BM, EM and the Value Premium

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ABSTRACT

Earnings-to-market (EM) and book-to-market (BM)measures do not serve as substitutes in accounting for size or in distinguishing between value and growth firms because (1) EM accounts for risks underlying the market risk premium (MRP) whereas BM does not; (2) the highest quintile of BM firms formed from ranked BM does not reflect the highest quintile of EM firms; (3) the pattern of size steadily decreasing with increases in BM is not found with increases in EM; (4) the range of implied discount rates and MRP derived for quintiles of firms formed from ranked EM is almost three times those derived from ranked BM; and (5) expected earnings growth falls but then dramatically rises with rising BM.

Keywords: Value premium, market risk premium, value and growth firms, book-to-market, size

1. Introduction

Earlier studies indicate that value firms identified by higher earnings-to-price (EP) or book-to-market (BM) ratios outperform growth firms with correspondingly lowerEPor BM ratios (Basu, 1977, 1983; Rosenberg, Reid, and Lanstein, 1985;Fama and French, 1992;Lakonishok, Shleifer, and Vishny, 1994; and Davis, Fama, and French, 2000). In determining which of the two constructs, EP or BM, is better at explaining the superior performance of value firms (the value premium), EPis shown to havelittle explanatory power between 1963 and 1990when both BM and size are introduced into the model(Banz, 1981; Reinganum, 1981, 1983; Fama and French, 1992).[1]

Much of the BM effect outside of January from 1963 to 1995 is driven by the low returns of young, smaller firms; consequently, size does a better job than BM at explaining returns (Loughran, 1997). However, these results are unique to the time frame analyzed. Prior to 1963 the value premium identified through BM exists for both small and large firms. Beyond 1963 the value premium exists with EP as the construct (Fama and French, 2006).[2]

[1]Over this same time frame, BM and size together do a better job at explaining the value premium than beta of the Capital Asset Pricing Model (Fama and French,1992, 1993; Sharpe, 1964; and Lintner, 1965). With evidence of unrewarded variation in beta from 1926 to 2004, cross-sectional returns are shown to reflect risk captured through size and/or BM (Fama and French, 2006).

[2]Other constructs of use in identifying the value premium include dividend yield (Ball, 1978;Blume, 1980;Rozeff,

The priced risk(s) associated with value firms are proposed to reflect a declining likelihood of these firms continuing operations. With recently declining market value, the corresponding increases in BM and EP reflect an increasing exposure to a systematic financial risk factor. Thus, superior returns realized by value firms represent compensation for relatively greater financial risk captured through BM and EP. Consistent with this premise, value firms with high BM values are associated with relatively lower earnings, higher debt ratios, and greater earnings uncertainty. Further, value firms are more likely to cut earnings than growth firms (Fama and French, 1995; and Chen and Zhang, 1998).

Conversely, several studies indicate that growth rather than value firms are associated with relatively greater financial distress risk. For example, using measures of bankruptcy risk to reflect distress (Altman, 1968; Ohlson, 1980), firms in greater distress experience lower returns and most of these firms have low BM ratios (Dichev, 1998). In another study, low BM firms with high past returns have higher measures of distress risk than high BM firms with low past returns (Griffin and Lemmon, 2002). Further, financial distress risk is associated with lower returns, suggesting that BM reflects something other than financial distress (Vassalou and Xing, 2004; and Garlappi, Shu and Yan, 2006).

In this study, we look to see if exposure to systematic risk factor(s) underlying the value premium is priced equivalently between EP (hereafter referred to as EM) and BM by focusing on the trend and variation in ex ante rates of return (k) and market risk premiums (MRP) associated with firms ranked by EM and BM.[3] We also focus on the ability of BM and EM to distinguish between value and growth and as a proxy for size. We presume that exposure to the relevant systematic risk(s) in the aggregate are fully reflected in k and MRP. Implied k and MRP are estimated through time from analysts' forecasted earnings estimates provided by the I/B/E/S Summary files (see Claus and Thomas, 2001). Prior studies looking at the value premium focus on realized returns following the portfolio formation periods. Our study differs in that it focuses on information contained through k and MRP implied at the time that portfolios are actually formed.

A straightforward time series analysis indicates that firms with higher (lower) levels of EM and/or BM are associated with lower (higher) earnings growth expectations. During contractions (1) earnings plummet more than equity book value, (2) EM and BM rise for firms as both k and MRP rise, and (3) market values are more strongly driven by assets-in-place than expected short-term or long-term growth opportunities. However, a cross-section analysis of firms distinguished by rankings of either EM or BM reveals that (1) EM reflects information from MRP whereas BM does not, (2) the highest quintile of EM firms does not tightly correspond with the highest quintile of BM firms, (3) size consistently falls with increases in BM but not with increases in EM, and (4) the range of implied k and MRP derived for quintiles of firms formed from rankings of EM is almost three times that derived from rankings of BM. Finally, BM appears insufficient to distinguish between value and growth as expected earnings growth falls over the first three quintiles of firms ranked by BM before strongly rising with the last two. Thus, BM and EM do not serve as perfect substitutes; BM does not distinguish between value and growth; and EM is not a proxy for size.

The rest of this paper is organized as follows. Section 2 develops the hypotheses. Section 3 provides the data and methodology used. Section 4 provides results and Section 5 reveals our concluding remarks.

1984; and Fama and French, 1988), cash-flow-to-price (Lakonishok, Shleifer, and Vishny, 1994), and sales-to-price (Barbee, Mukherji, and Raines, 1996). However, all of these constructs are captured by the three-factor modelreflective of market risk, size, and BM (Fama and French, 1996).

[3] Ex ante MRP reflect the difference between the expected market return and risk-free rate.

2. Hypotheses Development

The substitution of EM for BM in capturing the same underlying systematic risk(s) that drive the value premium is suspect because "E" in EM reflects earnings (net income) generated on used assets over the past year whereas "B" in BM reflects both used and unused assets involved with real asset investment activity over an undefined length of time. Therefore, EM reflects valuation of a "flow" whereas BM reflects valuation of a "stock." If earnings are strongly correlated with fixed asset levels, EM and BM should readily substitute for one another; however, not knowing the degree to which assets become idle and/or disinvestment occurs during downturns suggests that EM rather than BM serves as a relatively more effective and sensitive measure of value. Thus, our first hypothesis is:

H1: Earnings (E) show greater sensitivity to economic contractions than equity book (B) value.

During downturns, greater economic uncertainty leads to an increase in MRP and a corresponding decline in M. This decline in M leads to higher levels of EM and BM, reflecting the reduced importance of earnings from future growth opportunities in driving current market value. Thus, current assets-in-place play a more prominent role in determining current market value during economic downturns. Assuming that (1) MRP captures financial distress risk, (2) financial distress risk increases during economic downturns, and (3) EM is a more sensitive measure of value than BM, we frame our hypotheses as follows:

H2: Higher levels of EM and/or BM are associated with higher levels of k and MRP, particularly during economic contractions when M and earnings expectations growth decline.

H3: EM is more highly correlated with MRP than BM is.

Finally, in substituting EM for BM to eliminate size as an explanatory variable in accounting for the value premium, EM is assumed to reflect the same underlying systematic risk factor(s) as size. Under this assumption, EM and BM should be related to k, MRP and size in a similar manner. The fourth hypothesis explored is:

H4: Both EM and BM are positively related to k and MRP, and negatively related to size with generally the same degree of strength.

3. Data and Methodology

Prior studies relying upon observed excess returns or annual portfolio measures of performance as reported by Ibbotson Associates inappropriately overestimate the MRP (Claus and Thomas, 2001). As a correction for this, forward-looking estimates of the MRP using earnings estimates from I/B/E/S for each year from 1985 to 1998 are obtained through computing the expected rate of return, k, which equates U.S. stock market valuations with the present value of anticipated future flows. After subtracting the 10-year risk-free rates from these yearly estimates, the long-term MRP conditional on the information available in each particular year is shown to be approximately three percent.

In seeking to provide upper bound estimates of the MRP, corrections for biases in earnings estimates by analysts are ignored (Bagnoli, Beneish, and Watts, 1999; Matsumoto, 1999). Likewise, we do not rely upon precise point estimates of MRPs because we generally focus on the consistency in MRPs across various constructs as we move from growth to value. Such an approach allows us to ignore the assumption of stationary EM ratios over time (Fama and French, 2000).

Building upon the constant growth dividend model (Williams, 1938; and Gordon, 1962), stock price is set as a function of the current book value of equity plus the present value of expected abnormal earnings. Expected abnormal earnings reflect economic profits and are obtained by subtracting a charge for equity capital from forecasted accounting earnings. That is, expected abnormal earnings reflect the difference between expected earnings provided by analysts and earnings equal to a charge, k, assessed against the book value of equity, B.

