5-2016

The CAPM is Not Dead

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by

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A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Financial Economics

Approved:

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UTAH STATE UNIVERSITY
Logan, Utah

2016

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ABSTRACT

The CAPM is Not Dead

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The Capital Asset Pricing Model (CAPM) is among the earliest and most widely used security valuation models. Since its inception, CAPM has been criticized more than it has been appreciated. Although, it has been criticized both empirically and theoretically, it is still one of the most extensively used methods for the calculation of equity betas and returns throughout the globe. Among the most significant implications of the model is that the expected stock returns are determined by their corresponding level of systematic risk and not the idiosyncratic risk. According to much of the recent literature it is referred to as a 'failed' and 'dead' model. The primary purpose of this paper is the empirical examination of CAPM (Capital Asset Pricing Model) in search of a true 'market proxy', at which CAPM will hold. The CAPM is tested on the monthly returns (for the period January 2000 to December 2013) using twenty-four randomly selected stocks that are a part of the Standard & Poor's 500 (S&P 500) index. The CAPM is tested by calculating the Jensen's Alpha (intercept) using first and second pass regressions on various market proxies. The evidence does not validate standard CAPM except for the optimal market portfolio, which we found to be the true market portfolio.

(50 pages)

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Introduction

The two principal financial markets are the Money and Capital markets. These markets are the trading grounds for financial assets. Financial markets are the most vital feature for the progress of any economy. These markets are the foundation that offers a chance for firms to raise capital to finance their activities. Pricing these securities has always been an intriguing and fundamental task for the researchers and various models have been created in order to adequately price these securities.

Asset pricing models are used to estimate returns on the financial assets/securities, thus, they are in effect, used to estimate the value of these individual assets. In order to calculate the worth of these financial assets, we assess the inherent or systematic risk and the probable return these assets may produce over a specific course of time. Most of the pricing models have a built in presumption of a positive relation between the risks and return (i.e. higher risk means a higher expected return). Different models that are used to price the securities/capital assets differ primarily in their underlying assumptions, the stochastic procedure governing the arrival of news in the markets and the type of frictions allowed in the markets Ferson, and Jagannathan (1996). The different pricing models for assets also differ in the econometric methods they use.

CAPM is one of the most widely used of all such models. The model evolved by the works of Treynor (1962) and Sharpe (1964) building on the research of Markowitz (1952) on portfolio selection. CAPM is used to analyze the required rates of return for the risky assets. The validity of CAPM is based on a series of assumptions regarding both investors and the market. CAPM primarily gives a forecast for the required rate of return using the level of systematic risk existing in the market. The individual securities are assessed on the level of their contribution of systematic risk to the total risk of the market.

CAPM is based on the theory that investors require a return that is proportional to the level of risk they bear. It is basically a single factor model and is based on the premise that the required rate of returns can be predicted using the systematic risk.

CAPM is based on the following important assumptions:

- All investors are risk averse and rational.
- Every individual investor has the same ex-ante viewpoint about the expected returns, the standard error, and correlation coefficients of all the financial securities.
- The time horizon of all the investors is one period long and they aim to maximize their utilities during the course of the period.
- All investors are diversified using a range of different investments.
- The trade is free of transaction costs for all individual investors.
- The investors can borrow or lend unlimited amount of money at the Risk Free rate.
- 'No Taxes' so investors are indifferent between dividends and capital gains (Income taxes cause the individual investors to prefer capital gains tomorrow than dividends today).
- Due to their high number, investors are assumed to be price takers (no single investor can affect the price of a stock).
- Markets are in equilibrium.
- All investors have the same level of information available.

The standard algebraic form of CAPM can be defined as:

$$E(Ri) = Rf + (Rm - Rf)\beta i$$

Where,

$E(Ri)$: represents the expected return of the security i.

Rf : represents the risk free rate and US-treasury bill is often used as a proxy.

Rm : represents the return of the market portfolio. Various proxies for market return have been used in this paper.

βi = represents the systematic risk of the asset i, it is the sensitivity of the return of the security i relative to the expected excess returns of the market.

βi is computed using the following formula:

$$\beta i = \frac{Cov(Ri, Rm)}{Var(Rm)}$$

It is the ratio of covariance of security 'i's returns with the market return and variance of the market return. The market portfolio's beta always equals 1 as it is basically the beta obtained when market rates are regressed on themselves and are thus statistically bound to be 1. Beta of individual securities compares the extent of volatility of their returns relative to the market returns.

βi = 1.0 means that the security's volatility equals that of the market

βi > 1.0 means that the security is more volatile than the market.

βi < 1.0 means that the security is less volatile than the market

As seen by the equation of CAPM, expected returns on the asset i ($E(Ri)$) is positively associated with, Rm and βi.

Before the introduction of CAPM both professionals and individual investors used various different methods to price the securities. Some models were based on the assumption that the return provided by the securities was determined by the total risk the security inherited i.e. there was no concept of systematic and unsystematic (firm-specific) risks. Hence the benefit of diversification was rarely explored. Markowitz (1952) and Sharpe (1964), showed that an efficient combination of securities enabled the investors to remove the firm-specific risk, hence only they proposed that only systematic risk was the basis to determine premium. The CAPM, as a result predicts that investors only get their premium for bearing the non-diversifiable risk and holding securities with diversifiable risk earns them nothing.

