

The Capital Asset Pricing Model and the Value Premium: A Post-Financial Crisis Assessment

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We extend the study of Fama and French (2006) to include the data from the 2007-2009 financial crisis episode. First, we find that given this updated data set, value premium seems to be heavily concentrated in small stocks, and this concentration becomes more pronounced in the data at end of the 20th and the first decade of the 21st century. Second, based on our empirical results, while CAPM is incapable of explaining the value premium in the entire July 1926 to December 2009 period, it can easily explain the value premium for 1926-1963 and 1987-2009 sub-samples. Given that both 1926-1963 and 1987-2009 periods include episodes of severe financial crisis and war, our research points to the possibility of asset pricing practice shifts from factor models toward CAPM in times of financial or political turbulence.

Keywords: Book-to-market effect, CAPM, Factor models, Financial crisis, Value premium.

JEL Classification: C51; G12.

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1 Introduction

Many studies in empirical finance document that value stocks have higher average returns in comparison with growth stocks in the post-1926 period; see Fama and French (1992, 2006), and Davis et al. (2000).¹ This phenomenon is known as the “value premium”. Fama and French (1993) claim that the capital asset pricing theory (CAPM) of Sharpe (1964) and Lintner (1965) is incapable of explaining the value premium in the post-1963 financial data. Loughran (1997) claims that the value premium in the 1926-1995 period is concentrated in small stocks. Ang and Chen (2007),

¹Following the finance literature, we define “value stocks” as stocks with high ratios of the book value to the market value of equity, and “growth stocks” as stocks with low book-to-market ratios.

among other issues, study the ability of the CAPM to explain the value premium in the 1926-2001 period. They claim that CAPM successfully captures the value premium in 1926-1963 data using constant β s and in the post-1963 data by allowing time-varying β s. Fama and French (2006) study the relationship between firm size and the value premium and the ability of CAPM to explain the value premium. Their study indicates that in the 1926-2004 period, the variation in β is unrelated to size, the value premium can not be explained by CAPM outside the 1926-1963 sub-sample, and that weak value premia in large firms can only be detected in the 1963-1995 sub-sample.

These studies rely on samples that include the Great Depression and the 1987 market crash. Yet, the strain that the Financial Crisis of 2007-2009 exerted on many enterprises, including many financial institutions, was unprecedented since the market crash of 1929. In this paper, we extend the work of Fama and French (2006) to study the impact of the 2007-2009 financial crisis on the value premium and the ability of CAPM to explain this phenomenon in financial data. We find that by updating the data used in Fama and French (2006), some important conclusions of their research are reversed in favor of the findings of Loughran (1997) and Ang and Chen (2007). First and foremost, there are two sample periods where CAPM can successfully explain the value premium: 1987-2009, as well as 1926-1963 studied by Ang and Chen (2007). Second, our results support the findings of Loughran (1997), and show that his findings regarding the concentration of the value premium in small stocks is broadly supported by our findings. Thus, we think that Ang and Chen (2007) have not uncovered an isolated case where CAPM can explain the value premium, one which belongs to the arguably distant past. We believe that this pattern of migration from factor models to CAPM pricing, and vice versa, may be a market feature, which depends on the level of general uncertainty of market participants about the fundamentals and market conditions.

The rest of the paper proceeds as follows. In Section 2, we present an in-depth discussion of the data used in this study. We introduce the model, estimation techniques and issues, empirical

findings, and robustness checks in Section 3. Section 4 concludes.

2 Data

We extend the data set used in Fama and French (2006) to include the data for the 2007-2009 financial crisis period. This data is expressed in USD and sampled at monthly frequency.² Our full sample includes observations from July 1926 to December 2009. The value premium, $Prem_t$, for month t is computed as the return on one of the four factor and six size- B/M portfolios formed on the intersections of size and book value to market value (B/M) in excess of the return on the 1-month Treasury Bill (RF_t). Book equity is total assets, minus liabilities, plus balance sheet deferred taxes and investment credit, minus liquidation, redemption, or carrying value of preferred stock. Each portfolio is formed at the end of June of each year. They are the intersections of independent sorting of NYSE, AMEX (after 1962), and NASDAQ (after 1972) stocks into two size groups, S (small firms with the June market cap below the NYSE median) and B (big, market cap above the NYSE median), and into three book-to-market equity (B/M) groups, G (growth, firms in the bottom 30% of NYSE B/M), N (neutral, firms in the middle 40% of NYSE B/M) and V (value, firms in the top 30% of of NYSE B/M). They include small growth (SG), small neutral (SN), small value (SV), big growth (BG), big neutral (BN), and big value (BV). Small minus big (SMB), is the simple average of the returns on the three small stock portfolios minus the average of the returns on the three big stock portfolios. Value minus growth, VMG , is the simple average of the returns on the two value portfolios minus the average of the returns on the two growth portfolios. Value minus growth small, ($VMGS$), is SV minus SG , and value minus growth big, $VMGB$, is BV minus BG . The proxy for market return, RM_t , is the value-weighted market return which includes all the assets in NYSE, AMEX (after 1962), and NASDAQ (after