In the abnormal earnings model, expected dividends are restated using equation (1) below and k is estimated from (2).

$$d_t = e_t - (bv_t - bv_{t-1}) \qquad (1)$$

$$P_0 = bv_0 + \frac{ae_1}{(1+k)} + \frac{ae_2}{(1+k)^2} + \frac{ae_3}{(1+k)^3} + \frac{ae_4}{(1+k)^4} + \frac{ae_5}{(1+k)^5} + \left[\frac{ae_5(1+g_{ae})}{(k-g_{ae})(1+k)^5}\right] \qquad (2)$$

A

where

bv_0= book value of equity in year t,

d_t = dividend in year *t*,

e_t= earnings forecast for year *t*,

bv_t = expected book (or accounting) value of equity at the end of year *t*,

$ae_t = e_t - k(bv_{t-1})$ = expected abnormal earnings for year *t*, or forecast accounting earnings less a charge for the cost of equity,

k = expected rate of return on the market portfolio, derived from the abnormal earnings model, and

g_{ae} = constant growth rate in earnings beyond Year +5.

In equation (2) above, bv_0 refers to the firm's book value of equity obtained from COMPUSTAT's Industrial Annual, Research, and Full Coverage Annual Files for firms from 1984 to 2011. These values reflect the December fiscal year-end just prior to when the estimates for abnormal earnings are revealed. Equation (2) makes use of five years of abnormal earnings forecasts. These forecasts are obtained from the I/B/E/S Summary files which reveal consensus earnings forecasts for individual years up to five years as well as a five-year annualized consensus earnings forecast for each firm. Consensus forecasts from individual analyst forecasts are made available as of Thursday following the second Friday of each month. Thus, forecasts and prices are revealed by I/B/E/S to reflect information relating to the firm's fiscal year end as soon as possible.

More specifically, in April of each year from 1985-2011, the earnings forecasts for each of the following five years (if available) with only December fiscal year ends are taken from I/B/E/S so that all information associated with actual earnings reported four months earlier in December is fully reflected in the forecasts. All firms in our sample are required to have forecasts for years +1, +2 and a five-year growth forecast, just four months following Year 0 actual. If no forecasts are provided for years +3, +4, and/or +5, we use the firm's five-year growth rate to project these forecasts forward from earlier earnings numbers. Firms with negative earnings estimates are discarded.

In equation (2), the last bracketed term reflects the present value of abnormal earnings after Year +5 constantly growing at g_{ae}. The constant growth rate, g_{ae}, reflects the expected inflation rate. This rate is originally obtained by subtracting a constant real rate of three percent from the 10-year treasury

rate for each year (Claus and Thomas, 2001). We avoid implied negative growth rates near the end of the time frame analyzed when treasury yields are below three percent by taking as an average the annual inflation rate over each of the past 12 months as our estimate in the bracketed term.[4]
In the following presentation of results, per-share numbers associated with firms' dividends per share, earnings per shares, and share prices are multiplied by shares outstanding (in millions) and summed across all firms to obtain actual aggregate dividends (D), earnings (E), and market value of equity (M) by year. Aggregate book (B) values are calculated in a similar manner from data taken from COMPUSTAT. With these aggregates, the payout ratio (DE), dividend yield (DM), EM, and BM are computed and revealed. For example, BM over the entire 27-year sampling period is not a simple average of each of the 27 year BM ratios; rather, it is calculated as the summation of all equity book value over all equity market value for all firms over the entire sampling period. All other ratios are computed in a similar manner. By focusing on aggregates, we avoid the pitfalls of the dividend constant growth model as well as concerns over reported earnings deviating from true earnings.

4. Results

4.1 Aggregate Performance Measures through Time

In Table 1, the number of firms rises from 547 in 1985 to 1,851 in 2011, reflecting an annual compounded growth rate of 4.80 percent over the 27-year sampling period.[5] Similarly, the annual growth rate for D is 9.89 percent as D steadily increases from $28,858 (in millions) in 1985 to $335,463 in 2011. Only in 1991, 2001, and 2009 does D decline, coinciding with economic contractions identified by the National Bureau of Economic Research (NBER) over the last 27 years (highlighted by gray).[6] The impact of contractions upon E is apparent as well. For example, although E rises from $60,117 in 1985 to $874,527 in 2011, reflecting an annual growth rate of 10.85 percent, E declines in seven years. Five of these declining years are clustered during or near the three economic contractions.

Dividing D by E to obtain payout, we show that payout hovers between a low of 32.09 percent in 2001 and a high of 60.07 percent in 1987. Over the entire 27-year time frame using aggregate D and E, payout is 38.43 percent. Between 1985 and 1998, yearly payout ratios mirror those of Claus and Thomas (2001) and the aggregate payout ratio is 43.83 percent. From 1999 to 2011, aggregate payout falls to 37.30 percent.

Similar to the pattern for D, B steadily increases from $539,197 in 1985 to $7,869,693 in 2011, reflecting an annual growth rate of 10.86 percent. With the exception of 2009, B increases in every year. By comparison, M increases from $715,458 in 1985 to $14,594,943 in 2011, representing an annual growth rate of 12.30 percent. M declines over five years, with three of these years occurring with the last two contractions. Overall, these results indicate that earnings are more sensitive to contractions than equity book value.[7]

[4] Inflation rates are calculated from the U.S. Department of Labor statistics on the Consumer Price Index (CPI).
[5] From this point forward, we will reference the year in which the data are assumed to be available to the analysts rather than the prior fiscal year end that is actually associated with the data.
[6] These contraction periods include (1) July, 1990 through March, 1991; (2) March, 2001 through November, 2001; and (3) December, 2007, through June, 2009.
[7] The impact of the most recent contraction on D, E, B, and M from 2008 to 2009 is dramatic. Over this year, the change in these four aggregate measures is -26.62, -17.64, -18.02, and -43.61 percent, respectively.

Calculations of DM, EM, and BM are presented at the end of Table 1 and all three reveal a bowl-shaped pattern over time. For example, DM declines from 4.03 percent in 1985 to 1.19 percent in 2000 before rising to 2.30 percent in 2011. Aggregate DM over the entire 1985-2011 time frame is

2.13 percent.[8] Likewise, EM declines from a value of 8.40 percent in 1985 to a low of 3.00 percent in 2000 before gradually increasing to 5.99 percent in 2011. Aggregate EM from 1985 until 2011 is 5.54 percent. Finally, BM falls from 75.36 percent in 1985 to a low of 25.30 percent in 2000 before rising to 53.92 percent in 2011. Over all years, aggregate BM is 43.92 percent.

4.2 Expected Rates of Return and Market Risk Premiums

In Table 2, we provide details on the relative importance of book value, expected abnormal earnings over the following five years, and terminal value in driving current market value. Firms with relatively higher levels of BM or EM are considered to be value firms with market values more strongly reflecting current assets-in-place than anticipated earnings from new growth opportunities. For example, when dividing the data from Table 1 into three equal segments to reflect 1985-1993, 1994-2002, and 2003-2011 intervals, aggregate BM and EM are lowest over the second interval. Over these three intervals, aggregate BM is 56.33, 31.86, and 47.85 percent, respectively. Similarly, aggregate EM over the three intervals is 6.22, 4.14, and 6.08 percent, respectively.

As revealed in Table 2, the drop in BM over the second interval reflects the more prominent role that terminal value plays in driving market value. Over the three intervals, the present value of abnormal earnings expected over the next five years as a percent of market value remains relatively stable at 9.03, 12.44, and 11.90 percent, respectively. Beyond these five years, though, the present value of terminal value as a percentage of market value is 34.64, 55.70, and 40.25 percent over these three intervals, respectively.

The increased importance of terminal value over the second interval reflects a general reduction in risk as indicated by lower corresponding values for k and MRP. Over the three intervals, average yearly k is 11.16, 8.53, and 9.35 percent while average yearly MRP is 2.83, 2.47, and 5.32 percent, respectively. The dramatic increase in MRP with the third interval coincides with the exceptionally strong economic downturn from December, 2007, through June, 2009. Even beyond this downturn, MRP has remained exceptionally high by historical standards with values of 5.65 percent in 2010 and 7.57 percent in 2011.

In order to determine if BM and EM equally capture systematic risk(s) in explaining the value premium, we look at how k and MRP relate to BM and EM. Generally, the pattern of k over time resembles the bowl-shaped patterns of both BM and EM. This is supported by the correlation between k and BM of .8903 (p-value = .0000) and the correlation between k and EM of .7648 (p-value = .0000) using annual data. On the other hand, the connection between MRP and either BM or EM is less pronounced. For example, the correlation between MRP and BM is .1737 (p-value = .4974) whereas between MRP and EM, it is .3597 (p-value = .0653). These results indicate that EM reflects information contained in both k and MRP whereas BM reflects information contained only in k, suggesting that EM is relatively more sensitive to changes in market risk aversion and financial distress risk.