Nevertheless, with its inception, CAPM has been criticized both theoretically and empirically with equal fervor. Black, Jensen and Scholes (1972) and Miller and Scholes (1972) published papers which show that during the period from 1931-1965 securities with low betas ended up providing more returns than were predicted by CAPM while high beta stocks had lower returns. Fama and French (1992) in their analysis observed no significant relation between beta and market return. They observed a positive correlation between the ratio of book value to market value and returns as well as between market capitalization and returns.

Various researchers have tried to provide different explanations for such results. Brennan and Wang (2010) are of the opinion that the expected returns may not be absolutely perfect as "market prices differ from fundamental prices because of stochastic pricing errors which are zero on average". In their opinion it is not always true that CAPM predicts the 'exact numbers'. They believe that the predicted returns may be lower or higher than the actual numbers. Furthermore, according to Jensen (1967) the intercept or the Alpha term is also a part of the CAPM which is not taken into account in the model. In fact, it is this alpha (when greater than 0) is what gives an investor the ability to select securities that outperform the market. Roll (1976) believed that the market portfolio must be well diversified to include every possible obtainable asset, thus market portfolio identification is a big problem as the returns on all possible investments opportunities are unobservable. Soundness and validity of the Capital Asset Pricing Model is equivalent to the market being mean-variance efficient with respect to all investment opportunities. Without observing all investment opportunities, it is not possible to test whether a particular portfolio, or indeed any portfolio, is mean-variance efficient. Consequently, it is not possible to test the CAPM.

This paper is an attempt to expand on the body of literature focused on the explanation of anomalies in the CAPM and its constituents. We try to empirically investigate the CAPM on twenty-four randomly selected stocks; using various substitutes for the market portfolio in an effort to twat whether CAPM holds or not, or is it being used in a wrong way. We first use the S&P 500 Index returns as the market substitute, as it is the most commonly used market proxy around the world. Our tests for the S&P 500 index as the market portfolio turn out to be consistent with the previous research and beta fails to entirely explain the risk premium and we observe significant alphas for many securities. We then carry out our tests using as many as four different value and equal weighted portfolios taking them to be the market proxies, these include the CRSP equal weighted and value weighted portfolios and the equal and value weighted portfolios created using these twenty-four stocks.

Additionally, we use the twenty-four stocks to create two optimal portfolios (Sharpe Ratio Maximized). For the first portfolio we allow short selling (i.e. the portfolio weights are allowed to be negative). In the case of second portfolio however, we impose short selling constraints by construction and require non negative weights for all the stocks in the portfolio.

Then we carry out our test on the CAPM using the OLS first and second pass regressions against these market proxies. Our results show that CAPM holds perfectly for each of the twenty-four randomly selected stocks for the optimal portfolio without short selling. Further we find that CAPM still holds for stocks that have a weight of zero in the portfolio.

Data Description and Empirical Methodology

The data used in this analysis ranges from the period January 1, 2000 to December 31, 2013. The monthly data on the twenty-four randomly selected stocks and the S&P 500 index is obtained from the Center of Research on Security Prices (CRSP). We obtain the holding period returns, prices, volume, shares outstanding and the company tickers for identification. We also obtain monthly risk free rates from the Fama & Frech factors provided by WRDS. Additionally, the monthly returns on the CRSP value and equal weighted portfolios are also gathered for the same time period.

Further we create a value weighted portfolio using the monthly returns, share prices and shares outstanding of the twenty-four constituent stocks. We also create an equally weighted portfolio of the twenty-four stocks. Additionally, we generate two optimal portfolios (with and without the short selling constraints) using the monthly returns of our twenty-four stocks. We first use the monthly stock returns to create a 24×24 variance-covariance matrix denoted as Σ_i. Further we create a vector of expected returns of our twenty four stocks and denote it as $E(R_i)$. We also create a vector of weights w that contains all the weights of the twenty four stocks and sums to 1.We then use matrix algebra to calculate the portfolio expected return which is represented as $E(R_{p,w}) = w^T . E(R_i)$ and standard deviation which is $\sigma_{p,w} = \sqrt{w^T . \Sigma . \mathrm{w}}$. Furthermore, we calculate the Sharpe Ratio for the portfolio that is $S_p = \frac{E(R_p - R_f)}{\sigma_{p,w}}$. Now we optimize our portfolio using two different conditions. Firstly, we maximize our Sharpe ratio by changing the weights (that should sum to 1) while keeping the individual weights non negative. We name this first portfolio 'Optimal Portfolio without short selling'. In the second case, we repeat the procedure and maximize the Sharpe ratio subject to weights (that should sum to 1), however, in our second case we allow the weights to acquire negative values (i.e. short selling is allowed). We name this second portfolio 'Optimal Portfolio with short selling'.