²All series used in this paper are available from Kenneth French's website.

1972) universe.

Table 1 presents the summary statistics for the sample data. Monthly mean, annualized standard deviations, and t -statistics for market excess returns ($RM - RF$), and four other factors (SMB , VMG , $VMGS$, and, $VMGB$), as well as six size - B/M portfolio returns (SG , SN , SV , BG , BN , and, BV) for the full sample and the four sub-samples (July 1926 to June 1963, July 1963 to December 2009, July 2000 to December 2009, and July 1987 to December 2009).

As is seen in Panel A of Table 1, the value premium for the 1926-2009 period is large (0.34% per month) and statistically significant. The size of this premium is comparable to what is reported by Fama and French (2006) for the 1926-2004 period, and in line with what we report in Panels B and C of the same table for 1926-1963 and 1963-2009. Thus, for the full sample, the value premium exists and is statistically significant. This picture changes for the two sub-periods summarized in Panels D and E of Table 1. The value premium is substantially higher than average and statistically significant at the 5% level for the 2000-2009 period (0.73% per month), as is seen in Panel D. On the other hand, we observe that the period between the two major financial crises of the recent history, 1987-2009, demonstrates little evidence of a substantial value premium, as is seen on Panel E of Table 1. The monthly return on VMG for this period is only 0.15%, and it is not significantly different from zero at the usual statistical levels. Thus, unlike Fama and French (2006), we uncover some evidence of time variation in the value premium based on the period of investigation.

We find that the impact of size on the value premium is time-varying. As in Loughran (1997), Fama and French (2006), and Ang and Chen (2007), we find that value premium exists and is roughly the same magnitude between small and big portfolios in the 1926-1963 period ($VMGB$ and $VMGS$ have statistically significant monthly returns equal to 0.36% and 0.35%). Unlike Fama and French (2006) and similar to the findings of Loughran (1997), we find that once we consider sample periods other than 1926-1963, the value premium is obviously concentrated in small stocks.

This observation is more pronounced in the 1987-2009 and 2000-2009 samples. For the full sample, Panel A of Table 1, the difference between $VMGS$ and $VMGB$ monthly returns is 0.15% and these returns are less than one standard deviation from each other. For the 2000-2009 and 1987-2009 periods however, this difference is 0.71% and 0.48%, respectively. A simple means test shows that these differences in returns are statistically different from zero. Thus, we conclude that based on our observations so far, first, there is statistically significant evidence for the presence of the value premium in the sample data, and second, it seems that value premium is concentrated in small stocks for the last decade of the 20th century and the first decade of the 21st century.

In Table 2, we study the value premium for the 1926-2009 sample period along a finer grid for size and B/M values. This table shows the average monthly returns on 25 portfolios formed on the intersection of size and B/M quintile sorts. In Table 1, we consider all stocks above the NYSE median market cap as large, and those below as small. Here, following Fama and French (2006), we use NYSE quintile breakpoints as a sorting device. Thus, we compute the value premium within size quintile sorts by subtracting the average return on the highest two quintiles from the average return on the lowest two quintiles. Similarly, we sort the data based on NYSE B/M quintile breakpoints and compute the size premium by subtracting the returns on the two highest B/M quintile sorts from the lowest two.