[8] Payout continues to fall beyond the interval analyzed by Claus and Thomas (2001). Between 1985 and 1998, DM is 2.40 percent whereas beyond 1998, DM falls to 2.07 percent.

Overall, these results indicate that the business cycle plays a major role in shifting EM, BM, k, and MRP of firms over time. Firms with higher (lower) levels of EM and/or BM have lower (higher) earnings growth expectations. Over economic contractions, financial distress risk and market risk aversion increase as evidenced by corresponding increases in k and, particularly, MRP. During these times, firms become more "value-like" with higher levels of EM and BM, and market values are more strongly driven by assets-in-place than by either expected short-term or long-term growth opportunities. When perceived growth does become more important in driving current market value, it is growth beyond five years rather than growth over the next five years that matters most. Finally, these results highlight the importance of the relationship between assets-in-place and long-term growth over raw growth itself in understanding the time series variation of BM and EM.[9]

4.3 Relative Value, Size, and Long-Term Growth

The evidence indicates that EM is positively related to MRP and BM is not, suggesting that EM and BM are not perfect substitutes. In Tables 3 through 5, we continue to focus on this relationship between EM and BM by first ranking firms by BM each year and forming these firms into quintiles. For each year of each quintile, we assess earnings performance, dividend performance, and anticipated earnings growth. Thus, these tables combine both cross-sectional and time series analyses.

From these tables, distinctive patterns emerge. In Table 3, BM gradually increases with respective values of 14, 32, 49, and 70 before jumping to 118 percent in moving from Q1 to Q5. This increase in BM reflects both a gradual increase in B and a corresponding decrease in M. That is, B rises with values of $6,953,321, $11,924,441, $14,900,571, $16,741,589, and $18,346,960 as M falls with values of $49,208,799, $37,582,792, $30,573,680, $23,886,099, and $15,536,487 across the five quintiles, respectively.[10]

In Table 4, we provide results associated with E and the performance of EB and EM. Somewhat consistent with the pattern of declining M in Table 3, earnings initially rise from Q1 to Q2 and thereafter fall. From Q1 to Q5, E is $1,907,061, $2,035,705, $2,033,056, $1,668,355, and $1,040,585, respectively. Earnings performance measured as EB declines as we move across the quintiles with respective values of 27.4, 17.1, 13.6, 10.0, and 5.7 percent. Alternatively, earnings performance measured as EM displays an opposite trend over the first four quintiles with respective values of 3.9, 5.4, 6.6, and 7.0 percent before turning down with 6.7 percent for Q5.

The pattern for BM differs from that for EM. BM steadily increases across the five quintiles with the greatest increase found with Q5. In contrast, EM steadily increases over the first four quintiles before declining with Q5. B continuously increases across all five quintiles whereas E decreases continuously after Q2. The break in the direct relationship between BM and EM for Q5 reflects the greater decrease in E (-37.63 percent) over B (-9.59 percent) relative to M (-34.96 percent) as we move from Q4 to Q5. These results show that while BM and size serve as strong substitutes, EM does not serve as a strong substitute for either BM or size.

The time series analysis of Table 2 revealed that growth opportunities play a less significant role when firms become more "value-like" over time. Thus, for a given level of earnings, value firms should pay

[9]Further support for this is found in correlations of growth as measured through k-DM with BM (p-value = .0000) and EM (p-value = .0006) using annual data. Growth measured solely through yearly inflation ignores the interplay of assets-in-place and terminal value and is not significantly related to either BM or EM.

[10] The dramatic increase in BM for the Q5 coincides with the most dramatic decline in M. The change in M from Q4 to Q5 is -34.96 percent whereas the change in M from Q1 to Q2, Q2 to Q3, and Q3 to Q4 are -23.63, -18.65, and -21.87 percent, respectively.

relatively more in dividends since these firms do not have as strong an incentive to retain earnings for growth. However, the results in Table 5 show that dividends do not steadily increase and growth opportunities do not steadily decrease as BM increases across the five quintiles.

For example, D from Q1 through Q5 is $733,678, $699,585, $787,619, $669,755, and $446,805, respectively. While DB steadily falls in moving through these quintiles with respective values of 10.6, 5.9, 5.3, 4.0, and 2.4 percent, DM trends in an opposite direction with respective values of 1.5, 1.9, 2.6, 2.8, and 4.3 percent. Given the decline in D from Q3 to Q5, the increase in DM from Q3 to Q5 reflects a relatively greater decrease in M. This decline in M does not reflect a corresponding decline in five-year growth forecasts by analysts (G5%), though.

That is, G5% over the five quintiles is 109.7, 77.9, 59.4, 67.5, and 99.1 percent, respectively. The dramatic upturn in G5% from Q4 to Q5 is inconsistent with these firms reflecting value rather than growth. From earlier, we noted that the dramatic jump up in BM for Q5 is driven primarily by a great decline in M of -34.96 percent.[11] Assuming that M is forward looking, the decline in BM with Q5 should be associated with a corresponding decline in G5%, not in increase in G5%.

Our results focusing on aggregate BM from 1985-2011 in Table 3 show that the number of equity market value dollars it takes to support one dollar in equity book value as we move from Q1 to Q5 is $7.08, $3.15, $2.05, $1.43, and $.85, respectively. Thus, $7.08 in market value backs $1.00 in book value associated with long-term earnings growth of 109.7 percent. In contrast, the results for Q5 show that $.85 in market value backs $1.00 in book value associated with long-term earnings growth of 99.1 percent. This shows that the market value of Q1 is 8.36 times that of Q5 for every $1.00 in book value even though expected long-term earnings growth for Q1 is only 1.11 times that for Q5. It is difficult to rationalize BM as a construct that meaningfully captures the distinction between value and growth when growth expectations for Q5 are almost as high as that for Q1. Thus, while a strict time series analysis indicates that the current market values of high EM and BM firms are driven less by short-term or long-term growth opportunities, a cross-sectional analysis indicates that the highest two quintiles of BM firms are associated with increasing growth expectations by analysts.

4.4 Implied Market Returns (k) and Market Risk Premiums (MRP)

In Tables 6 and 7, we reveal results of calculations of k and MRP for all five quintiles formed by rankings of BM and EM, respectively. Upon first glance, BM and EM serving as substitutes in measuring the value premium appears justified as both k and MRP increase in moving from Q1 to Q5. In Table 6, average yearly k is 9.16, 9.62, 9.92, 10.28, and 10.62 and average yearly MRP is 3.02, 3.48, 3.78, 4.14, and 4.48 percent, respectively. The range for both k and MRP is 146 basis points. When we form quintiles of firms based on rankings of EM in Table 7, we see a similar pattern with k of 7.05, 8.87, 9.34, 9.94, and 11.25 percent, respectively. Average yearly MRP is .80, 2.62, 3.10, 3.70, and 5.01 percent, respectively. The range for both k and MRP is 420 basis points.

However, the difference in k for Q1 between rankings of BM and EM is significant (p-value = .0003), with k for Q1 formed from rankings of EM less than those formed from rankings of BM in 25 of 27 years. On the other end, the difference in k for Q5 between rankings of BM and EM is also significant (p-value = .0730), with k for Q5 formed from rankings of EM greater than those formed from rankings of BM in 22 of 27 years. These results show that k and MRP are more sensitive to rankings of EM than that of BM. That is, while firms with the lowest levels of earnings per dollar of market value are less risky than firms with the lowest levels of book value per dollar of market value, firms with the highest

[11]The long-term growth rate is calculated based on earnings numbers aggregated across all firms by year and across the entire sampling period.

levels of earnings per dollar of market value are more risky than firms with the highest levels of book value per dollar of market value. EM captures more variance in k and MRP than BM does.

Finally, the results from Table 3 earlier revealed that size decreases with increasing BM, suggesting that size and BM substitute for one another in explaining the value premium. Drawing from the

results presented in Table 7, we do not find a similar relationship between EM and size. Size across the five quintiles is calculated as $10,120,906, $31,729,782, $39,292,255, $39,168,826, and $36,476,089, respectively. Thus, increasing size with increasing EM over the first three quintiles is a trend opposite to that of size and BM. Only with the move from Q4 to Q5 do we see an inverse relationship between size and EM consistent with that between size and BM. These results suggest that swapping in EM for BM when size threatens to do a better job is not advisable.

5. Summary and Conclusions

Fama and French (2006) use BM to distinguish between value and growth firms and show that BM best job explains the value premium prior to 1963. Beyond 1963, they swap in EM for BM to explain the value premium and counter Loughran's (1997) conclusion that the value premium is limited to small-sized firms. In our study, we look to see if exposure to risk factors driving the value premium as captured through ex ante rates of return (k) and market risk premiums (MRP) are priced equivalently between BM and EP. We also focus on the ability of BM to distinguish between value and growth and proxy for size.

