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Stock Returns and the Franchise Value

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An accurate predictive model of a firm's future performance has been long sought after in the finance field. This study examines the relationship of a firm's franchise value, using the Franchise Factor, to its Price-to-Earnings ratio as one model of performance. Using the firms in the S&P 1,500 as the data sample, this study also examines the effects of market value along with the franchise value to price-to-earnings ratio. The results show that the franchise value to price-to-earnings ratio, even when controlling for the firm's market value, was in fact predictive of individual companies' stock returns between 2000 and 2009.

1. Introduction

A firm's total value of equity, or market value (MV), may be represented as the sum of its tangible value (TV) and franchise value (FV). The terminal value of a firm's equity is the value of the current earnings when capitalized at the market discount rate. A firm's FV measures its capacity to expand over time through investments that provide above-market returns. This is the total net present value of the returns from each franchise investment. FV is also known as the present value of growth opportunities (PVGO). TV and FV in combination represent the firm's market value (MV), and are used for calculating the common price/earnings (P/E) ratio (MV/current earnings). Decomposition of the P/E results in two major components, the base P/E and the Franchise Factor. Base P/E is the P/E of a firm with constant earnings over time and Franchise Factor captures the returns associated with new investments. Franchise Factor contributes to the P/E ratio in the same way that FV contributes to share value.

Using the Franchise Factor and P/E ratio, this study examines the relation between a stock's future performance and its current ratio of the Franchise Factor to P/E, and if the direction and strength of the relation is dependent on specific scenarios or characteristics. These include the market condition (bull vs. bear), monetary policy (restrictive v. stimulative), sector differences and market cap of firms. Existing literature provides little empirical evidence of a robust relationship. This paper fills that gap and provides an important model for analysts to predict firm performance.

2. Literature Review

P/E ratio decomposition can largely be attributed to Leibowitz and Kogelman (1990). They show that the P/E ratio is composed of two factors – (1) a Franchise Factor that represents

the P/E impact of new investments at a specified return and (2) a growth measure that reflects the significance of the new investment opportunities. The Franchise Factor reflects return on new investments. New investments that provide above-market returns will produce a positive Franchise Factor and an above-market P/E. The decomposition of the P/E suggested in their study allows the analyst to cut through the confusion that can arise from the standard Dividend Discount Model, which intertwines assumptions regarding a constant-growth process, implicit return levels and dividend payout policies. Two surprising results of the analysis are the small size of Franchise Factor and the extra-ordinary magnitude of growth required to raise P/E significantly.

Growth opportunities as a measure of a company are not new. Pindyck (1988) examines irreversible investment expenditures. Specifically, Pindyck examines the implications for capacity choice, utilization, firm value, and long-run marginal cost. A firm invests until the full value of an incremental unit of capacity equals its full cost. The former includes the value of the option to not utilize the unit; the latter includes the opportunity cost of sinking resources in the unit. With irreversibility, capacity is smaller, and firm value can be largely attributable to growth possibilities. Most major investment expenditures are at least partly irreversible: the firm cannot readily disinvest, so the expenditures become sunk costs. Irreversibility usually arises because capital is industry - or firm- specific, that is, it cannot be used in a different industry or by a different firm. Pindyck found that in markets with volatile and unpredictable demand, firms should hold less capacity than they would if investment were reversible or future demands were known. Also, much of the market value of these firms is due to the possibility (as opposed to the expectation) of increased demand in the future. This value may result from patents and technical knowledge, but it also arises from the managerial expertise, infrastructure, and market position

that gives these firms (as opposed to potential entrants) the option to economically expand capacity.

Chung and Charoenwong (1991) view the firm's future investment opportunities as operating options and examines the effect of growth opportunities on the firm's systematic risk using contingent claims analysis. The market value of the firm is comprised of the value of assets in place and the present value of growth opportunities. The present value of growth opportunities reflects the value of future investments which are expected to yield rates of return in excess of the opportunity cost of capital. Growth opportunities exist when the competitive process that drives the rates of return on capital investment projects toward the firm's cost of capital is halted or delayed. Generally, the firm can delay the competitive process when there are barriers to entry arising from economies of scale, product differentiation, brand loyalty, or patents. Since the firm is not obligated to undertake all of its future investment opportunities, the value of growth opportunities is best regarded as the present value of the firm's options to make future investments. The study predicts that the greater the portion of a stock's market value accounted for by the firm's growth opportunities, the higher the systematic risk, and explores the importance of a firm's growth opportunities as a measure of risk. Their empirical results suggest that a significant portion of the market value is accounted for by growth opportunities.