It is immediately obvious from column $H - L$ and row $S - B$ of Table 2 that the value premium monotonically declines and the size premium monotonically increases along size and B/M dimensions, respectively.³ While the size and value premia associated with the two lowest B/M and the highest size (*Big*) categories in Table 2 are not statistically significant at conventional significance levels, all other categories are. Based on the information presented in Table 2, we conclude that

³There is a flat area on $S - B$ row between columns 3 and 4. This area does not necessarily violate the claim of monotonic rise in size premium, since these adjacent values are very close.

for the 1926-2009 period, overall average value premium is 0.36% per month, and this premium is statistically significant. It is slightly lower than the 0.38% value reported by Fama and French (2006) and is close to the 0.34% *VMG* average monthly return reported in Table 1. The difference can be explained through the longer sample size which contains the 2007-2009 crisis period for the former, and a finer sort along quintiles for the latter case. We also observe a higher concentration of the value premium in smaller stocks once we use a finer sorting scheme. The difference between *Small* and *Big* portfolio returns is 0.46% per month.⁴

3 Estimated Model and Empirical Findings

We use time-series tests to evaluate the ability of Sharpe (1964) and Lintner (1965) CAPM in explaining the value premium for the 1926-2009 period. In particular we are interested in CAPM's ability to explain the value premium in samples including crisis periods, such as the Great Depression, the market crash of 1987, and the 2007-2009 financial crisis.

The estimated model is

$$Prem_t = \alpha + \beta[RM_t - RF_t] + \epsilon_t, \quad (1)$$

where $Prem_t$ is the excess return over the one-month T-Bill rate for each one of the ten portfolios specified in Section 2, RM_t is the market return, RF_t is the return on the one-month T-Bill, and ϵ_t is a standard normal error term. Thus, $Prem_t$ assumes the values of *SMB*, *VMG*, *VMGS*, *VMGB*, *SG*, *SN*, *SV*, *BG*, *BN*, and *BV*. If CAPM indeed explains the value premium, then we expect that estimated intercept parameter, $\hat{\alpha}$, to be equal to zero.

⁴While this is a very informative demonstration of the concentration of value premium in small stocks, this observation needs to be treated carefully. There is little scope for diversification in extreme portfolios. See Fama and French (2006) and references therein.

Estimated parameter values are reported in Table 3. We find that the intercept parameter for the size premium, (SMB), is uniformly statistically insignificant across all sample periods. We can not reject the null hypothesis that α_{SMB} is significantly different from zero at conventional confidence levels. This finding is evidence in support of compatibility of CAPM pricing and size premium, and confirms earlier evidence reported by Fama and French (1996, 2006), among others.

On the other hand, the estimated intercept parameters for the value premium (VMG), demonstrate sample-dependent variation. Estimated α 's are statistically not significantly different from zero at conventional levels for the 1923-1963 and the 1987-2009 sub-samples. The estimated slope parameters, $\hat{\beta}$'s for the same sample periods are 0.35 (t -statistic=13.62) and -0.10 (t -statistic=-1.97) respectively. The intercept parameter is statistically significant at the usual levels for the 1926-2009 and the 1963-2009 periods. They imply Jensen's alpha values equal to 0.24% (t -statistic=2.09) and 0.40% (t -statistic=2.86), respectively. Estimated β parameters for these two data samples are 0.16 (t -statistic=7.70) and -0.15 (t -statistic=-4.80). Thus, we rule out a CAPM explanation of the value premium for the 1963-2009 and the 1926-2009 periods based on point estimates, but can not do the same for 1926-1963 and 1987-2009 periods.

We then refine the value premium measure along the size dimension, and estimate the model using $VMGS$ and $VMGB$ premia. This split further stresses what we have found so far, namely the value premium, whether explained by CAPM or not, is concentrated in small stocks. This split somewhat alters the picture presented above in different sample periods. We find that using $VMGS$ as our left hand side variable, there is less evidence suggestive of CAPM's ability to explain value premium in small stocks. Only one sub-sample, 1926-1963, has an estimated intercept parameter which is not statistically different from zero at conventional levels of confidence. All other periods have statistically significant intercept parameters: for 1926-2009, it is equal to 0.37% (t -statistic=3.03), for the 1963-2009 period, it is 0.57% (t -statistic=3.62), and for the 1987-2009

period, this parameter assumes a value equal to 0.47% (t -statistic=1.74). For these three sample periods, estimated β s are statistically different from zero, but they are either negative (1963-2009 and 1987-2009), or very small (1926-2009). On the other hand, using *VMGB* as the left-hand-side variable leads to universal failure to reject the hypothesis that estimated α parameters are different from zero in large stocks across all sample periods. Except in 1987-2009 sub-sample, all other estimated β parameters are statistically different from zero at the usual significance levels for *VMGB* regressions.