All our seven portfolios namely 'S&P 500 index', 'CRSP value weighted portfolio', 'CRSP equally weighted portfolio', 'Sample value weighted portfolio', 'Sample equal weighted portfolio', 'Optimal portfolio without short selling' and finally 'Optimal Portfolio with short selling' contain monthly returns for the period January 1, 2000 to December 31, 2013. We then create the Monthly risk premium of each security. It is calculated by subtracting the Risk free rate from the individual security return for each month using the following equation:

$$R_{pit} = R_{it} - R_{ft}\,, t = 1,2,3 \ldots$$

Where,

- R_{pit} represents the risk premium for stock i for month t
- R_{it} represents the return of security i for month t.
- R_{ft} represents the monthly risk free rate

Again, a similar method is used to calculate the monthly risk premium for the market portfolio;

$$R_{pmt} = R_{mt} - R_{ft}\,, t = 1,2,3 \ldots$$

Where,

- R_{pmt} represents the risk premium of the market for the month t
- R_{mt} represents the return of the market index for the month t.
- R_{ft} represents the monthly risk free rate

After gathering all the data, first, we run a time series regression. Beta for each of the 24 stocks is estimated using the regression analysis. The monthly risk premium for each stock is regressed with each of the seven market indexes risk premium using the Ordinary Least Squared (OLS) method:

$$R_{pit} = \alpha_i + \beta_i\left(R_{pmt}\right) + \varepsilon\, , i = 1,2,3\ldots, t = 1,2,3\ldots$$

Where:

- R_{pit} represents the risk premium for stock i for the month t
- R_{pmt} represents the risk premium of the market for the month t
- α_i and $\beta_i$are the regression parameter
- ε is the residual term

Next, results from the first pass regressions are reported. Average expected returns for each individual stock is also calculated and reported. Here, beta represents the index for systematic risk.

Now we run the cross sectional (second pass) regression to estimate the new Alpha and Beta values

$$\mathrm{E}(\mathrm{R_{pi}}) = \alpha_i + \beta_j(\beta_\mathrm{i}) + \varepsilon \qquad , i = 1,2,3\ldots, t = 1,2,3\ldots$$

Where:

- $E(R_{pi})$ represents the expected (average) risk premium for stock i
- β_i represents the beta estimated via first pass regressions
- α_i and $\beta_j$represents the regression parameter
- ε represents the residual term

Results

The first table illustrates summary statistics (observations, mean, and standard deviation, minimum and maximum) for all the seven portfolios that are used as market proxies in this paper. It also includes the summary statistics for the twenty-four stocks used in this study along with the risk free rate.

The results of the time series regressions for each of the twenty-four stocks risk premiums (i.e. Stock's return less Risk free rate) against the S&P 500 index's risk premium are reported in the second table. For brevity, only the cases where we observe a significant alpha (i.e. a violation of standard CAPM) is described in this section. The table begins with the first regression of Adobe risk premium against the S&P 500 index risk premium, we observe a beta of 1.497 that is significant even at 1% level. The alpha in this case is statistically insignificant. The second regression is of Abbot's risk premium against the S&P 500 index risk premium and we observe a beta of 0.298 that is again significant at 1% level, however alpha is 0.008 and in this case is statistically significant which is against the theory of CAPM. For the fourth regression Amazon is regressed on the S&P 500 index's risk premium, and we observe a statistically significant beta (1% level) of 1.662. Additionally, we observe a statistically significant alpha of 0.019 (10% level). In the standard CAPM, we should observe no significant alpha so this case is a violation of the standard CAPM. The fifth time series regression is of the PepsiCo against S&P 500 index, we observe a statistically significant beta of 0.418 and it is significant at the 1% level. Additionally, we observe a statistically significant alpha for Pepsi, its alpha of 0.006 is significant at 10% level.

The ninth regression is a time series regression of Johnson's and Johnson's risk premium against the S&P 500 index risk premiums. It yields a positive significant alpha of 0.006 that is statistically significant at 10% level. Kellogg's regression with the S&P 500 index again yields us a statistically significant alpha of 0.007 (10% level). The thirteenth time series regression in the second table, that is of MacDonald's risk premium against that of the S&P 500 index again violates the CAPM and we observe a statistically significant alpha of 0.007 (10% level), the beta is statistically significant at 1% level. Monster Beverage's risk premium when regressed with the S&P 500 index, yields us a statistically significant alpha of 0.040 that is significant at the 1% level, and the beta in this case is also statistically significant. The sixteenth time series regression that is of Moody's violates the CAPM and we observe a statistically significant alpha of 0.015 (5% level). The seventeenth regression that is of Nextera's risk premiums against that of S&P 500 index gives us an alpha of 0.011 that is significant at the 1% level. For Nike again we observe a significant alpha of 0.014 (5% level). Nvidia's time series regression also violates the standard CAPM and we observe an alpha of 0.025 that is significant at the 1% level. The twenty third regression of Autodesk against S&P also violates CAPM and we observe a statistically significant alpha of 0.017 (1% level). Finally, the last regression in table 2 is of MMM's risk premiums against the S&P 500 index risk premiums, we observe a violation of CAPM as the regression yields a statistically significant alpha of 0.008(5% level). Moreover, using S&P 500 index as the market proxy, we observe as many as thirteen cases of significant alphas out of twenty-four-time series regressions. However, all twenty-four regressions provide us with a statistically significant beta.