Our results initially focused on the time series performance of aggregate measures of earnings (E), equity book value (B), and equity market value (M) show that firms characterized by higher (lower) levels of EM and/or BM are associated with lower (higher) earnings growth expectations. During periods of economic contractions, (1) earnings are more sensitive to contractions than equity book value, (2) firms generally become more "value-like" with higher levels of EM and BM as both k and MRP increase, and (3) market values are more strongly driven by assets-in-place than by either short-term or long-term growth opportunities. During periods of economic stability with no threat of downturn, EM and BM fall as long-term growth plays a relatively more prominent role in driving the value of firms.

EM and BM do not serve as proper substitutes in accounting for size or in consistently distinguishing between value and growth firms in a number of ways. First, EM reflects information from both k and MRP as BM reflects information only from k, suggesting that EM more comprehensively accounts for risk(s) underlying the value premium. Second, as we move from the first quintile (Q1) to the fifth (Q5) quintile of firms formed from rankings of BM, BM increases through all five quintiles while EM increases through the first four quintiles before declining with Q5. Third, consistent with the trade-off between BM and size, size steadily increases as we move across the five quintiles formed from rankings of BM. Across quintiles formed from rankings of EM, though, size increases over the first three quintiles before declining over the last two quintiles.

When deriving implied k and MRP for quintiles of firms formed from rankings of BM and EM, both k and MRP steadily increase as we move from Q1 through Q5. However, EM is associated with a much greater range in both k and MRP than BM when comparing Q1 with Q5. Firms with lower levels of earnings are less risky than firms with the lower levels of book value per dollar of market value. On the other hand, firms with higher levels of earnings are more risky than firms with higher levels of book value per dollar of market value. The average difference between k and MRP for Q1 and Q5 when focusing on portfolios formed from rankings of BM is 146 basis points. For portfolios formed from rankings of EM, the difference is 420 basis points. With the range formed from EM nearly three

times that formed from BM, the variance in k and MRP are much more strongly accounted for by rankings of EM than BM.

Finally, assumptions of increasing BM reflective of increasing value are suspect as aggregate dividends decline and aggregate forecasted earnings growth increase in moving from Q3 to Q5. We show that

the market value of Q1 is 8.36 times that of Q5 for every $1.00 in book value even though expected long-term earnings growth for Q1 is only 1.11 times that for Q5. With Q5 exhibiting a projected earnings growth rate nearly as high as that for Q1, BM seems ill-equipped to distinguish between value and growth.

References

Altman E, 1968. Financial ratios, discriminant analysis and the prediction of corporate bankruptcy Journal of Finance, 23: 589-609.

Bagnoli M, BeneishMD, Watts SG, 1999. Whisper forecasts of quarterly earnings per share. Journal of Accounting and Economics, 28: 27-50.

Barbee WC, Sandip M, Raines GA, 1996.Do sales-price and debt-equity explain stock returns better than book-market and firm size? Financial Analysts Journal, 52: 56-60.

Ball R, 1978. Anomalies in relationships between securities yields and yield-surrogates. Journal of Financial Economics, 6: 103-126.

Banz R, 1981. The relationship between return and market value of common stocks. Journal of Financial Economics, 9: 3-18.

Basu S, 1977. The investment performance of common stocks in relation to their price-earning sratios: A test of the efficient market hypothesis. Journal of Finance, 32: 663-682.

Basu S, 1983. The relationship between earnings yield, market value, and return for NYSE common stocks: Further evidence. Journal of Financial Economics, 12: 129-156.

Blume ME, 1980.Stock returns and dividend yields: Some more evidence. The Review of Economics and Statistics, 62: 567-577.

Chen N, Zhang F, 1998. Risk and return of value stocks. Journal of Business,71: 501-535.

Claus JJ, Thomas JK, 2001. Equity premia as low as three percent? Evidence from analysts earnings forecasts for domestic and international stock markets. Journal of Finance, 56: 1629-1666.

Davis JL, FamaEF, French KR, 2000. Characteristics, covariances, and average returns: 1929–1997. Journal of Finance 55: 389–406.

Dichev ID, 1998. Is the risk of bankruptcy a systematic risk?Journal of Finance, 53: 1131-1147.

Fama EF, French KR, 1988. Dividend yields and expected stock returns.Journal of Financial Economics, 22: 3-26.

Fama EF, French KR,1992. The cross-section of expected stock returns.Journal of Finance, 47: 427-467.

Fama EF, French KR,1993. Common risk factors in the returns on stocks and Bonds.Journal of Financial Economics, 33: 3-56.

Fama EF, French KR,1995. Size and book-to-market factors in earnings and Returns.Journal of Finance, 50: 131-155.

Fama EF, French KR,1996. Multifactor explanations of asset pricing anomalies.Journal of Finance, 51: 55-84.

Fama EF, French KR,2000. Forecasting profitability and earnings.Journal of Business 73: 161–175.

Fama EF, French KR,2006. The value premium and the CAPM.Journal of Finance, 61: 2163-2185.

Garlappi L,Shu T, Yan H, 2008. Default risk, shareholder advantage and stock Returns. Review of Financial Studies, 21:2743-2778.

Gordon M, 1962. The Investment, Financing and Valuation of the Corporation . Homewood: Irwin.

Griffin JM, Lemmon ML, 2002.Book-to-market equity, distress risk, and stock Returns. Journal of Finance, 57: 2317-2336.

Lintner J, 1965. The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets.Review of Economics and Statistics 47: 13–37.

Lakonishok J, ShleiferA, Vishny RW, 1994. Contrarian investment, extrapolation, and risk. Journal of Finance, 49: 1541-1578.

Loughran T, 1997. Book-to-market across firm size, exchange, and seasonality.Journal of Financial and Quantitative Analysis 32: 249–268.

Matsumoto DA, 1999. Managements incentives to guide analysts forecasts. Working Paper (Harvard Business School).

Ohlson JA, 1980, Financial ratios and the probabilistic prediction of bankruptcy. Journal of Accounting Research, 18:109-131.

Reinganum MR, 1981. Misspecification of capital asset pricing: Empirical anomalies based on Earnings yields and market values. Journal of Financial Economics, 9: 19-46.

Reinganum MR, 1983. The anomalous stock market behavior of small firms in january: Empirical tests for tax loss selling effects. Journal of Financial Economics, 12: 89-104.

Rosenberg B, Reid K, Lanstein R, 1985.Persuasive evidence of market inefficiency. Journal of Portfolio Management, 11: 9-17.

Rozeff M, (1984. Dividend yields are equity risk premiums. Journal of Portfolio Management, 10: 68-75.

Sharpe WF, 1964. Capital asset prices: A theory of market equilibrium under conditions of risk. Journal of Finance 19: 426–442.

Vassalou M, Xing Y, 2004. Default risk in equity returns. Review of Financial Studies, 24: 831-867.

Williams JB, 1938. The Theory of Investment Value. Cambridge: Harvard University Press.

Table 1: Dividends (D), Earnings (E), Equity Book Values (B), and Market Capitalizations (M) for U.S. Stocks: 1985-2011