Sorting the assets in portfolios based on size and B/M ratios in growth, neutral, and value categories, we find that while the 1926-1963 period results are in line with the findings of Fama and French (2006), the other periods are not. This means that except for *SG* premium in the 1987-2009 period with estimated intercept parameter equal to 0.13% (t -statistic=0.58), all other intercept parameters are statistically different from zero. This observation allows us to concentrate our discussion on the full sample, 1926-2009. Based on our findings, and unlike Fama and French (2006), all size- B/M portfolios seem to pose a problem for CAPM individually. However, we can not make inferences about joint properties of estimated models and parameters. We address this very important issue in what follows.

To illustrate our findings so far, we plot the estimated annual β s in Eq. 1 in a series of figures. Figure 1 plots annual β s for four size - B/M portfolio excess returns regressed against market excess returns. As is seen on this Figure, both in top and bottom panels, β s for value stocks, small or big, were larger than those for growth stocks up to roughly 1971. Since 1971, this relationship is reversed and growth stocks seem to have higher β s.

Fama and French (2006) appeal to graphical representation of estimated β s to provide support for their claim of failure of CAPM to explain the value premium in the post-1963 period. In part, their claim is based on the downward sloping trend in annual β s. In Figure 2 we show that while

this downward trend is detectable in the 1926-2000 period, it seems to have reversed since. In the middle and the bottom panel of Figure 2, we showcase this issue by concentrating on data which became available since Fama and French (2006). As is seen in the bottom panel of this figure, corresponding to 1987-2009 data, a distinct change in post-2000 values is visible. The trend seems to have turned upward. By concentrating on the first decade of the 21st century in the middle panel, we magnify this trend. What we discuss here, based on visual representation, is supported by our empirical findings. Panel C of Table 3 shows that CAPM can indeed explain the value premium. This ability may be related to this reversal of trend in annual β s, seen in the bottom panel of Figure 2.

As mentioned earlier, CAPM is successful in explaining the value premium, if estimated intercept parameters (or Jensen's alphas) are jointly equal to zero, implying no scope for informational market inefficiency. As is seen across different panels of Table 3, these estimated parameters display considerable variation in statistical significance across different portfolios, both within and across sample periods. Thus we need to use a Wald-type test to make reasonable statistical inference. Gibbons et al. (1989) (henceforth GRS) introduce a method to test the null hypothesis that the intercepts of the CAPM regressions, Eq. (1), are jointly equal to zero. Their test is argued to be preferable to the Wald test in financial studies. If the α s are equal to zero, the GRS statistic should also equal zero; as the α s increase so does the value of the GRS statistic. This test statistic is computed as

$$GRS = \left(\frac{T - N - 1}{N} \right) \left[1 + \frac{\hat{\mu}_M^2}{\hat{\sigma}_M^2} \right]^{-1} \hat{\alpha}' \hat{\Sigma}^{-1} \hat{\alpha}, \quad (2)$$

where $\hat{\alpha}$ is an $N \times 1$ vector of estimated intercepts, $\hat{\Sigma}$ is an unbiased estimator of the residual covariance matrix, $\hat{\mu}$ is the average excess returns for the market, $\hat{\sigma}$ is the standard deviation of the market portfolio, T is sample length, and N is the number of assets or portfolios. Under the null of market efficiency, $GRS \sim F_{df_1, df_2}$, where $df_1 = N$, and $df_2 = T - N - 1$.

It is immediately obvious from Table 3 that the hypothesis of the estimated intercept parameters jointly equal to zero is easily rejected for 1926-2009 and 1963-2009 periods, but it can not be statistically ruled out for 1926-1963 and 1987-2009 periods. For the full sample, 1926-2009 period or Panel D in Table 3, the GRS statistic is 5.16 and the corresponding p -value is 0.0005. Similarly, for 1963-2009 period, we obtain a GRS statistic equal to 8.71 (p -value=0.0004). On the other hand, for 1926-1963 and 1987-2009, we respectively get GRS statistic values equal to 0.55 (p -value=0.7721) and 2.74 (p -value=0.5793). This observation leads us to conclude that while CAPM can not explain the value premium for long samples of 1926-2009 and 1963-2009, it is quite successful in 1926-1963 period, and particularly in the inter-crisis sample of 1987-2009.