Leibowitz and Kogelman (1992) continue their work on the composition of the P/E by identifying the components, and providing a model for analyzing the various factors that shape the P/E behaviors of different firms. These factors include growth from market-rate investments, homogeneous growth, franchise structures and surprise events. In addition, it is stated that in an idealized world without surprises, a firm's prospective franchise investments would be well defined and the franchise value associated with the franchise investments would completely

determine the firm's price/earnings ratio. This theoretical P/E would be subject to "gravitational" forces pulling it down to the base P/E as the franchise was depleted. In the real world of course, P/E multiples rise and P/E multiples fall. New information about companies and markets continually flows toward investors as fresh scenarios are uncovered, old scenarios are discarded, and probabilities redefined. Leibowitz and Kogelman (1992) identify that the combination of the revaluation of prior franchises and the discovery of new prospects is embedded in changing P/Es. And that even when dealing with the complexities of the real world, the framework of the franchise factor model can help in analyzing the various factors that shape the P/E behavior of different firms.

In that same year, Leibowitz and Kogelman (1992) released a study of the theoretical price/earnings ratio produced by the franchise factor model. They state that the model has been based implicitly on an estimate of the firm's value divided by a normalized value for the economic earnings. This becomes a problem when comparing to the P/E ratio because the market addresses P/E values by dividing the market price by some measure of accounting earnings. As a result, the "market P/E" is subject to daily price volatility, and new accounting charges and reporting conventions. This problem between economic and accounting values for earnings, book value, and return on equity can be addressed in a "blended P/E." Computed from the theoretical price and the reported accounting earnings produced, the blended P/E should be closer to the market multiple than a theoretical P/E.

Chung (1993) attempts to explain the cross-sectional differences in firms financial structures based upon their operating risk and asset characteristics. What was found is that firms with larger asset beta use less long- and short-term borrowing. This is consistent with the traditional notion that riskier firms use less debt. Chung also showed that empirical results were

distorted when a firm experiences temporary declines in earnings that are close to zero or negative. Firms with greater growth opportunities tend to use less debt, and firms with a higher proportion of fixed assets tend to use more long-term debt, indicating that firms are matching maturities of their assets and liabilities. Additionally, Chung (1993) identifies present value of growth opportunities (PVGO) to price as a rearrangement of the P/E ratio.

Leibowitz and Kogelman (1994) deals with the P/E cost of earnings growth. Essentially, P/E has a base level that implies the future growth in earnings already. If that growth is greater than the share price growth, it results in a decline in the firm's P/E because the share price reflects a fixed level of future franchise investments. Without the prospect of new opportunities the franchise value will be used up, declining towards the base P/E. Danielson (1998), also applies a model based on P/E that is used to explore how a firm's P/E relates to four value drivers: the risk adjusted discount rate, the reinvestment rate, the return on new investments, and the length of a period of competitive advantage. Theoretically, some of these could also be applied to the PVGO/P ratio.

A majority of valuation models view a company as going through various phases of growth before ultimately entering a terminal phase of "competitive equilibrium." Leibowitz and Kogelman (1998) address this phase due to the relatively little attention that has been given to the material impact that this phase can have on the valuation of a company. Analysts face an almost irresistible temptation to focus on the early, more exciting growth phases of the earnings progression. The typical treatment of the terminal phase has been to assume that earnings either stabilize or regress to some general market growth rate. In the theoretical literature, a number of early writers have been concerned with the issue of how to model a growth company's transition

into an equilibrium state. Leibowitz and Kogelman (1998) provide useful insights into the complex structure of this terminal phase using a sales-driven franchise approach to valuation.

A working paper series by Richard Wall (2007) focuses on the development of a model that lends itself more directly to practical measurement of PVGO than prior academic models using simplifying assumptions. A significant bias in PVGO measurements occurs if analysts are not careful in distinguishing between real cost and the nominal cost of equity. Wall suggests that the PVGO concept can serve as an improvement over the P/E multiples in investment decision-making because it makes the ratio more transparent. This allows for better comparison across peer companies and industries. He also addresses the franchise value which is stated as the difference between return on stockholders' equity and the cost of equity, the source of potentially positive expected NPV.