Forecast in April	Number of Firms	Dividends D_0	Earnings E_0	Payout D_0/E_0	Claus and Thomas Payout	Book Value B_0	Market Value M_0	D_0/M_0	E_0/M_0	B_0/M_0
1985	547	28,858	60,117	48.00%	46%	539,197	715,458	4.03%	8.40%	75.36%
1986	552	29,590	57,438	51.52%	48%	555,262	923,347	3.20%	6.22%	60.14%
1987	585	34,064	56,710	60.07%	56%	602,484	1,065,166	3.20%	5.32%	56.56%
1988	580	34,107	71,841	47.48%	51%	641,968	1,026,220	3.32%	7.00%	62.56%
1989	649	39,458	88,828	44.42%	43%	708,957	1,161,061	3.40%	7.65%	61.06%
1990	649	43,544	91,657	47.51%	47%	762,826	1,283,942	3.39%	7.14%	59.41%
1991	685	43,528	89,899	48.42%	50%	776,206	1,461,403	2.98%	6.15%	53.11%
1992	764	45,844	80,071	57.25%	56%	809,624	1,582,758	2.90%	5.06%	51.15%
1993	864	47,471	89,923	52.79%	51%	818,574	1,813,264	2.62%	4.96%	45.14%
1994	1,010	48,559	105,288	46.12%	45%	867,668	1,854,162	2.62%	5.68%	46.80%
1995	1,106	55,459	138,428	40.06%	40%	1,058,810	2,327,216	2.38%	5.95%	45.50%
1996	1,240	61,811	178,487	34.63%	39%	1,184,735	3,029,911	2.04%	5.89%	39.10%
1997	1,496	70,000	190,162	36.81%	37%	1,374,112	3,719,482	1.88%	5.11%	36.94%
1998	1,565	76,037	203,118	37.43%	34%	1,494,495	5,426,725	1.40%	3.74%	27.54%
1999	1,504	81,448	222,458	36.61%	N/A	1,723,640	6,426,090	1.27%	3.46%	26.82%
2000	1,464	95,913	241,848	39.66%	N/A	2,041,822	8,070,447	1.19%	3.00%	25.30%
2001	1,221	91,267	284,379	32.09%	N/A	2,045,437	6,643,271	1.37%	4.28%	30.79%
2002	1,277	110,510	271,505	40.70%	N/A	2,337,286	6,841,240	1.62%	3.97%	34.16%
2003	1,374	125,225	288,366	43.43%	N/A	2,691,050	5,812,704	2.15%	4.96%	46.30%
2004	1,512	157,972	410,382	38.49%	N/A	3,496,775	8,427,654	1.87%	4.87%	41.49%
2005	1,690	199,518	562,938	35.44%	N/A	4,259,258	9,889,245	2.02%	5.69%	43.07%
2006	1,718	253,989	749,733	33.88%	N/A	5,264,761	12,596,151	2.02%	5.95%	41.80%
2007	1,821	308,570	907,744	33.99%	N/A	6,140,324	14,927,146	2.07%	6.08%	41.14%
2008	1,827	361,857	933,163	38.78%	N/A	6,580,995	14,480,779	2.50%	6.44%	45.45%
2009	1,696	265,524	768,542	34.55%	N/A	5,395,417	8,165,563	3.25%	9.41%	66.08%
2010	1,758	291,856	667,211	43.74%	N/A	6,825,507	12,522,507	2.33%	5.33%	54.51%
2011	1,851	335,463	874,527	38.36%	N/A	7,869,693	14,594,943	2.30%	5.99%	53.92%
All Years	33,005	3,337,443	8,684,762	38.43%	N/A	68,866,881	156,787,857	2.13%	5.54%	43.92%

Table 2: Implied Expected Rate of Return on the Market (k) and Market Risk Premium (MRP) for U.S. Stocks: 1985-2011

Forecast in April	Percent of Market Value Represented by Present Value of							10-Year		Real		
	bv_0	ae_1	ae_2	ae_3	ae_4	ae_5	Terminal Value	Rf	Inflation	Real Rate	k	MRP
1985	75.36%	-0.04%	0.61%	1.23%	1.55%	1.81%	19.48%	11.43%	3.64%	7.79%	13.26%	1.83%
1986	60.14%	1.10%	1.77%	2.01%	2.21%	2.44%	30.34%	7.30%	2.24%	5.06%	10.45%	3.15%
1987	56.56%	0.92%	1.67%	2.00%	2.24%	2.51%	34.10%	8.02%	3.00%	5.02%	10.56%	2.54%
1988	62.56%	1.24%	1.44%	1.74%	1.97%	2.15%	28.91%	8.72%	3.86%	4.86%	11.58%	2.86%
1989	61.06%	1.50%	1.53%	1.55%	1.80%	1.98%	30.56%	9.18%	4.87%	4.31%	11.68%	2.50%
1990	59.41%	0.72%	1.16%	1.65%	1.95%	2.10%	33.00%	8.79%	5.12%	3.67%	11.82%	3.03%
1991	53.11%	0.68%	1.31%	1.78%	2.08%	2.31%	38.72%	8.04%	4.79%	3.25%	11.06%	3.02%
1992	51.15%	0.94%	1.70%	2.12%	2.44%	2.64%	39.01%	7.48%	3.14%	4.34%	10.12%	2.64%
1993	45.14%	1.52%	2.14%	2.56%	2.72%	2.87%	43.05%	5.97%	3.05%	2.92%	9.91%	3.94%
1994	46.80%	1.84%	2.38%	2.72%	2.89%	2.95%	40.42%	6.97%	2.48%	4.49%	9.96%	2.99%
1995	45.50%	2.33%	2.66%	2.72%	2.84%	2.97%	40.98%	7.06%	2.82%	4.24%	10.27%	3.21%
1996	39.10%	2.28%	2.49%	2.67%	2.80%	3.05%	47.62%	6.51%	2.81%	3.70%	9.38%	2.87%
1997	36.94%	2.14%	2.45%	2.79%	3.00%	3.19%	49.48%	6.89%	2.73%	4.16%	9.36%	2.47%
1998	27.54%	2.05%	2.45%	2.83%	3.07%	3.32%	58.74%	5.64%	1.37%	4.27%	7.10%	1.46%
1999	26.82%	1.75%	2.15%	2.55%	2.85%	3.12%	60.76%	5.18%	1.71%	3.47%	6.93%	1.75%
2000	25.30%	1.54%	1.87%	2.25%	2.47%	2.71%	63.85%	5.99%	3.70%	2.29%	8.10%	2.11%
2001	30.79%	1.65%	2.02%	2.37%	2.63%	2.90%	57.64%	5.14%	2.89%	2.25%	8.05%	2.91%
2002	34.16%	1.69%	2.26%	2.62%	2.91%	3.22%	53.13%	5.21%	1.47%	3.74%	7.63%	2.42%
2003	46.30%	1.63%	1.99%	2.28%	2.45%	2.58%	42.77%	3.96%	2.98%	0.98%	9.19%	5.23%
2004	41.49%	2.28%	2.47%	2.53%	2.61%	2.71%	45.91%	4.35%	1.73%	2.62%	7.74%	3.39%
2005	43.07%	2.46%	2.47%	2.41%	2.40%	2.46%	44.74%	4.34%	3.11%	1.23%	8.78%	4.44%
2006	41.80%	2.74%	2.70%	2.39%	2.38%	2.40%	45.59%	4.99%	3.33%	1.66%	8.78%	3.79%
2007	41.14%	2.48%	2.59%	2.58%	2.54%	2.79%	45.88%	4.69%	2.76%	1.93%	9.01%	4.32%
2008	45.45%	2.33%	2.53%	2.64%	2.65%	2.57%	41.84%	3.68%	3.92%	-0.24%	10.30%	6.62%
2009	66.08%	0.97%	1.91%	2.69%	2.66%	2.38%	23.33%	2.93%	-0.34%	3.27%	9.83%	6.90%
2010	54.51%	1.55%	2.28%	2.53%	2.66%	2.40%	34.08%	3.85%	2.29%	1.56%	9.50%	5.65%
2011	53.92%	1.54%	1.82%	2.11%	2.27%	2.58%	35.76%	3.46%	3.56%	-0.10%	11.03%	7.57%

Table 3: Equity Book (B_0) and Equity Market (M_0) Values by Quintiles Formed from Ranked Equity Book-to-Market (B_0/M_0) Ratios: 1985-2011