This observation is particularly intriguing. Both the 1926-1963 and the 1987-2009 periods are relatively shorter and include substantially turbulent financial and security episodes. The 1926-1963 period contains data from 1929 market crash, the Great Depression, World War II, the Korean war, and the beginning phase of the Vietnam war. The other sample, the 1987-2009 period, includes the 1987 market crash, the Iraq war, and the 2007-2009 financial crisis. The other two samples studied naturally include this data, but it seems that these turbulent sub-samples are tempered by the inclusion of relatively long periods of a more stable financial and security environment.

We interpret these results as suggestive of market participants' switching from one asset pricing practice (factor models) to a simpler one (CAPM), as uncertainty in the economy increases. We can also view this switching behavior as a reaction to an environment where systemic risk strongly dominates other forms of risk. We leave a more formal study of this assertion for future research.

4 Conclusion

In this paper, we extend the data used in Fama and French (2006) to include the observations pertaining to 2007-2009 financial crisis. This extended data shows that while the CAPM of Sharpe

(1964) and Lintner (1965) does not explain the value premium in the 1926-2009 period, it can do so quite successfully in two sub-samples. The first sub-sample is 1926-1963, which is well documented in Fama and French (2006) and Ang and Chen (2007). The second period is 1987-2009. Both periods have striking similarities. The most salient points of similarity are extended periods of crisis, turbulence, and uncertainty in financial markets and severe threats to security.

These observations lead us to speculate that in periods of crisis and prolonged uncertainty about market conditions or fundamentals, or with respect to security in the economy, market participants may move away from factor models and adopt the CAPM framework, which is simpler. Alternatively, conditions such as a severe security risk (war) or financial crisis imply that systematic risk may not be diversifiable and dominates other forms of risk. Thus, investors price assets using the dominant source of risk and abandon methods such as factor models which try to price assets based on other (less important) sources of risk. We leave a more formal study of this assertion for future research.

We also find supporting evidence for the results of Loughran (1997). We show that the value premium is significantly concentrated in small stocks. This feature seems to strengthen as we study data samples which are more tilted toward the late 20th century and the early 21st century.

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Table 1: **Summary Statistics of the Data**

	Factor Portfolios					Size- <i>B/M</i> Portfolios					
	<i>RM - RF</i>	<i>SMB</i>	<i>VMG</i>	<i>VMGS</i>	<i>VMGB</i>	<i>SG</i>	<i>SN</i>	<i>SV</i>	<i>BG</i>	<i>BN</i>	<i>BV</i>
Panel A: July 1926 to December 2009											
Mean	0.63	0.25	0.34	0.41	0.27	1.02	1.25	1.44	0.88	0.96	1.15
Standard Deviation	5.42	3.24	3.74	3.86	4.30	7.79	7.11	8.45	5.39	5.83	7.39
<i>t</i> -Stat.	3.66	2.40	2.91	3.39	2.00	4.18	5.58	5.40	5.18	5.19	4.94
Panel B: July 1926 to June 1963											
Mean	0.85	0.21	0.35	0.35	0.36	1.03	1.16	1.37	0.83	0.89	1.20
Standard Deviation	6.43	3.48	4.17	3.89	5.23	8.75	8.80	10.70	6.16	7.23	9.62
<i>t</i> -Stat.	2.79	1.23	1.78	1.89	1.46	2.47	2.78	2.71	2.85	2.59	2.62
Panel C: July 1963 to December 2009											
Mean	0.44	0.27	0.33	0.47	0.20	0.94	1.24	1.41	0.83	0.91	1.03
Standard Deviation	4.48	3.05	3.31	3.81	3.36	6.94	5.45	6.09	4.69	4.42	4.92
<i>t</i> -Stat.	2.31	2.12	2.36	2.89	1.37	3.21	5.39	5.46	4.19	4.89	4.93
Panel D: July 2000 to December 2009											
Mean	-0.12	0.54	0.73	1.13	0.32	0.10	0.97	1.23	-0.06	0.48	0.26
Standard Deviation	4.81	3.02	3.93	4.40	3.99	6.84	5.92	8.33	4.48	4.96	6.61
<i>t</i> -Stat.	-0.26	1.91	1.99	2.74	0.87	0.15	1.75	1.57	-0.15	1.04	0.42
Panel E: July 1987 to December 2009											
Mean	0.51	0.17	0.15	0.39	-0.09	0.80	1.11	1.19	0.89	0.89	0.80
Standard Deviation	4.59	3.17	3.90	4.56	3.73	5.30	5.28	6.47	4.74	4.64	7.01
<i>t</i> -Stat.	1.87	0.90	0.65	1.43	-0.40	2.50	3.47	3.06	3.11	3.19	1.89