Smit and Van Vliet (2009) present an intuitive explanation, based on insights of real options theory, for the value size puzzle. Growth firms are not overvalued, but are priced for their upward potential. Small growth firms are especially characterized by an asymmetric risk-return relation. The study also addresses the value-size premium of firms which consists of two parts: a distress premium and a growth discount. The reason given is that small growth firms have different risk-return relations than large asset firms, beta overestimates the systematic risk of growth options; and investors like upward potential, which translates in a growth discount, and dislike downward risk. In the study, PVGO/Price is identified as a distinguishable measure of firms with and without growth options.

All of the previous works delve into the field of "franchise value" in some manner, through the P/E ratio, or general theory on growth opportunities. However, there is a lack of empirical evidence between franchise value to P/E and stock price performance. This study fills

that gap. With proper measurement, franchise value can be a useful tool in both investment decision making and academic research evaluating the fundamentals that underlie value creation.

3. Data

In order to test this hypothesis a survey of firms is taken from the CRSP and Compustat databases, as well as Morningstar. The CRSP US Stock Database contains end-of-day and month-end prices on all listed NYSE, Amex, and NASDAQ common stocks along with basic market indices, and includes the most comprehensive distribution information available, with accurate total return calculations. Compustat North America is a database of U.S. and Canadian fundamental and market information on active and inactive publicly held companies. It provides more than 300 annual and 100 quarterly Income Statement, Balance Sheet, Statement of Cash Flows, and supplemental data items. Due to the extraordinary number of firms in CRSP and Compustat, only those in the S&P 1500 are used. Morningstar is used to provide the total returns on this index. Of the firms available in the S&P 1500, some had to be screened out due to missing information and data inconsistencies when merging the two databases. This resulted in the number of firms being reduced to around 1400. Once the franchise value to P/E ratio was calculated, more firms were removed due to negative ratios or lack of information to produce the ratio. Ultimately, after all screening, there were approximately 350 firms for each year.

The focus of this study is on the comparison of a firm's Franchise Factor to P/E ratio and its annual return. For consistency, only firms with a fiscal year end in December are examined. In order to calculate the Franchise Factor, required rate of return (r), return on equity (ROE), and the growth equivalent (G) are needed. The required rate of return on each firm's equity is calculated based on the Capital Asset Pricing Model (CAPM).

Capital Asset Pricing Model: $r = R_m + \beta(R_m - R_f)$

Annual return of each firm (r) is needed in the required rate of return calculation and is obtained from the CRSP database. Of the 1,872 firms provided by CRSP, which includes firms that do not exist presently, only 1472 were used as a result of data inconsistencies. This return is then used in the calculation for beta, which is determined by calculating the slope of the regression between the preceding 36 month returns of the firm and the monthly return of the S&P 1,500 from Morningstar. When using the CAPM for required rate of return, two assumptions were made.

These assumptions are:

- Market return of 11%
- Risk-free rate of 4%.

Both of these values are based on historical averages as reported in the SBBI 2011 yearbook. These two assumed values, when inputted into the CAPM along with the calculated beta of the firm, estimate the required rate of return for the firm at that moment in time.

In order for the ROE to be determined, Compustat is needed to obtain the necessary variables. These include net income (NI), fiscal year, and shareholder's equity (CEQ) all on an annual basis. In order for these variables to be obtained for the firms in the CRSP data set, the ticker symbol (TIC) is used as a proxy for merging CRSP and Compustat because of its similarities across both databases. However, this is not a completely accurate method due to TIC being inconsistent at times and results in some lost observations. The Average Shareholder Equity is calculated using the previous and current year's shareholder's equity.

Return on Equity: $ROE = \frac{Net\ Income}{Average\ Shareholder\ Equity}$

The last component of the Franchise Factor Model is the Growth Equivalent. However, in order to calculate growth equivalent, a growth constant is needed. Growth is a product of a firm's retention rate multiplied by ROE, as previously shown. Retention rate is calculated using the following Compustat variables for each company, Net Income (NI) and Dividends (DVC). Once these variables are obtained, the dividends are subtracted from the net income and then divided by net income to reflect the percentage of earnings that stayed within the firm.

Growth: $g = Retention\,rate * ROE$

After calculating both the required rate of return (r) and growth (g), the Growth Equivalent can be computed. The equation, as shown below, represents the total growth as calculated previously, divided by the growth in excess of the cost of capital. Ultimately, the growth equivalent captures the present value of the opportunities for productive new investments.

Growth Equivalent: $G = \frac{g}{g-r}$

The P/E-producing power of a given return pattern is captured in the investment's franchise factor. The incremental P/E value of an investment opportunity is given by the product of its FF and the size of the investment as measured by its growth equivalent. An infinite number of combinations of franchise factors and growth equivalents can give rise to the same P/E increment. In a stable market, the franchise factor depends only on the ROE, whereas the growth

equivalent depends only on the assumed growth rate. Thus, the franchise factor and the growth equivalent fully, but separately, capture the impact of ROE and growth on the P/E.