The results of time series regressions using S&P 500 index as the market proxy are inconsistent with the prediction of the standard Capital Asset Pricing Model. We hypothesize that the violation of CAPM is a result of the market proxy used in this model. We then carry out the complete process again using the CRSP equally weighted index returns as our market portfolio. The CRSP equally weighted index turns out to be a better market portfolio than the S&P 500 index. We observe only three cases of statistically significant alphas for the CRSP equally weighted portfolio (reported in table 3). Ideally, our model should observe no case of statistically significant alpha so CRSP equally weighted index is not an ideal market proxy. The fifteenth regression in Table 3, that is, Monster Beverage risk premium against the CRSP equally weighted index yields a positive statistically significant alpha of 0.037 (1% level). The seventeenth regression of Next Era with CRSP equally weighted index again results in a positive significant alpha of 0.01 (5% level). The time series regression of Nike against CRSP equally weighted index also yields a positive significant alpha of 0.012 (10% level). All our betas, when using CRSP equally weighted index as the market proxy, are statistically significant except for Johnson’s & Johnson’s and Abbot, this too is a violation of CAPM.

We then use CRSP value weighted index as our market proxy and regress all our twenty-four stock’s risk premium’s against the new market proxy. The results are reported in Table 4. We observe as many as six cases of significant alphas with CRSP value weighted index as our market proxy. The second time series regression of Abbot’s risk premium against that of CRSP value weighted index results in a positive significant alpha of 0.007 that is significant at the 10% level. Further, our eleventh regression of Kellogg Company against the market proxy gives us an alpha of 0.007(10% level). The time series regression numbered fifteen, sixteen, seventeen and eighteen of Monster, Moody’s Next Era and Nike again generated positive significant alphas of 0.038(1% level), 0.013(5% level), 0.010(5% level) and 0.013 (5% level), respectively. Betas from all our twenty-four regressions, however, are statistically significant using CRSP value weighted index as the market proxy.

Further we use an equally weighted portfolio of the sample stocks as our market proxy and repeat our time-series regressions and record them in Table 5. We observe as many as four statistically significant alphas using equally weighted portfolio as the market proxy. The sixth regression of Hewlett-Packard against the new market proxy gave negative and significant alpha of -0.013(5% level). The eighth regression of Intel also yielded a negative alpha of -0.014 that is statistically significant at 5% level. The fifteenth and seventeenth regressions of Monster and Next era also violate the CAPM and we observe significant alphas of 0.032(1% level) and 0.008(10% level) respectively. All the betas in this case, using equally weighted portfolio, are statistically significant. We further use the value weighted portfolio of our twenty-four sample stocks to carry out the time series regressions in an attempt to find our true 'market portfolio' and record the results in table 6. The value weighted portfolio, when used as the market proxy, provides us with a similar result to the equally weighted portfolio. We observe significant alphas for the sixth, eighth, fifteenth and seventeenth regressions for Hewlett-Packard, Intel, Monster and Next era, the alphas are -0.011 (10% level), -0.013 (10% level), 0.036 (1% level) and 0.009 (5% level) respectively. The betas for all twenty-four regressions are observed to be statistically significant.

Table 7 shows the results from the time series regressions using the Optimal Portfolio with short selling as the market proxy. We observe no significant alpha in any of the twenty-four regressions. However, the beta in as many as six cases fail to explain the risk premium i.e. we observe a statistically insignificant beta. The betas for third, sixth, eighth, twentieth, twenty-first, and twenty second regressions for AT&T, Hewlett-Packard, Intel, Oracle, Yahoo and Bank of

America respectively turn out to be insignificant, hence against the theory of CAPM. Finally, we use the optimal portfolio without short selling as our market proxy, and as Table 8 shows, all our betas turn out to be statistically significant even at 1% level. Furthermore, we find no significant alpha in any of the twenty-four, time series regressions. Hence our optimal portfolio without short selling turns out to be a market portfolio at which CAPM holds.

We then record the betas for all the seven cases from our first pass (time series) regressions and regress the average excess returns of each security against each their betas in seven different cross sectional regressions in an attempt to show that the betas entirely explain the average excess return. In our table 9 we see that when average excess returns of the twenty-four stocks are regressed against the betas obtained from the time series regressions using S&P 500 index as the market, we observe an insignificant beta and a statistically significant alpha of 0.009 (1% level). This means that betas are unable to explain the average excess return of the stocks which is against the theory of CAPM. In the next cross sectional second pass regression recorded in table 9 we use betas from the CRSP equally weighted market proxy. The beta in this case too fails to explain the average excess market return and we observe an insignificant beta while a significant alpha of 0.009 (5% level).

The second pass regression is then carried out using betas from the first pass regressions when CRSP value weighted portfolio was used as the market proxy. Again we observe a statistically insignificant beta while we observe a statistically significant alpha of 0.009 (5% level). The cross sectional (second pass) regression of average excess returns of the twenty-four stocks against betas from the first pass regression of equally weighted portfolio also fails to hold CAPM. We observe an insignificant beta and a significant alpha of 0.007 at the 5 % level. The value weighted portfolio betas too fail to explain the average excess returns and we observe an insignificant beta and a significant alpha of 0.010 (5% level.)

