0.87	-4.94		-2.14
k = 36									
Slope	1323	2.19	-0.32	0.18	-0.45	0.16	-0.79	0.02	-0.28
t-statistic		6.04	-4.54	2.03	-5.11	1.60	-5.31		-2.85
k = 60									
Slope	1030	1.87	-0.23	0.17	-0.51	0.18	-0.48	0.02	-0.33
t-statistic		5.25	-3.14	1.97	-6.42	1.98	-3.54		-4.13

Table 3, Part B: Estimates of regression (6), which uses BM_t as an explanatory variable

	Stocks	Intercept	MC_t	BM_t	$dM_{t-k,t}$	$dB_{t-k,t}$	$NS_{t-k,t}$	R^2
1927-2006								
k = 12								
Slope	1000	1.97	-0.51	0.20	-0.42	-0.02	-2.22	0.02
t-statistic		6.24	-4.89	2.74	-2.76	-0.08	-1.72	
k = 36								
Slope	803	1.66	-0.44	0.14	-0.40	0.04	-0.78	0.03
t-statistic		5.03	-3.70	1.80	-3.76	0.33	-2.57	
k = 60								
Slope	650	1.60	-0.40	0.13	-0.42	0.01	-0.35	0.03
t-statistic		4.99	-3.30	1.57	-4.70	0.10	-1.73	
1927-1963								
k = 12								
Slope	141	1.53	-0.67	0.11	-0.70	0.17	-3.19	0.03
t-statistic		2.90	-3.11	0.91	-2.35	0.42	-1.12	
k = 36								
Slope	138	0.98	-0.59	0.09	-0.58	0.12	-0.77	0.03
t-statistic		1.66	-2.32	0.65	-2.76	0.46	-1.15	
k = 60								
Slope	134	1.24	-0.64	0.05	-0.53	0.02	-0.18	0.03
t-statistic		2.13	-2.39	0.33	-2.92	0.07	-0.42	
1963-2006								
k = 12								
Slope	1710	2.34	-0.38	0.27	-0.18	-0.17	-1.43	0.02
t-statistic		6.19	-5.44	3.23	-1.47	-1.65	-4.98	
k = 36								
Slope	1323	2.19	-0.32	0.18	-0.26	-0.02	-0.79	0.02
t-statistic		6.04	-4.54	2.06	-2.74	-0.26	-5.33	
k = 60								
Slope	1030	1.86	-0.22	0.18	-0.34	0.01	-0.47	0.02
t-statistic		5.23	-3.10	2.15	-4.23	0.08	-3.44	

Table 4 – Cross-section distributions of net share issues ($NS_{t\text{-}k,t}$) for All but Tiny Stocks

$NS_{t\text{-}k,t}$ is the change over k (= 12, 36, or 60) months in split-adjusted shares outstanding for All but Tiny stocks. The table shows averages for the years in a period of the percent of stocks and the percent of market cap with negative (Neg), zero (0) and positive (Pos) $NS_{t\text{-}k,t}$. The table also shows averages of the median (-50%) of $NS_{t\text{-}k,t}$ for firms that repurchase ($NS_{t\text{-}k,t}$ < 0) and the quintile breakpoints (20%, 40%, 60%, 80%) of $NS_{t\text{-}k,t}$ for firms that issue ($NS_{t\text{-}k,t}$ > 0). The date ranges correspond to the returns that are explained by $NS_{t\text{-}k,t}$ in the regressions of Table 2. For example, the results for 1963-2006 summarize the net share issues for one, three, and five year intervals ending in December 1962 to December 2005, which are used to explain the returns for July 1963 to December 2006. The results for 1933-1943 summarize $NS_{t\text{-}k,t}$ ending in December 1932 to December 1942, which are used to explained the returns for July 1933 to June 1943.