Franchise Factor: $F.F. = \frac{ROE-r}{ROE*r} * G$

Once the Franchise Factor is calculated for each firm, it is then compared to the P/E ratio at the corresponding time. This ratio is then compared to the return of the firm based on CRSP. Using a ten year period, the change in the ratio during this time is examined in order to determine if a relationship exists between the returns of a firm and its ratio of franchise value to P/E. The firms will also be examined by their market value to see if this helps explain the franchise value to P/E ratio.

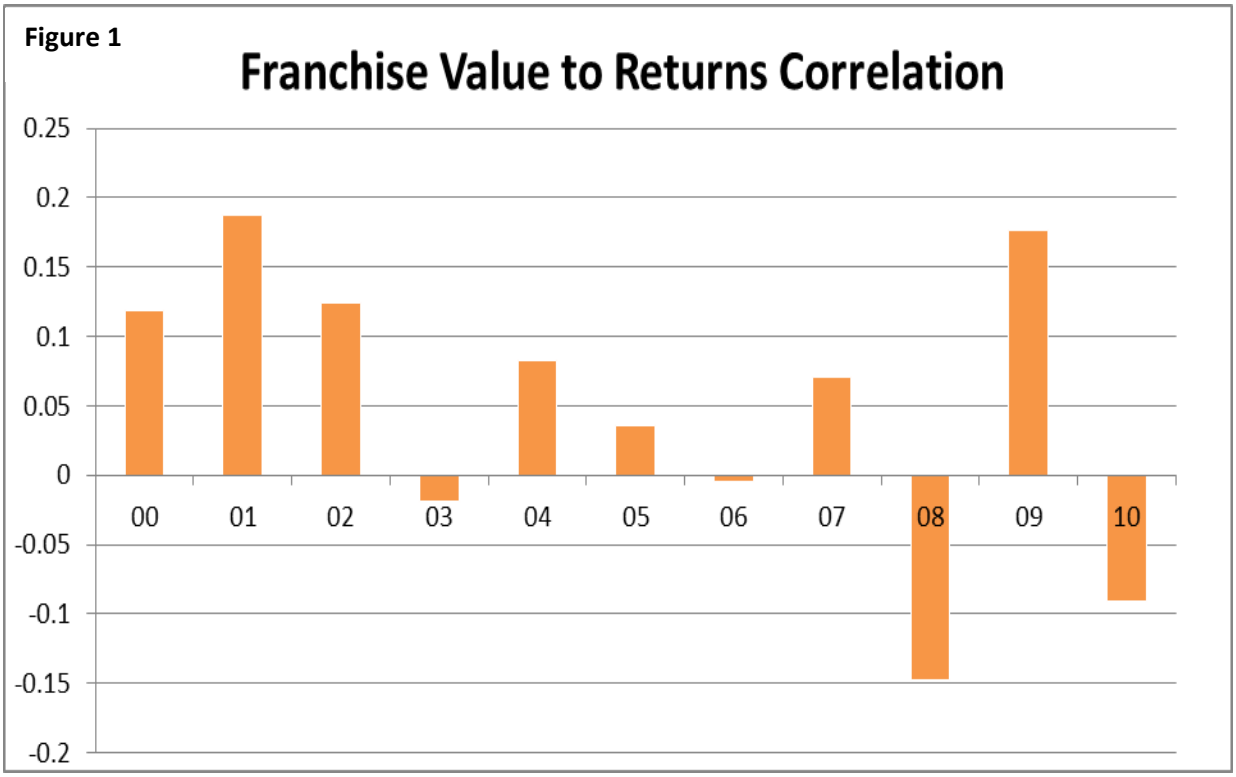
4. Data Analysis

Analysis of the relation between stock performance and the ratio of franchise value to P/E for the sample period 2000-2010 is broken down into four major sections. Section 4.1 is an examination of the year returns as compared to the previous year's franchise value to P/E ratio. This allows for testing the predictive nature of the ratio on the following year returns. Section 4.2 examines the breakdown of Chart 1 into bull and bear market years, and if the franchise value to P/E ratio is better at predicting returns in a specific market type. Section 4.3 is an examination of the correlations as shown in each year, and the implications monetary policy has on them. Lastly, section 4.3 again looks at the predictability of returns given the franchise value to P/E ratio. However, this differs from the correlation test done because it looks at each firms returns over a number of years as opposed to analyzing the returns of all firms in a specific year.