Size-value weight portfolios, *SG*, *SN*, *SV*, *BG*, *BN*, and *BV*, are formed at the end of June of each year. They are the intersections of independent sorts of NYSE, AMEX (after 1962), and NASDAQ (after 1972) stocks into two size groups, *S* (small firms with the June market cap below the NYSE median) and *B* (big, market cap above median), and three book-to-market equity (*B/M*) groups, *G* (growth, firms in the bottom 30% of NYSE *B/M*), *N* (neutral, firms in the middle 40%) and *V* (value, firms in the top 30%). Book equity is total assets, minus liabilities, plus balance sheet deferred taxes and investment credit, minus liquidation, redemption, or carrying value of preferred stock. *RM - RF* is the value-weighted market return minus the risk-free rate, shown here as the 1-month Treasury bill rate. *SMB* (small minus big) is the simple average returns in the three small stock portfolios minus the simple average return of the three big stock portfolios. *VMG* is the simple average return of the two value portfolios minus the simple average return of the two growth portfolios. *VMGS* is *SV* minus *SG*, *VMGB* is *BV* minus *BG*, and *VMGS* is *VMGS* minus *VMGB*. Monthly means (in %), annualized standard deviations (in %), and *t*-statistics (the ratio of the mean to its standard error) are also reported.

Table 2: **Average Monthly Returns for 25 Portfolios formed on Size and B/M, July 1963 to December 2009**

	<i>Low</i>	2	3	4	<i>High</i>	$H - L$	$t(H - L)$
<i>Small</i>	0.62	1.20	1.23	1.41	1.54	0.57	4.29
2	0.82	1.09	1.33	1.34	1.43	0.43	3.44
3	0.84	1.13	1.18	1.27	1.47	0.39	3.02
4	0.95	0.94	1.10	1.24	1.26	0.31	2.53
<i>Big</i>	0.83	0.90	0.86	0.94	1.00	0.11	0.93
$S - B$	-0.16	0.23	0.30	0.29	0.36	0.36	2.84
$t(S - B)$	-0.97	1.42	2.12	2.20	2.53		

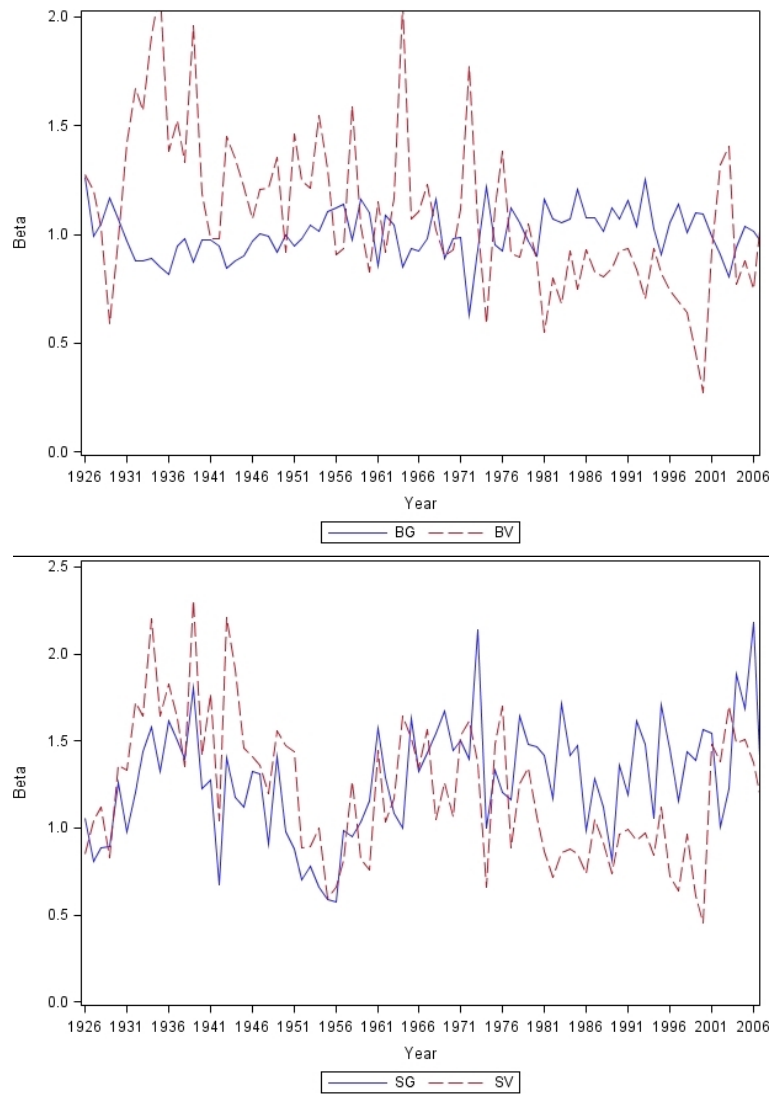
25 value-weight portfolios are formed on the intersections of independent sorts of NYSE, AMEX (after 1962), and NASDAQ (after 1972) stocks into five size groups and five book-to-market groups. Book equity in B/M is for the fiscal year ending in the preceding calendar year. $H - L$ is the value premium for a size group estimated from the time-series of monthly differences between average returns for the two highest B/M quintiles within a size quintile and the average of the returns for the two lowest B/M quintiles. In addition, $S - B$ is the size premium for a B/M quintile computed from the time series of monthly differences between average returns for the two smallest size quintiles within a B/M quintile and the average of the returns for the two biggest size quintiles. $t(H - L)$ or $t(S - B)$ is the average monthly difference divided by its standard error.