	% of Stocks			% of Market Cap			Net Share Issues				
	Neg	0	Pos	Neg	0	Pos	-50%	20%	40%	60%	80%
k = 12											
1927-1963	6.1	69.9	24.0	7.0	57.9	35.1	-0.56	0.35	2.89	8.53	23.25
1963-2006	18.9	13.0	68.1	25.7	8.7	65.6	-1.44	0.33	0.94	2.55	9.38
1927-1933	3.5	79.3	17.2	4.1	60.4	35.5	-0.10	0.44	6.88	15.23	37.92
1933-1943	1.7	92.2	6.1	2.8	87.2	10.0	-0.79	0.60	3.28	11.12	28.67
1943-1953	8.1	73.5	18.4	10.0	63.6	26.4	-0.76	0.21	2.31	7.80	23.14
1953-1963	9.9	38.5	51.6	9.9	21.4	68.8	-0.40	0.19	0.69	2.65	9.12
1963-1973	13.2	21.6	65.2	12.2	12.9	74.9	-0.57	0.15	0.49	1.57	5.65
1973-1983	13.6	24.8	61.6	13.6	20.2	66.2	-0.94	0.22	0.74	2.19	9.22
1983-1993	23.0	6.9	70.2	34.2	3.7	62.1	-1.88	0.28	0.83	2.27	8.78
1993-2006	24.0	2.6	73.4	38.0	1.1	60.9	-2.11	0.58	1.50	3.71	12.60
k = 36											
1929-1963	9.5	53.4	37.1	8.9	41.0	50.1	-0.97	1.22	6.08	16.36	36.91
1963-2006	21.7	4.3	73.9	26.9	2.4	70.7	-3.31	1.52	4.68	11.75	27.48
1929-1933	6.3	54.1	39.5	7.4	28.6	64.0	-0.07	2.73	12.54	28.68	57.61
1933-1943	4.2	81.5	14.3	5.9	69.0	25.1	-1.22	1.38	6.44	17.47	43.31
1943-1953	13.6	55.3	31.0	12.5	47.8	39.7	-1.32	0.82	5.53	15.87	37.15
1953-1963	11.8	23.0	65.1	8.9	11.1	80.0	-0.74	0.86	3.68	10.82	22.00
1963-1973	15.0	8.7	76.3	11.7	4.5	83.8	-1.30	0.62	2.24	6.32	15.76
1973-1983	17.7	6.4	75.9	15.6	4.0	80.4	-1.95	0.92	2.98	8.88	21.65
1983-1993	26.8	2.2	71.0	38.1	1.2	60.7	-4.89	1.48	4.72	11.78	27.20
1993-2006	25.9	1.2	72.9	37.7	0.5	61.7	-4.58	2.63	7.61	17.65	40.20
k = 60											
1931-1963	11.5	44.0	44.5	9.9	31.8	58.4	-1.09	2.11	9.48	21.87	50.63
1963-2006	21.8	2.4	75.8	25.6	1.1	73.3	-4.58	3.08	9.24	20.32	45.13
1931-1933	8.6	42.9	48.5	8.2	16.8	75.0	-0.08	7.44	18.25	34.24	76.39
1933-1943	6.0	68.6	25.4	6.7	50.9	42.4	-0.88	2.26	11.16	24.36	59.32
1943-1953	15.6	46.5	37.9	13.1	39.7	47.2	-1.59	1.24	8.12	20.77	51.73
1953-1963	13.7	17.0	69.4	10.1	7.6	82.2	-0.99	1.76	7.41	18.01	35.70
1963-1973	14.3	5.3	80.4	10.2	2.3	87.5	-1.72	1.38	4.35	10.73	25.28
1973-1983	17.6	2.7	79.8	14.0	1.7	84.3	-2.70	1.88	6.39	15.92	35.13
1983-1993	26.9	1.1	72.0	35.8	0.5	63.7	-6.40	3.28	9.76	20.90	44.65
1993-2006	26.7	0.9	72.4	37.5	0.4	62.1	-6.66	5.01	14.40	29.91	66.81

Table 5 – Abnormal returns for All but Tiny and Tiny Stocks sorted on net share issues ($NS_{t-k,t}$)

The residuals from the monthly regressions of stock returns on market cap (MC_t) and the book-to-market ratio (BM_t) in Table 1 are sorted on net share issues ($NS_{t-k,t}$) and grouped using the intervals of $NS_{t-k,t}$ for All but Tiny stocks summarized in Table 4. The table shows the regression residuals averaged first within the cells of the sort for a month and then across months in a period. The t-statistics for the average residuals are also shown. Firms that repurchase are sorted into two groups, those below (<-50%) and above (-50%) the median for firms with $NS_{t-k,t} < 0$. Firms that issue ($NS_{t-k,t} > 0$) are sorted into quintiles, Low, 2, 3, 4, High. The date ranges correspond to the k = 12 period for monthly returns. Thus, 1927-1963 starts in July 1927 for k = 12, July 1929 for k = 36, and July 1931 for k = 60, and ends in June 1963. The second period, 1963-2006, is from July 1963 to December 2006 for k = 12, 36, and 60.

	All but Tiny								Tiny							
	Repurchases			Issues					Repurchases			Issues				
	<-50%	-50%	0	Low	2	3	4	High	<-50%	-50%	0	Low	2	3	4	High
1927-1963																
k = 12																
Average	0.15	-0.08	-0.00	0.10	0.28	-0.18	0.03	0.01	0.24	-0.54	-0.01	0.05	-0.51	0.58	0.13	-0.03
t-statistic	0.78	-0.54	-0.07	0.77	1.74	-1.23	0.13	0.03	0.44	-0.83	-0.21	0.06	-0.89	0.60	0.17	-0.05
k = 36																
Average	0.26	0.05	-0.04	0.07	0.13	0.13	0.12	-0.06	-0.16	0.26	-0.06	-0.45	-0.42	0.18	0.18	0.07
t-statistic	2.22	0.41	-1.16	0.85	1.50	1.18	0.97	-0.42	-0.33	0.77	-1.21	-1.04	-0.89	0.24	0.38	0.12
k = 60																
Average	0.03	0.06	-0.05	0.08	0.13	0.10	-0.03	0.09	0.25	-0.43	-0.08	-0.14	-0.88	0.28	0.34	0.29
t-statistic	0.27	0.73	-1.35	0.95	1.62	1.19	-0.28	0.66	0.43	-1.04	-1.15	-0.34	-1.50	0.62	0.75	0.69
1963-2006																
k = 12																
Average	0.25	0.08	-0.04	0.08	0.08	0.12	-0.05	-0.41	0.26	0.04	-0.11	-0.02	0.25	0.23	0.04	-0.38
t-statistic	4.66	1.62	-0.46	1.89	2.37	2.70	-0.91	-5.57	3.24	0.56	-2.04	-0.28	4.00	3.31	0.51	-4.58
k = 36																
Average	0.23	0.05	-0.13	0.03	0.10	0.10	-0.06	-0.31	0.08	0.06	-0.24	0.05	0.19	0.25	0.02	-0.35
t-statistic	3.93	0.97	-1.19	0.89	2.90	2.76	-1.05	-4.59	1.03	0.87	-2.54	0.83	3.11	3.75	0.26	-4.44
k = 60																
Average	0.25	0.08	-0.10	0.02	0.11	0.02	-0.02	-0.33	-0.00	0.01	-0.37	-0.00	0.16	0.15	0.12	-0.31
t-statistic	4.21	1.47	-0.81	0.42	3.54	0.55	-0.33	-5.14	-0.05	0.12	-2.93	-0.03	2.38	1.95	1.37	-3.56