	Quintile 1			Quintile 2			Quintile 3			Quintile 4			Quintile 5		
Forecast in April	B_0/M_0	B_0	M_0	B_0/M_0	B_0	M_0	B_0/M_0	B_0	M_0	B_0/M_0	B_0	M_0	B_0/M_0	B_0	M_0
1985	32%	53,017	167,238	47%	64,239	137,765	68%	85,769	125,940	97%	143,458	147,993	141%	192,714	136,522
1986	24%	44,530	184,498	39%	108,802	278,501	56%	71,270	127,478	78%	126,698	162,817	120%	203,961	170,053
1987	21%	42,278	205,715	38%	133,169	346,327	56%	92,676	165,988	74%	112,001	152,223	114%	222,360	194,912
1988	21%	38,905	189,276	40%	105,730	261,265	59%	116,094	196,206	84%	204,682	244,449	131%	176,557	135,025
1989	20%	49,834	252,498	45%	120,715	269,869	63%	143,847	229,342	81%	208,272	256,502	122%	186,289	152,850
1990	18%	51,789	283,642	41%	104,759	256,961	61%	256,537	419,586	85%	154,351	181,310	137%	195,390	142,444
1991	16%	63,305	406,885	38%	137,234	357,569	59%	169,267	286,092	81%	227,143	280,215	137%	179,258	130,641
1992	15%	68,159	460,594	36%	111,034	305,805	55%	168,043	304,463	77%	299,665	387,878	131%	162,723	124,018
1993	16%	76,247	463,170	34%	168,016	488,353	48%	161,899	334,132	66%	231,411	349,400	102%	181,000	178,207
1994	14%	57,759	405,951	33%	174,182	524,444	47%	142,872	305,586	65%	260,053	402,343	108%	232,801	215,838
1995	15%	90,445	602,837	33%	168,736	518,258	48%	265,838	554,592	67%	272,989	408,350	107%	260,802	243,180
1996	13%	123,633	931,784	29%	194,599	678,771	42%	291,983	700,819	64%	269,061	419,082	102%	305,459	299,456
1997	14%	223,745	1,575,747	32%	282,414	880,809	48%	251,580	521,906	67%	311,722	468,335	112%	304,652	272,684
1998	10%	224,313	2,331,785	23%	285,657	1,233,877	37%	341,245	927,877	51%	269,487	523,757	91%	373,794	409,429
1999	10%	360,925	3,594,854	27%	382,064	1,409,658	47%	372,086	791,772	77%	307,682	397,845	130%	300,883	231,961
2000	8%	303,539	3,987,191	23%	577,916	2,469,819	44%	341,657	776,067	71%	356,833	504,712	139%	461,876	332,658
2001	12%	424,269	3,456,496	31%	573,589	1,831,319	52%	345,960	671,142	81%	376,751	463,556	147%	324,867	220,759
2002	14%	441,297	3,218,519	31%	461,842	1,493,286	43%	404,781	939,281	66%	469,415	715,883	118%	559,950	474,270
2003	18%	472,749	2,624,026	39%	498,154	1,261,891	61%	591,589	976,336	90%	484,975	536,938	156%	643,582	413,514
2004	14%	285,223	2,094,102	28%	671,948	2,416,678	42%	751,287	1,771,949	60%	660,319	1,105,638	109%	1,127,999	1,039,287
2005	16%	394,540	2,474,724	32%	941,290	2,940,041	44%	802,971	1,826,466	61%	937,677	1,529,743	106%	1,182,781	1,118,270
2006	13%	326,924	2,521,726	26%	638,478	2,458,814	37%	1,221,537	3,315,809	55%	1,296,994	2,371,394	92%	1,780,827	1,928,407
2007	13%	447,025	3,326,176	27%	936,561	3,449,856	40%	1,285,477	3,202,202	57%	1,841,325	3,223,965	94%	1,629,936	1,724,947
2008	17%	750,763	4,397,301	34%	1,224,895	3,636,907	51%	1,677,030	3,314,297	76%	1,750,145	2,293,289	140%	1,178,161	838,986
2009	22%	610,872	2,807,260	49%	923,217	1,880,450	78%	1,383,592	1,766,161	113%	1,278,810	1,133,097	207%	1,198,926	578,595
2010	15%	444,016	2,898,964	34%	992,474	2,911,582	53%	1,318,122	2,483,051	76%	1,765,965	2,375,878	124%	2,304,929	1,853,032
2011	14%	483,222	3,345,840	33%	942,726	2,883,918	52%	1,845,560	3,539,138	0%	2,123,704	2,849,506	125%	2,474,481	1,976,540
All Years	14%	6,953,321	49,208,799	32%	11,924,441	37,582,792	49%	14,900,571	30,573,680	70%	16,741,589	23,886,099	118%	18,346,960	15,536,487

Table 4: Earnings Performance by Quintiles Formed from Ranked Equity Book-to-Market (B0/M0) Ratios: 1985-2011

	Quintile 1			Quintile 2			Quintile 3			Quintile 4			Quintile 5		
Forecast in April	E_0	E_0/B_0	E_0/M_0	E_0	E_0/B_0	E_0/M_0	E_0	E_0/B_0	E_0/M_0	E_0	E_0/B_0	E_0/M_0	E_0	E_0/B_0	E_0/M_0
1985	10,710	20.2%	6.4%	9,629	15.0%	7.0%	12,334	14.4%	9.8%	13,046	9.1%	8.8%	14,398	7.5%	10.5%
1986	8,268	18.6%	4.5%	15,450	14.2%	5.5%	8,363	11.7%	6.6%	9,518	7.5%	5.8%	15,840	7.8%	9.3%
1987	7,712	18.2%	3.7%	14,952	11.2%	4.3%	7,703	8.3%	4.6%	8,769	7.8%	5.8%	17,574	7.9%	9.0%
1988	9,429	24.2%	5.0%	15,204	14.4%	5.8%	14,081	12.1%	7.2%	19,194	9.4%	7.9%	13,934	7.9%	10.3%
1989	12,707	25.5%	5.0%	20,915	17.3%	7.8%	16,418	11.4%	7.2%	22,801	10.9%	8.9%	15,987	8.6%	10.5%
1990	13,465	26.0%	4.7%	16,566	15.8%	6.4%	31,529	12.3%	7.5%	15,629	10.1%	8.6%	14,468	7.4%	10.2%
1991	16,373	25.9%	4.0%	21,636	15.8%	6.1%	19,929	11.8%	7.0%	22,812	10.0%	8.1%	9,150	5.1%	7.0%
1992	18,130	26.6%	3.9%	16,791	15.1%	5.5%	16,054	9.6%	5.3%	23,162	7.7%	6.0%	5,934	3.6%	4.8%
1993	19,579	25.7%	4.2%	26,745	15.9%	5.5%	16,858	10.4%	5.0%	20,228	8.7%	5.8%	6,513	3.6%	3.7%
1994	19,786	34.3%	4.9%	29,226	16.8%	5.6%	18,061	12.6%	5.9%	22,478	8.6%	5.6%	15,737	6.8%	7.3%
1995	28,540	31.6%	4.7%	29,052	17.2%	5.6%	34,543	13.0%	6.2%	27,887	10.2%	6.8%	18,406	7.1%	7.6%
1996	38,280	31.0%	4.1%	35,267	18.1%	5.2%	59,053	20.2%	8.4%	22,023	8.2%	5.3%	23,863	7.8%	8.0%
1997	61,133	27.3%	3.9%	49,523	17.5%	5.6%	32,045	12.7%	6.1%	29,327	9.4%	6.3%	18,134	6.0%	6.7%
1998	66,451	29.6%	2.8%	50,129	17.5%	4.1%	37,954	11.1%	4.1%	26,814	9.9%	5.1%	21,770	5.8%	5.3%
1999	83,110	23.0%	2.3%	49,893	13.1%	3.5%	51,355	13.8%	6.5%	24,693	8.0%	6.2%	13,406	4.5%	5.8%
2000	63,550	20.9%	1.6%	84,774	14.7%	3.4%	33,085	9.7%	4.3%	36,666	10.3%	7.3%	23,773	5.1%	7.1%
2001	103,281	24.3%	3.0%	99,203	17.3%	5.4%	43,450	12.6%	6.5%	28,695	7.6%	6.2%	9,749	3.0%	4.4%
2002	103,905	23.5%	3.2%	69,584	15.1%	4.7%	45,702	11.3%	4.9%	37,169	7.9%	5.2%	15,146	2.7%	3.2%
2003	121,749	25.8%	4.6%	56,265	11.3%	4.5%	62,796	10.6%	6.4%	35,897	7.4%	6.7%	11,659	1.8%	2.8%
2004	69,507	24.4%	3.3%	110,416	16.4%	4.6%	94,862	12.6%	5.4%	70,371	10.7%	6.4%	65,225	5.8%	6.3%
2005	101,359	25.7%	4.1%	156,592	16.6%	5.3%	120,339	15.0%	6.6%	106,064	11.3%	6.9%	78,584	6.6%	7.0%
2006	93,143	28.5%	3.7%	127,624	20.0%	5.2%	220,889	18.1%	6.7%	172,803	13.3%	7.3%	135,274	7.6%	7.0%
2007	137,601	30.8%	4.1%	185,404	19.8%	5.4%	231,224	18.0%	7.2%	223,710	12.1%	6.9%	129,805	8.0%	7.5%
2008	205,646	27.4%	4.7%	233,965	19.1%	6.4%	247,091	14.7%	7.5%	189,998	10.9%	8.3%	56,463	4.8%	6.7%
2009	222,543	36.4%	7.9%	182,699	19.8%	9.7%	208,234	15.1%	11.8%	103,168	8.1%	9.1%	51,898	4.3%	9.0%
2010	128,808	29.0%	4.4%	166,860	16.8%	5.7%	129,007	9.8%	5.2%	139,228	7.9%	5.9%	103,308	4.5%	5.6%
2011	142,296	29.4%	4.3%	161,342	17.1%	5.6%	220,098	11.9%	6.2%	216,206	10.2%	7.6%	134,585	5.4%	6.8%
All Years	1,907,061	27.4%	3.9%	2,035,705	17.1%	5.4%	2,033,056	13.6%	6.6%	1,668,355	10.0%	7.0%	1,040,585	5.7%	6.7%

Table 5: Dividend Performance and Expected Earnings Growth by Quintiles Formed from Ranked Equity Book-to-Market (B0/M0) Ratios: 1985-2011