Table 3: CAPM Regressions to Explain Monthly Returns

	<i>SMB</i>	<i>VMG</i>	<i>VMGS</i>	<i>VMGB</i>	<i>SG</i>	<i>SN</i>	<i>SV</i>	<i>BG</i>	<i>BN</i>	<i>BV</i>
Panel A: July 1926 to June 1963										
α	0.04	0.05	0.13	-0.02	-0.03	0.08	0.10	0.03	-0.04	0.01
β	0.19	0.35	0.26	0.45	1.24	1.26	1.49	0.94	1.09	1.39
t_α	0.26	0.31	0.78	-0.10	-0.15	0.52	0.46	0.59	-0.51	0.06
t_β	7.95	13.62	9.82	13.94	45.57	50.93	42.50	118.30	86.03	53.56
R^2	0.12	0.29	0.18	0.30	0.82	0.85	0.80	0.97	0.94	0.87
GRS=0.55, p -Value=0.7721										
Panel B: July 1963 to December 2009										
α	0.18	0.40	0.57	0.23	0.35	0.77	0.92	0.39	0.51	0.61
β	0.22	-0.15	-0.23	-0.07	1.34	1.07	1.12	1.01	0.92	0.95
t_α	1.44	2.86	3.62	1.58	2.41	7.04	6.23	7.78	7.61	5.73
t_β	7.96	-4.80	-6.52	-2.15	41.38	43.84	34.14	91.80	61.74	39.82
R^2	0.10	0.04	0.07	0.01	0.76	0.78	0.68	0.94	0.87	0.74
GRS=8.71, p -Value=0.0004										
Panel C: July 1987 to December 2009										
α	0.07	0.20	0.47	-0.01	0.13	0.58	0.61	0.37	0.41	0.30
β	0.17	-0.10	-0.16	-0.04	1.29	1.01	1.13	1.00	0.93	0.96
t_α	0.43	0.87	1.74	-0.31	0.58	3.77	2.59	5.47	3.79	1.69
t_β	4.44	-1.97	-2.68	-0.85	26.30	30.01	22.37	68.39	39.72	24.96
R^2	0.06	0.01	0.02	0.00	0.72	0.76	0.64	0.94	0.85	0.69
GRS=2.74, p -Value=0.5793										
Panel D: July 1926 to December 2009										
α	0.12	0.24	0.37	0.11	0.22	0.51	0.59	0.27	0.31	0.38
β	0.20	0.16	0.07	0.26	1.28	1.19	1.35	0.97	1.02	1.22
t_α	1.24	2.09	3.03	0.86	2.00	5.32	4.44	7.45	5.70	3.73
t_β	11.22	7.70	3.12	10.77	62.24	68.00	55.16	145.31	102.90	65.15
R^2	0.11	0.06	0.00	0.10	0.80	0.82	0.75	0.95	0.91	0.81
GRS=5.16, p -Value=0.0005										