Finally, we use our optimal portfolios to run two final cross sectionals (second pass) regressions. First, we record the betas from time series regression where optimal portfolio with short selling was used as the market proxy. We then regress the average excess returns against the betas and observe a statistically significant beta of 0.023(1% level) and an insignificant alpha. It means that our betas are explaining the average excess returns completely and CAPM holds. Lastly, we use betas from the time series regression where optimal portfolio without short selling is used as the market proxy. We then run our final cross sectional regression of average excess returns against the betas. The results recorded in table 9 show that we observe a statistically significant beta of 0.015 (1% level) and an insignificant alpha. Hence, the betas are completely explaining the average excess market return and we observe no intercept. This means that CAPM holds perfectly if we use the optimal portfolios both with and without short selling as our market portfolios. Looking at figure 8 and figure 9, which represent the plots of average excess market returns for ‘optimal portfolio with short-selling’ and ‘optimal portfolio without short-selling’, respectively, we can observe that due to significant betas and insignificant alphas in both optimal portfolios, all of non-diversifiable risk has been compensated via excess market returns.

Conclusion

The primary purpose of this paper was to investigate the validity of Capital Asset Pricing Model (CAPM) based on the data of securities from the S&P500 index using various market proxies in search of a true ‘market proxy’, at which CAPM will hold. If CAPM were correct then the intercept term (Jensen’s Alpha) should be equal to zero and the coefficient of beta should explain the excess market return. However, according to the results of first pass regressions, our model finds cases of insignificant betas and various instances of significant Jensen’s alphas for all the market proxies except for the ‘optimal portfolio without short selling’.

For the second pass regressions we observe several instances where the values of alpha are significantly different from zero. This is the case for all our market proxies except for the two optimal portfolios both with and without short selling. The beta coefficients on the other hand are insignificant in all cases except for the two optimal portfolios. The betas for both optimal portfolios explained the average excess market return entirely in the second pass regressions. Hence, we conclude that, in general, CAPM holds for the ‘optimal portfolio without short selling’ which is the best market proxy for CAPM.

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Table 1: Summary of the monthly returns of twenty-four randomly selected companies, the S&P 500 Index, CRSP Equally Weighted Portfolio, CRSP Value Weighted Portfolio, Sample Equally Weighted Portfolio, Sample Value Weighted portfolio, Optimal Portfolio without Shorting, Optimal Portfolio with shorting & Risk Free Rate. Data Ranges from January, 2000 to December, 2013 and contains 166 observations each.

Summary statistics

Statistic	N	Mean	St. Dev.	Min	Max
CRSP Equally Weighted Portfolio	166	0.0097	0.0595	-0.2052	0.2250
CRSP Value Weighted Portfolio	166	0.0047	0.0474	-0.1846	0.1140
Sample Equally Weighted Portfolio	166	0.0127	0.0540	-0.1759	0.1580
Optimal Portfolio without Shorting	166	0.0183	0.0405	-0.1127	0.1729
Optimal Portfolio with shorting	166	0.0247	0.0470	-0.0947	0.1721
S&P 500 Index Returns	166	0.0026	0.0452	-0.1694	0.1077
Sample Value Weighted portfolio	166	0.0101	0.0465	-0.1330	0.1637
Riskfree Rate	166	0.0016	0.0017	0.0000	0.0056
Adobe Systems Inc.(ADBE)	166	0.0166	0.1307	-0.3348	0.8524
Abbott Laboratories(ABT)	166	0.0096	0.0570	-0.2074	0.1208
AT&T, Inc.(T)	166	0.0052	0.0699	-0.1876	0.2900
Amazon.com Inc.(AMZN)	166	0.0224	0.1528	-0.4116	0.6218
Pepsico, Inc.(PEP)	166	0.0084	0.0475	-0.2001	0.1935
Hewlett-Packard Company.(HPQ)	166	0.0041	0.1076	-0.3199	0.3539
The Home Depot, Inc.(HD)	166	0.0067	0.0781	-0.2059	0.2216
Intel Corporation(INTC)	166	0.0034	0.1075	-0.4449	0.3382
Johnson&& Johnson(JNJ)	166	0.0081	0.0492	-0.1601	0.1744
Invesco Ltd.(IVZ)	166	0.0121	0.1209	-0.3086	0.3647
Kellogg Company.(K)	166	0.0093	0.0508	-0.1386	0.2627
Legg Mason Inc.(LM)	166	0.0094	0.1056	-0.4170	0.2687
McDonald's Corp.(MCD)	166	0.0096	0.0612	-0.2567	0.1826
McGraw Hill Financial,Inc.(MHFI)	166	0.0108	0.0770	-0.2621	0.3183
Monster Beverage Corporation(MNST)	166	0.0419	0.1425	-0.4012	0.8916
Moody's Corporation.(MCO)	166	0.0174	0.0891	-0.2489	0.2880
NextEra Energy,Inc.(NEE)	166	0.0131	0.0570	-0.1916	0.2318
Nike, Inc.(NKE)	166	0.0164	0.0828	-0.3750	0.3976
NVIDIA Corporation.(NVDA)	166	0.0286	0.2001	-0.4866	0.8339
Oracle Corporation.(ORCL)	166	0.0081	0.1072	-0.3476	0.4864
Yahoo! Inc.(YHOO)	166	0.0054	0.1417	-0.3618	0.5590
Bank of America Corp.(BAC)	166	0.0084	0.1277	-0.5327	0.7291
Autodesk, Inc.(ADSK)	166	0.0198	0.1328	-0.3748	0.4622
3M Company.(MMM)	166	0.0101	0.0603	-0.1454	0.2065