	Quintile 1			Quintile 2			Quintile 3			Quintile 4			Quintile 5		
Forecast in April	D_0/B_0	D_0/M_0	G5%	D_0/B_0	D_0/M_0	G5%	D_0/B_0	D_0/M_0	G5%	D_0/B_0	D_0/M_0	G5%	D_0/B_0	D_0/M_0	G5%
1985	8.9%	2.8%	130.9%	6.1%	2.8%	112.1%	5.2%	3.5%	81.9%	4.9%	4.8%	103.0%	4.5%	6.4%	80.4%
1986	7.4%	1.8%	117.3%	6.6%	2.6%	116.2%	4.5%	2.5%	97.5%	5.2%	4.0%	127.8%	4.6%	5.5%	44.2%
1987	7.8%	1.6%	160.4%	7.6%	2.9%	147.7%	5.0%	2.8%	143.6%	4.2%	3.1%	131.7%	5.1%	5.8%	55.2%
1988	9.6%	2.0%	132.5%	6.2%	2.5%	126.9%	5.5%	3.3%	91.6%	4.9%	4.1%	67.2%	4.2%	5.5%	62.0%
1989	10.5%	2.1%	136.3%	6.0%	2.7%	70.5%	5.1%	3.2%	80.0%	5.3%	4.3%	46.1%	4.6%	5.7%	56.0%
1990	11.1%	2.0%	135.5%	5.4%	2.2%	99.3%	6.3%	3.9%	68.0%	5.2%	4.5%	60.5%	4.1%	5.6%	76.5%
1991	11.4%	1.8%	132.0%	5.7%	2.2%	89.8%	6.3%	3.7%	70.3%	5.3%	4.3%	71.7%	3.3%	4.5%	109.2%
1992	11.8%	1.7%	128.3%	5.1%	1.8%	94.2%	5.8%	3.2%	117.1%	5.5%	4.2%	94.7%	3.7%	4.8%	198.0%
1993	11.0%	1.8%	140.8%	6.9%	2.4%	93.1%	5.5%	2.6%	107.6%	5.3%	3.5%	77.1%	3.5%	3.5%	233.7%
1994	13.7%	2.0%	111.7%	5.9%	2.0%	96.2%	6.0%	2.8%	89.3%	5.0%	3.2%	101.2%	3.8%	4.1%	87.2%
1995	11.5%	1.7%	109.2%	6.0%	1.9%	86.0%	5.8%	2.8%	90.8%	3.9%	2.6%	90.2%	3.4%	3.7%	114.2%
1996	12.4%	1.6%	113.7%	6.1%	1.7%	94.7%	5.2%	2.2%	32.1%	3.4%	2.2%	110.8%	3.3%	3.4%	53.3%
1997	10.5%	1.5%	123.3%	5.5%	1.8%	96.9%	4.8%	2.3%	79.6%	3.2%	2.1%	90.1%	3.0%	3.3%	74.6%
1998	11.3%	1.1%	116.1%	5.5%	1.3%	107.0%	4.4%	1.6%	97.6%	3.3%	1.7%	89.6%	2.9%	2.6%	78.1%
1999	9.2%	0.9%	134.9%	4.8%	1.3%	122.8%	3.5%	1.6%	45.5%	3.4%	2.6%	89.0%	2.2%	2.9%	107.2%
2000	8.8%	0.7%	196.8%	6.3%	1.5%	112.4%	3.5%	1.5%	132.9%	3.0%	2.1%	90.7%	2.2%	3.1%	109.7%
2001	7.2%	0.9%	112.8%	5.8%	1.8%	60.2%	3.7%	1.9%	75.3%	2.5%	2.1%	69.1%	1.5%	2.2%	161.2%
2002	9.0%	1.2%	133.5%	5.1%	1.6%	80.0%	5.4%	2.3%	74.8%	3.2%	2.1%	94.2%	1.9%	2.2%	223.1%
2003	9.7%	1.8%	90.1%	5.1%	2.0%	103.3%	5.0%	3.0%	64.2%	2.8%	2.5%	89.4%	1.6%	2.6%	353.9%
2004	10.4%	1.4%	113.1%	5.9%	1.6%	92.2%	5.1%	2.2%	46.0%	3.6%	2.1%	50.9%	2.4%	2.6%	58.9%
2005	8.9%	1.4%	94.0%	5.8%	1.8%	69.5%	5.0%	2.2%	34.8%	4.4%	2.7%	52.1%	2.4%	2.6%	57.9%
2006	9.5%	1.2%	97.8%	5.7%	1.5%	66.4%	6.3%	2.3%	33.7%	4.4%	2.4%	37.0%	2.9%	2.7%	56.8%
2007	11.1%	1.5%	103.6%	5.5%	1.5%	75.4%	6.8%	2.7%	42.8%	4.7%	2.7%	52.8%	2.0%	1.9%	41.0%
2008	9.8%	1.7%	102.3%	6.1%	2.1%	67.1%	6.4%	3.3%	60.8%	4.4%	3.4%	50.3%	2.4%	3.3%	102.4%
2009	14.4%	3.1%	37.4%	5.8%	2.9%	20.4%	4.9%	3.8%	15.3%	2.8%	3.1%	77.5%	1.7%	3.6%	98.7%
2010	12.5%	1.9%	116.3%	6.4%	2.2%	72.0%	4.4%	2.4%	99.9%	3.5%	2.6%	108.6%	2.3%	2.8%	133.5%
2011	13.1%	1.9%	164.0%	6.2%	2.0%	97.3%	4.5%	2.4%	94.0%	4.1%	3.1%	63.4%	1.7%	2.2%	198.3%
All Years	10.6%	1.5%	109.7%	5.9%	1.9%	77.9%	5.3%	2.6%	59.4%	4.0%	2.8%	67.5%	2.4%	4.3%	99.1%

Table 6: The Implied Expected Rate of Return on the Market (k) and Market Risk Premium (MRP) for U.S. Stocks for Quintiles Formed by Ranked Equity Book-to-Market (B/M) Ratios: 1985-2011

	Quintile 1 (Q1)		Quintile 2 (Q2)		Quintile 3 (Q3)		Quintile 4 (Q4)		Quintile 5 (Q5)		Q1-Q2	Q1-Q3	Q1-Q4	Q1-Q5
Forecast in April	k	MRP	k	MRP	k	MRP	k	MRP	k	MRP	MRP	MRP	MRP	MRP
1985	12.76%	1.33%	12.40%	0.97%	13.50%	2.07%	13.79%	2.36%	14.04%	2.61%	0.35%	-0.74%	-1.04%	-1.28%
1986	9.07%	1.77%	10.46%	3.16%	10.65%	3.35%	11.54%	4.24%	10.83%	3.53%	-1.40%	-1.59%	-2.47%	-1.76%
1987	9.61%	1.59%	10.42%	2.40%	10.39%	2.37%	11.24%	3.22%	11.47%	3.45%	-0.81%	-0.78%	-1.63%	-1.86%
1988	11.15%	2.43%	11.76%	3.04%	11.78%	3.06%	11.05%	2.33%	12.40%	3.68%	-0.61%	-0.63%	0.09%	-1.26%
1989	11.94%	2.76%	11.83%	2.65%	11.43%	2.25%	11.09%	1.91%	12.23%	3.05%	0.11%	0.51%	0.85%	-0.29%
1990	11.75%	2.96%	11.83%	3.04%	11.59%	2.80%	11.62%	2.83%	12.74%	3.95%	-0.07%	0.16%	0.13%	-0.99%
1991	10.58%	2.54%	11.04%	3.00%	11.11%	3.07%	11.77%	3.73%	10.97%	2.93%	-0.46%	-0.53%	-1.19%	-0.39%
1992	9.34%	1.86%	9.79%	2.31%	10.56%	3.08%	10.54%	3.06%	12.31%	4.83%	-0.45%	-1.22%	-1.20%	-2.97%
1993	9.98%	4.01%	9.94%	3.97%	9.80%	3.83%	9.50%	3.53%	11.06%	5.09%	0.04%	0.18%	0.48%	-1.07%
1994	9.73%	2.76%	9.75%	2.78%	9.98%	3.01%	9.95%	2.98%	10.94%	3.97%	-0.03%	-0.26%	-0.22%	-1.22%
1995	9.59%	2.53%	9.59%	2.53%	10.47%	3.41%	10.68%	3.62%	12.33%	5.27%	0.00%	-0.88%	-1.09%	-2.74%
1996	8.96%	2.45%	9.44%	2.93%	9.68%	3.17%	9.60%	3.09%	9.72%	3.21%	-0.48%	-0.72%	-0.64%	-0.76%
1997	8.80%	1.91%	9.87%	2.98%	9.72%	2.83%	9.89%	3.00%	9.31%	2.42%	-1.07%	-0.92%	-1.09%	-0.51%
1998	6.25%	0.61%	7.62%	1.98%	7.39%	1.75%	8.26%	2.62%	8.03%	2.39%	-1.37%	-1.13%	-2.00%	-1.78%
1999	5.97%	0.79%	7.48%	2.30%	8.13%	2.95%	9.58%	4.40%	9.40%	4.22%	-1.50%	-2.16%	-3.60%	-3.43%
2000	7.03%	1.04%	8.37%	2.38%	9.48%	3.49%	11.05%	5.06%	10.67%	4.68%	-1.34%	-2.44%	-4.01%	-3.64%
2001	7.33%	2.19%	8.53%	3.39%	9.74%	4.60%	8.75%	3.61%	8.49%	3.35%	-1.19%	-2.41%	-1.42%	-1.15%
2002	7.24%	2.03%	7.63%	2.42%	7.79%	2.58%	8.53%	3.32%	8.72%	3.51%	-0.38%	-0.55%	-1.28%	-1.48%
2003	8.98%	5.02%	8.86%	4.90%	9.53%	5.57%	10.09%	6.13%	10.29%	6.33%	0.12%	-0.55%	-1.11%	-1.31%
2004	7.16%	2.81%	8.09%	3.74%	7.36%	3.01%	8.26%	3.91%	8.11%	3.76%	-0.93%	-0.20%	-1.10%	-0.94%
2005	8.50%	4.16%	8.87%	4.53%	8.52%	4.18%	9.37%	5.03%	8.77%	4.43%	-0.37%	-0.03%	-0.87%	-0.28%
2006	8.27%	3.28%	8.76%	3.77%	8.81%	3.82%	9.08%	4.09%	9.05%	4.06%	-0.49%	-0.54%	-0.81%	-0.78%
2007	8.65%	3.96%	8.92%	4.23%	9.43%	4.74%	9.36%	4.67%	8.45%	3.76%	-0.27%	-0.79%	-0.72%	0.20%
2008	9.92%	6.24%	10.23%	6.55%	10.89%	7.21%	10.48%	6.80%	9.87%	6.19%	-0.31%	-0.96%	-0.56%	0.06%
2009	8.58%	5.65%	8.96%	6.03%	10.26%	7.33%	11.83%	8.90%	12.93%	10.00%	-0.38%	-1.67%	-3.24%	-4.34%
2010	9.22%	5.37%	9.05%	5.20%	9.29%	5.44%	10.18%	6.33%	10.14%	6.29%	0.17%	-0.07%	-0.96%	-0.92%
2011	11.00%	7.54%	10.35%	6.89%	10.61%	7.15%	10.41%	6.95%	13.49%	10.03%	0.65%	0.39%	0.59%	-2.49%
Average	9.16%	3.02%	9.62%	3.48%	9.92%	3.78%	10.28%	4.14%	10.62%	4.48%	-0.46%	-0.76%	-1.12%	-1.46%