4.1 Correlation Test

The companies included in the correlation test are those for which data available. Companies that were missing or had negative franchise value to P/E ratios were removed from the sample. Using this method for screening the companies resulted in variations for the number of companies in each year. However, each year still had well over 300 companies, providing a strong sample. In addition, some of the FV to P/E ratios were abnormally high or low. To reduce the effect of the extreme outliers on the correlation, the data were winsorized to the 99th and 1st percentile.

Figure 1



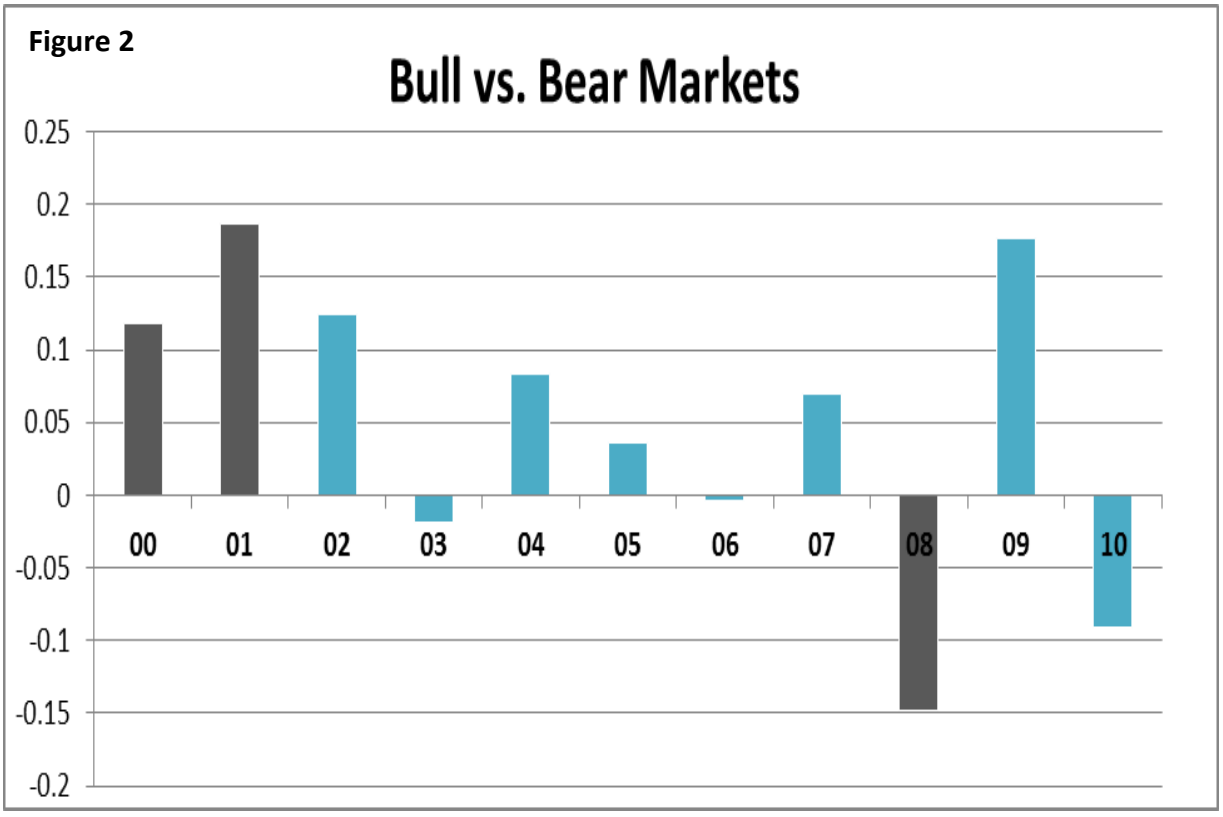
Based on Figure 1, there appears to be strong correlation between the returns and the franchise value to P/E ratio. However, as stated in Section 4, this is merely a correlation across companies and the following year returns. This does not examine a firm across the 2000-2010 time frame. This chart is broken down further in later sections to examine the implications of

monetary policy and market conditions. From an initial look, the chart shows that the franchise value to P/E ratio does capture the financial crisis in 2008, a bear market.