Table 2: The Table reports the results obtained by estimating the following time series (first-pass) regression: $R_{pit} = \alpha_i + \beta_i(R_{pmt}) + \varepsilon$. R_{pit} *represents the risk premium for stock* i *(*$i = 1,2,3 \dots 24$*) for month* t ($t = 1,2,3 \dots 166$). R_{pmt} *represents the risk premium of the market for month* t ($t = 1,2,3 \dots 166$). β_i *represents the beta estimated via first pass regressions,* α_i *and* β_1 *represents the regression parameters,* ε *represents the residual term. The monthly returns of twenty-four randomly selected stocks (Data ranging from January, 2000 to December, 2013) are used to calculate risk premiums and are regressed against the risk premiums of the market represented by S&P 500 index in twenty-four separate time series regressions to obtain betas and Jensen's alphas (intercept).*

Regression Results

	Dependent variable:			
	Adobe RiskPremium	Abbott RiskPremium	AT&T RiskPremium	Amazon RiskPremium
	(1)	(2)	(3)	(4)
S&P500 RiskPremium	1.497***	0.298***	0.671***	1.662***
	(0.192)	(0.095)	(0.108)	(0.229)
Alpha	0.014	0.008*	0.003	0.019*
	(0.009)	(0.004)	(0.005)	(0.010)
Observations	166	166	166	166
R2	0.270	0.056	0.190	0.243
Adjusted R2	0.265	0.051	0.185	0.238
Residual Std. Error (df = 164)	0.112	0.055	0.063	0.134
F Statistic (df = 1; 164)	60.604***	9.815***	38.421***	52.632***
Note:				*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	PepsiCo RiskPremium	HP RiskPremium	Home Depot RiskPremium	Intel RiskPremium	J&J RiskPremium
	(5)	(6)	(7)	(8)	(9)
S&P500 RiskPremium	0.418***	1.428***	1.009***	1.534***	0.395***
	(0.075)	(0.148)	(0.109)	(0.141)	(0.079)
Alpha	0.006*	0.001	0.004	0.0003	0.006*
	(0.003)	(0.007)	(0.005)	(0.006)	(0.004)
Observations	166	166	166	166	166
R2	0.160	0.362	0.341	0.418	0.132
Adjusted R2	0.155	0.358	0.337	0.414	0.127
Residual Std. Error (df = 164)	0.044	0.086	0.064	0.082	0.046
F Statistic (df = 1; 164)	31.217***	93.134***	84.956***	117.574***	25.039***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	Invesco RiskPremium	Kellog RiskPremium	LM RiskPremium	McDonald RiskPremium	MHFI RiskPremium
	(10)	(11)	(12)	(13)	(14)
S&P500 RiskPremium	2.113***	0.238***	1.583***	0.659***	0.860***
	(0.127)	(0.085)	(0.134)	(0.092)	(0.115)
Alpha	0.008	0.007*	0.006	0.007*	0.008
	(0.006)	(0.004)	(0.006)	(0.004)	(0.005)
Observations	166	166	166	166	166
R2	0.630	0.045	0.461	0.238	0.256
Adjusted R2	0.628	0.039	0.458	0.233	0.252
Residual Std. Error (df = 164)	0.074	0.050	0.078	0.054	0.067
F Statistic (df = 1; 164)	279.042***	7.770***	140.402***	51.124***	56.475***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	MNST RiskPremium (15)	Moody RiskPremium (16)	NextEra RiskPremium (17)	Nike RiskPremium (18)	Nvedia RiskPremium (19)
S&P500 RiskPremium	0.606**	0.940***	0.434***	0.807***	2.143***
	(0.241)	(0.135)	(0.092)	(0.128)	(0.301)
Alpha	0.040***	0.015**	0.011***	0.014**	0.025*
	(0.011)	(0.006)	(0.004)	(0.006)	(0.014)
Observations	166	166	166	166	166
R2	0.037	0.228	0.119	0.196	0.237
Adjusted R2	0.031	0.224	0.114	0.191	0.232
Residual Std. Error (df = 164)	0.140	0.079	0.054	0.074	0.175
F Statistic (df = 1; 164)	6.349**	48.511***	22.248***	39.933***	50.840***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	Oracle RiskPremium (20)	Yahoo RiskPremium (21)	BAC RiskPremium (22)	ADSK RiskPremium (23)	MMM RiskPremium (24)
S&P500 RiskPremium	1.235***	1.667***	1.551***	1.654***	0.745***
	(0.157)	(0.207)	(0.183)	(0.189)	(0.086)
Alpha	0.005	0.002	0.005	0.017*	0.008**
	(0.007)	(0.009)	(0.008)	(0.009)	(0.004)
Observations	166	166	166	166	166
R2	0.273	0.283	0.304	0.319	0.313
Adjusted R2	0.269	0.279	0.300	0.315	0.309
Residual Std. Error (df = 164)	0.092	0.121	0.107	0.110	0.050
F Statistic (df = 1; 164)	61.564***	64.752***	71.562***	76.861***	74.878***
Note:					*p<0.1; **p<0.05; ***p<0.01