Table 7: The Implied Expected Rate of Return on the Market (k) and Market Risk Premium (MRP) for U.S. Stocks for Quintiles Formed by Ranked Equity Earnings-to-Market (E/M) Ratios: 1985-2011

	Quintile 1 (Q1)		Quintile 2 (Q2)		Quintile 3 (Q3)		Quintile 4 (Q4)		Quintile 5 (Q5)		Q1-Q2	Q1-Q3	Q1-Q4	Q1-Q5
Forecast in April	k	MRP	k	MRP	k	MRP	k	MRP	k	MRP	MRP	MRP	MRP	MRP
1985	9.77%	-1.66%	12.53%	1.10%	12.94%	1.51%	12.94%	1.51%	14.21%	2.78%	-2.77%	-3.17%	-3.18%	-4.45%
1986	8.99%	1.69%	9.79%	2.49%	9.51%	2.21%	10.64%	3.34%	10.81%	3.51%	-0.81%	-0.53%	-1.66%	-1.83%
1987	7.54%	-0.48%	9.74%	1.72%	9.96%	1.94%	10.76%	2.74%	12.08%	4.06%	-2.20%	-2.42%	-3.22%	-4.53%
1988	6.64%	-2.08%	10.75%	2.03%	11.03%	2.31%	11.61%	2.89%	13.19%	4.47%	-4.11%	-4.39%	-4.97%	-6.55%
1989	7.38%	-1.80%	11.50%	2.32%	11.71%	2.53%	11.30%	2.12%	12.98%	3.80%	-4.13%	-4.33%	-3.93%	-5.61%
1990	7.05%	-1.74%	11.53%	2.74%	11.48%	2.69%	12.35%	3.56%	12.90%	4.11%	-4.48%	-4.43%	-5.30%	-5.85%
1991	8.14%	0.10%	10.50%	2.46%	10.64%	2.60%	10.73%	2.69%	12.93%	4.89%	-2.36%	-2.50%	-2.59%	-4.79%
1992	8.38%	0.90%	9.21%	1.73%	9.86%	2.38%	10.18%	2.70%	11.02%	3.54%	-0.83%	-1.48%	-1.80%	-2.63%
1993	7.65%	1.68%	9.90%	3.93%	9.43%	3.46%	9.57%	3.60%	11.33%	5.36%	-2.25%	-1.79%	-1.93%	-3.68%
1994	6.49%	-0.48%	9.06%	2.09%	9.51%	2.54%	9.95%	2.98%	11.32%	4.35%	-2.57%	-3.02%	-3.46%	-4.83%
1995	12.12%	5.06%	9.58%	2.52%	9.90%	2.84%	10.47%	3.41%	12.83%	5.77%	2.53%	2.21%	1.64%	-0.71%
1996	6.77%	0.26%	8.81%	2.30%	9.07%	2.56%	9.99%	3.48%	10.59%	4.08%	-2.04%	-2.30%	-3.22%	-3.83%
1997	7.74%	0.85%	8.32%	1.43%	9.24%	2.35%	10.10%	3.21%	10.86%	3.97%	-0.59%	-1.50%	-2.37%	-3.12%
1998	5.65%	0.01%	6.15%	0.51%	7.42%	1.78%	7.91%	2.27%	9.01%	3.37%	-0.50%	-1.76%	-2.25%	-3.36%
1999	4.33%	-0.85%	6.34%	1.16%	7.99%	2.81%	9.47%	4.29%	11.29%	6.11%	-2.01%	-3.67%	-5.15%	-6.96%
2000	5.46%	-0.53%	6.61%	0.62%	8.50%	2.51%	10.81%	4.82%	12.92%	6.93%	-1.14%	-3.04%	-5.35%	-7.45%
2001	4.78%	-0.36%	7.15%	2.01%	8.11%	2.97%	9.00%	3.86%	11.11%	5.97%	-2.37%	-3.33%	-4.23%	-6.34%
2002	6.34%	1.13%	6.84%	1.63%	6.87%	1.66%	7.86%	2.65%	8.62%	3.41%	-0.50%	-0.53%	-1.52%	-2.28%
2003	6.84%	2.88%	8.32%	4.36%	8.70%	4.74%	9.31%	5.35%	11.20%	7.24%	-1.48%	-1.86%	-2.47%	-4.36%
2004	5.73%	1.38%	6.86%	2.51%	7.51%	3.16%	7.74%	3.39%	8.80%	4.45%	-1.13%	-1.78%	-2.01%	-3.07%
2005	4.70%	0.36%	8.47%	4.13%	8.48%	4.14%	8.61%	4.27%	9.56%	5.22%	-3.76%	-3.78%	-3.91%	-4.86%
2006	4.63%	-0.36%	8.28%	3.29%	8.61%	3.62%	8.88%	3.89%	9.08%	4.09%	-3.65%	-3.98%	-4.25%	-4.45%
2007	5.80%	1.11%	7.56%	2.87%	8.65%	3.96%	8.91%	4.22%	9.94%	5.25%	-1.76%	-2.85%	-3.11%	-4.14%
2008	8.24%	4.56%	9.12%	5.44%	9.75%	6.07%	10.50%	6.82%	11.47%	7.79%	-0.88%	-1.51%	-2.27%	-3.23%
2009	7.57%	4.64%	9.38%	6.45%	9.07%	6.14%	9.64%	6.71%	11.79%	8.86%	-1.81%	-1.50%	-2.07%	-4.22%
2010	8.46%	4.61%	8.20%	4.35%	8.96%	5.11%	9.18%	5.33%	10.63%	6.78%	0.26%	-0.50%	-0.72%	-2.17%
2011	13.41%	9.95%	9.35%	5.89%	10.00%	6.54%	10.62%	7.16%	11.79%	8.33%	4.06%	3.41%	2.79%	1.62%
Average	7.05%	0.80%	8.87%	2.62%	9.34%	3.10%	9.94%	3.70%	11.25%	5.01%	-1.82%	-2.30%	-2.90%	-4.20%