4.2 Market Condition

Using information on returns, and fluctuations of those returns, in the S&P 500 was used to determine which years should be considered a bear or bull market. Based on this, it was determined that the years 2000, 2001, and 2008 were bear markets overall. All other years from 2000-2010 are determined as being bull markets. It is important to note that classifying an entire year as a bear or bull market is fairly subjective. Some of the years used are extremely hard to classify, but the information shown does have some important implications.

Figure 2



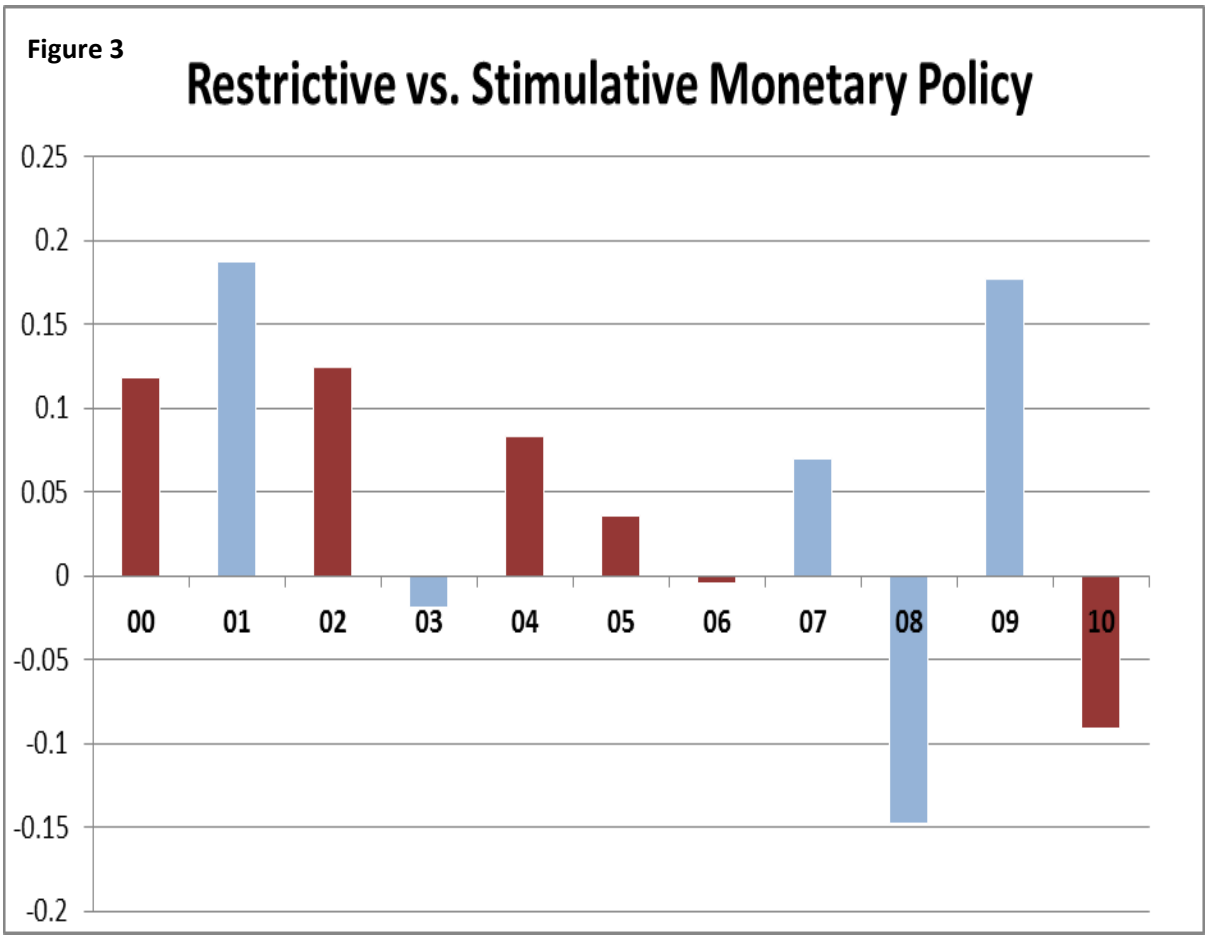
Given the years used, only the 2008 bear market is captured by the franchise value to P/E ratio. Even though there is a small sample for the years, it is important that the ratio was able to

capture the crisis. Due to the subjectivity of a year being a bear or bull market, it is hard to compare the ratio to a bear or bull market annually. Possibly a look at month to month would be more accurate. Regardless, the ratio appears to be fairly accurate in capturing years that were clearly bull or bear markets, such as 2008 and 2009.