Table 3: The Table reports the results obtained by estimating the following time series (first-pass) regression: $R_{pit} = \alpha_i + \beta_i(R_{pmt}) + \varepsilon$. R_{pit} *represents the risk premium for stock* i $(i = 1,2,3 \ldots 24)$ *for month* t $(t = 1,2,3 \ldots 166)$. R_{pmt} *represents the risk premium of the market for month* t $(t = 1,2,3 \ldots 166)$. β_i *represents the beta estimated via first pass regressions,* α_i *and* β_1 *represents the regression parameters,* ε *represents the residual term. The monthly returns of twenty-four randomly selected stocks (Data ranging from January, 2000 to December, 2013) are used to calculate risk premiums and are regressed against the risk premiums of the market represented by CRSP Equally Weighted index in twenty-four separate time series regressions to obtain betas and Jensen's alphas (intercept).*

Regression Results

	Dependent variable:			
	Adobe RiskPremium	Abbott RiskPremium	AT&T RiskPremium	Amazon RiskPremium
	(1)	(2)	(3)	(4)
CRSP Equal Weighted RiskPremium	1.139***	0.096	0.247***	1.249***
	(0.146)	(0.074)	(0.089)	(0.175)
Alpha	0.006	0.007	0.002	0.011
	(0.009)	(0.004)	(0.005)	(0.010)
Observations	166	166	166	166
R2	0.270	0.010	0.045	0.237
Adjusted R2	0.266	0.004	0.039	0.232
Residual Std. Error (df = 164)	0.112	0.057	0.068	0.134
F Statistic (df = 1; 164)	60.774***	1.664	7.644***	50.965***
Note:				*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	PepsiCo RiskPremium	HP RiskPremium	Home Depot RiskPremium	Intel RiskPremium	J&J RiskPremium
	(5)	(6)	(7)	(8)	(9)
CRSP Equal Weighted RiskPremium	0.130**	1.125***	0.688***	1.061***	0.098
	(0.061)	(0.110)	(0.087)	(0.114)	(0.064)
Alpha	0.006	-0.007	-0.0005	-0.007	0.006
	(0.004)	(0.007)	(0.005)	(0.007)	(0.004)
Observations	166	166	166	166	166
R2	0.027	0.389	0.275	0.346	0.014
Adjusted R2	0.021	0.385	0.270	0.342	0.008
Residual Std. Error (df = 164)	0.047	0.084	0.067	0.087	0.049
F Statistic (df = 1; 164)	4.532**	104.430***	62.106***	86.705***	2.350
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	Invesco RiskPremium	Kellog RiskPremium	LM RiskPremium	McDonald RiskPremium	MHFI RiskPremium
	(10)	(11)	(12)	(13)	(14)
CRSP Equal Weighted RiskPremium	1.409***	0.206***	1.195***	0.295***	0.588***
	(0.114)	(0.064)	(0.102)	(0.077)	(0.090)
Alpha	-0.001	0.006	-0.002	0.006	0.004
	(0.007)	(0.004)	(0.006)	(0.005)	(0.005)
Observations	166	166	166	166	166
R2	0.484	0.059	0.455	0.082	0.207
Adjusted R2	0.481	0.053	0.451	0.077	0.202
Residual Std. Error (df = 164)	0.087	0.049	0.078	0.059	0.069
F Statistic (df = 1; 164)	154.088***	10.219***	136.808***	14.715***	42.750***
Note:					*p<0.1; **p<0.05; ***p<0.0

	Dependent variable:				
	MNST RiskPremium	Moody RiskPremium	NextEra RiskPremium	Nike RiskPremium	Nvedia RiskPremium
	(15)	(16)	(17)	(18)	(19)
CRSP Equal Weighted RiskPremium	0.402**	0.675***	0.165**	0.326***	1.928***
	(0.184)	(0.104)	(0.073)	(0.105)	(0.214)
Alpha	0.037***	0.010	0.010**	0.012*	0.011
	(0.011)	(0.006)	(0.004)	(0.006)	(0.013)
Observations	166	166	166	166	166
R2	0.028	0.204	0.030	0.055	0.331
Adjusted R2	0.022	0.199	0.024	0.050	0.327
Residual Std. Error (df = 164)	0.141	0.080	0.056	0.081	0.164
F Statistic (df = 1; 164)	4.787**	41.995***	5.071**	9.604***	81.145***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	Oracle RiskPremium	Yahoo RiskPremium	BAC RiskPremium	ADSK RiskPremium	MMM RiskPremium
	(20)	(21)	(22)	(23)	(24)
CRSP Equal Weighted RiskPremium	0.912***	1.313***	1.047***	1.386***	0.406***
	(0.121)	(0.155)	(0.146)	(0.136)	(0.072)
Alpha	-0.001	-0.007	-0.002	0.007	0.005
	(0.007)	(0.009)	(0.009)	(0.008)	(0.004)
Observations	166	166	166	166	166
R2	0.257	0.304	0.239	0.387	0.161
Adjusted R2	0.253	0.299	0.234	0.383	0.155
Residual Std. Error (df = 164)	0.093	0.119	0.112	0.104	0.055
F Statistic (df = 1; 164)	56.770***	71.489***	51.506***	103.611***	31.381***
Note:					*p<0.1; **p<0.05; ***p<0.01