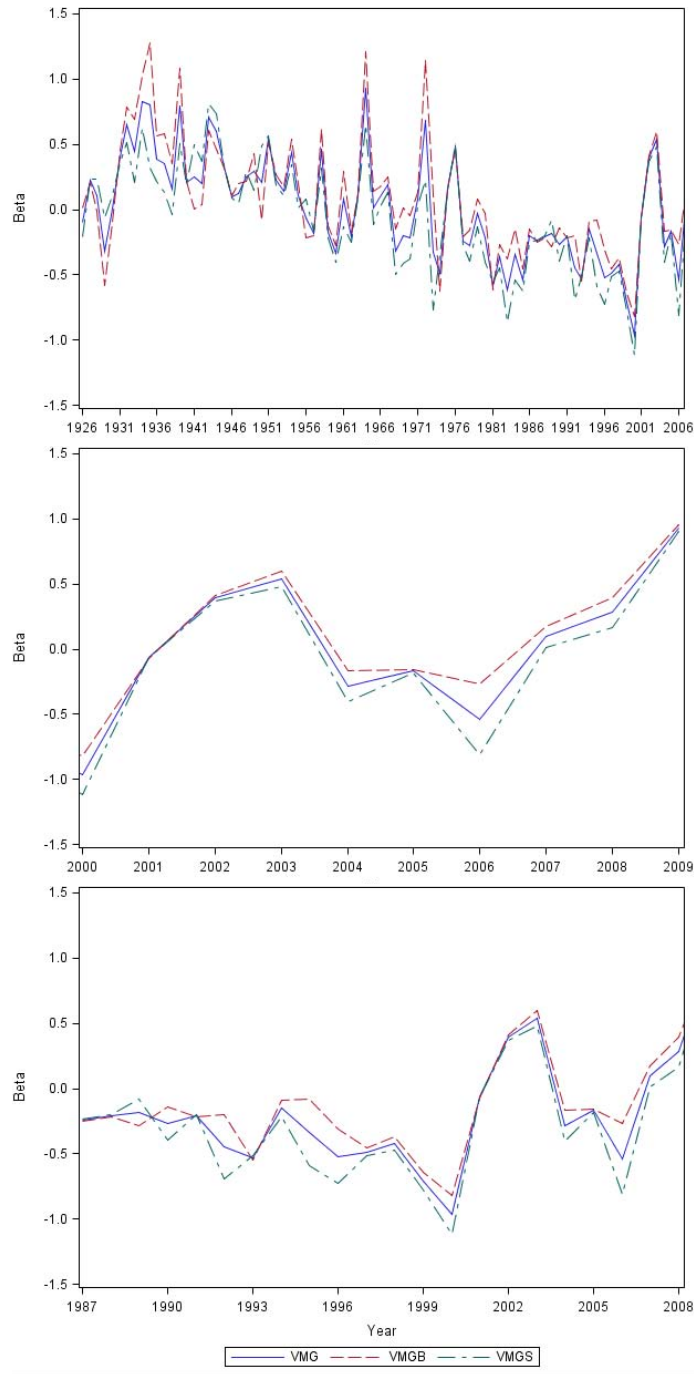
The CAPM regression is $Prem_t = \alpha + \beta[RM_t - RF_t] + \epsilon_t$, where RM is the market return, RF is the return on the 1-month T-Bill, and factor and size- B/M portfolio returns are as described in Section 2 and in Table 1. Student t -statistics for estimated intercept and slope parameters are reported as t_α and t_β , respectively. R^2 is adjusted for degrees of freedom. GRS is the Gibbons et al. (1989) F -statistic testing the hypothesis that the intercepts in the regressions for the six size- B/M portfolios are jointly equal to zero.

Figure 1: **One-Year β s for Value Premium, 1926-2006 Period**



This figure reports one-year β s for big growth, *BG*, big value, *BV*, small growth, *SG*, and small value, *SV*. Sampling period is monthly data for 1926-2006. Data source: Kenneth R. French's data library.

Figure 2: One-year β s for value premium across different sub-samples.



This figure reports one-year β s for *VMG* (average of the returns on small value, *SV*, and big value, *BV*, minus the average of returns on small growth, *SG*, and big growth, *BG*), *VMGS* (*SV* minus *SG*), and *VMGB* (*BV* minus *BG*), respectively. Data source: Kenneth R. French's data library.