4.3 Monetary Policy

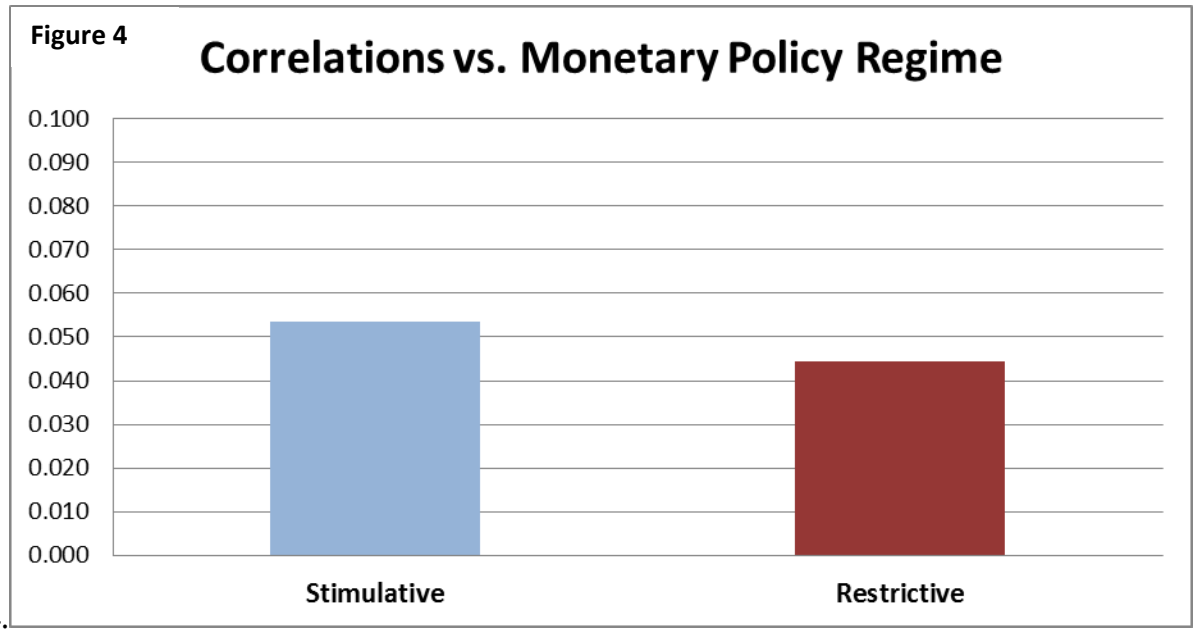
In this section, the correlation chart is broken down into restrictive and stimulative monetary policy years. Years were determined as such by the changes in the federal funds rate. The years in which the federal funds rate was increasing over time, or had a significant change and then maintained that level for the remainder of the year, are classified as restrictive. A similar method is used for a stimulative classification, except it occurs when the federal funds rate was decreasing. As in Figure 2, Figure 3 is broken down into two categories using blue and red to identify these. Blue is indicative of a stimulative monetary policy and red is used to identify a restrictive monetary policy.

Figure 3



As shown in Figure 3, the years that were identified as having a stimulative monetary policy appear to have the largest positive or negative correlations; specifically the years 2008 and 2009. These large fluctuations are a result of the financial crisis in 2008. It is important to note, that as a result of the financial crisis, correlations may be skewed. Additionally, this is a problem because of the amount of years used, potentially a larger horizon would not have this problem. This chart however, does not tell us much in terms of which monetary policy results in a stronger correlation between the returns of a firm and the franchise value to P/E ratio.

Figure 4



4.

In Figure 4, the average of the correlations in each category is taken for the years 2000 to 2010. Based on the chart, there appears to be a stronger correlation in times of stimulative monetary policy with the franchise value to P/E ratio. This difference could be a result of the financial crisis in which the federal funds rate decreased drastically. Given the averages, the difference between the two policy correlations is not significant.

4.4 Firm Returns and Franchise Value

In order to compare a firm's returns over the years as compared to the franchise value to P/E ratio, a panel regression was used. For this to be accomplished, dummy variables were used for the years 2000 to 2009, indicating which year the company's returns came from. Similar to the correlation conducted for Figure 1, the franchise value to P/E ratio values were winsorized to the 99^{th} and 1^{st} percentile in order to reduce the effect of extreme outliers. In addition, the market value (Mkvalt) of a firm is used to examine if it also has an effect on the franchise value to P/E ratio. The regression included a total of 3574 observations. It is important to note this is not the

number of unique companies, as a company is observed multiple times over the years (ex. XOM appears 10 times). Also, the year 2010 is not used because there is no data for 2011 returns, and forward returns are needed in order to see if the franchise value to P/E ratio is predictive of the following year.

Figure 5.	*Regression Statistics*
Multiple R	0.4821
R Square	0.2324
Adjusted R Square	0.2298
Standard Error	0.3266
Observations	3574

ANOVA	*df*	*SS*	*MS*	*F - Stat*	*P - Value*
Regression	12	115.001	9.583	89.857	0.00%
Residual	3561	379.788	0.107		
Total	3573	494.789			

Figure 6.	*Coefficients*	*Standard Error*	*t Stat*	*P-value*
Intercept	0.212	0.025	8.337	0.00%
Mkvalt	0.000	0.000	-5.763	0.00%
FV/PE	0.057	0.019	2.974	0.30%
2000	-0.015	0.027	-0.569	56.93%
2001	-0.091	0.027	-3.428	0.06%
2002	-0.239	0.028	-8.633	0.00%
2003	0.078	0.028	2.813	0.49%
2004	-0.006	0.027	-0.232	81.64%
2005	-0.122	0.026	-4.654	0.00%
2006	-0.069	0.026	-2.620	0.88%
2007	-0.182	0.027	-6.780	0.00%
2008	-0.578	0.027	-21.293	0.00%
2009	0.085	0.028	3.028	0.25%

Initial examination should be focused on the adjusted R^2, as opposed to the R^2, because the R^2 is automatically inflated due to the number of variables and the adjusted R^2 controls for this. Given the adjusted R^2, 22.98% of the variability in the stock returns can be explained by ratio of a firm's franchise value to P/E and the market value. In other words, 22.98% of the future returns can be predicted.

When focusing on Figure 6, which contains the variables of the regression, the most important statistics are located in the Coefficients and P-value columns. Coefficients indicate the amount of change expected in the log odds when there is a one unit change in the predictor variable with all other variables in the model held constant. P-value is the probability of obtaining a test statistic at least as extreme as the one that was actually observed, assuming that the null hypothesis is true. Examining the coefficient for the franchise value to P/E ratio (FV/PE) tells us that for every 1% increase in the ratio, there will be approximately a six basis point increase in the returns. Based on the values for the P-value column, almost all of the variables are statistically significant at the 1% level. This includes the franchise value to P/E ratio and the market value variables.

ANOVA.

To determine the significance of the regression as a whole, the ANOVA table should be examined. Within this table, the F-Stat and correlating P-value are present, which ultimately test the overall statistical significance of the regression. The F-Stat for the panel regression is 89.857 and is also significant at the 1% level given a p-value of zero. Given the results of the panel regression analysis, it is clear that the franchise value to P/E ratio is indeed a good predictor of future stock performance. Even with the market value of a firm being included, the statistical significance of the ratio still holds.

5. Conclusion

This study examines the franchise value, or present value of growth opportunities, for companies within the S&P 1,500 and how it relates to the future stock performance. Franchise value of the companies for the period January 2000 to December 2009 is determined by the Leibowitz and Kogelman (1990) franchise factor model. The Compustat, CRSP and Morningstar databases provide information on these companies necessary to compute the franchise factor model. There are a total of approximately 350 companies after screening those with missing variables. Statistical significance was determined by the p-value derived from the t-tests and F-test. Only p-values of 1% or less were considered to be significant. This p-value is lower than conventional p-values of 10% or 5%, resulting in a 99% confidence level. Included with the panel regression analysis, a correlation of the company's returns as compared to the franchise value to P/E ratio was conducted to examine if the ratio held for individual years.

Given the analysis presented in Figures 1 to 4, several conclusions can be made on franchise value to P/E ratio. The information from Figures 1 to 4 suggests that the franchise value to P/E ratio is neither particularly dependent on monetary policy nor current market conditions, with few exceptions. The exceptions appear to be extreme cases where the year is clearly a bear or bull market. In such cases, the ratio appears to correspond particularly well with the market condition. Monetary policy on the other hand, does not appear to have any relevance on the strength of the correlation for the ratio being indicative of future returns. Additionally, based on the panel regression analysis, market value demonstrates a strong relation with the franchise value to P/E ratio in predicting future returns. While this study certainly does not guarantee that the franchise value to P/E ratio is always predictive of future returns, it does

present empirical evidence of a strong correlation. Overall, the franchise value to P/E ratio model is useful in predicting the subsequent year's stock performance.

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