Table 4: The Table reports the results obtained by estimating the following time series (first-pass) regression: $R_{pit} = \alpha_i + \beta_i(R_{pmt}) + \varepsilon$. R_{pit} *represents the risk premium for stock* i *(*$i = 1,2,3 \dots 24$*) for month* t ($t = 1,2,3 \dots 166$). R_{pmt} *represents the risk premium of the market for month* t ($t = 1,2,3 \dots 166$). β_i *represents the beta estimated via first pass regressions,* α_i *and* β_1 *represents the regression parameters,* ε *represents the residual term. The monthly returns of twenty-four randomly selected companies (Data ranging from January, 2000 to December, 2013) are used to calculate risk premiums and are regressed against the risk premiums of the market represented by CRSP Value Weighted index in twenty-four separate time series regressions to obtain betas and Jensen's alphas (intercept).*

Regression Results

	Dependent variable:			
	Adobe RiskPremium	Abbott RiskPremium	AT&T RiskPremium	Amazon RiskPremium
	(1)	(2)	(3)	(4)
CRSP Value Weighted RiskPremium	1.553***	0.225**	0.530***	1.632***
	(0.177)	(0.092)	(0.107)	(0.216)
Alpha	0.010	0.007*	0.002	0.016
	(0.008)	(0.004)	(0.005)	(0.010)
Observations	166	166	166	166
R2	0.320	0.035	0.130	0.258
Adjusted R2	0.316	0.030	0.125	0.253
Residual Std. Error (df = 164)	0.108	0.056	0.065	0.132
F Statistic (df = 1; 164)	77.058***	6.026**	24.610***	56.960***
Note:				*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	PepsiCo RiskPremium	HP RiskPremium	Home Depot RiskPremium	Intel RiskPremium	J&J RiskPremium
	(5)	(6)	(7)	(8)	(9)
CRSP Value Weighted RiskPremium	0.344***	1.425***	0.952***	1.439***	0.317***
	(0.073)	(0.137)	(0.105)	(0.136)	(0.077)
Alpha	0.006	-0.002	0.002	-0.003	0.005
	(0.003)	(0.007)	(0.005)	(0.006)	(0.004)
Observations	166	166	166	166	166
R2	0.119	0.397	0.334	0.405	0.093
Adjusted R2	0.114	0.393	0.330	0.401	0.088
Residual Std. Error (df = 164)	0.045	0.084	0.064	0.083	0.047
F Statistic (df = 1; 164)	22.202***	107.930***	82.347***	111.544***	16.909***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	Invesco RiskPremium	Kellog RiskPremium	LM RiskPremium	McDonald RiskPremium	MHFI RiskPremium
	(10)	(11)	(12)	(13)	(14)
CRSP Value Weighted RiskPremium	2.034***	0.225***	1.553***	0.562***	0.811***
	(0.118)	(0.081)	(0.124)	(0.090)	(0.110)
Alpha	0.004	0.007*	0.003	0.006	0.007
	(0.006)	(0.004)	(0.006)	(0.004)	(0.005)
Observations	166	166	166	166	166
R2	0.643	0.045	0.489	0.190	0.251
Adjusted R2	0.640	0.039	0.486	0.185	0.246
Residual Std. Error (df = 164)	0.072	0.050	0.076	0.055	0.067
F Statistic (df = 1; 164)	294.830***	7.661***	156.928***	38.533***	54.877***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	MNST RiskPremium	Moody RiskPremium	NextEra RiskPremium	Nike RiskPremium	Nvedia RiskPremium
	(15)	(16)	(17)	(18)	(19)
CRSP Value Weighted RiskPremium	0.621***	0.880***	0.376***	0.663***	2.161***
	(0.229)	(0.129)	(0.089)	(0.126)	(0.281)
Alpha	0.038***	0.013**	0.010**	0.013**	0.020
	(0.011)	(0.006)	(0.004)	(0.006)	(0.013)
Observations	166	166	166	166	166
R2	0.043	0.220	0.099	0.145	0.265
Adjusted R2	0.037	0.216	0.093	0.140	0.260
Residual Std. Error (df = 164)	0.140	0.079	0.054	0.077	0.172
F Statistic (df = 1; 164)	7.376***	46.356***	18.017***	27.917***	59.049***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	Oracle RiskPremium	Yahoo RiskPremium	BAC RiskPremium	ADSK RiskPremium	MMM RiskPremium
	(20)	(21)	(22)	(23)	(24)
CRSP Value Weighted RiskPremium	1.260***	1.672***	1.405***	1.668***	0.680***
	(0.146)	(0.193)	(0.178)	(0.175)	(0.084)
Alpha	0.003	-0.001	0.002	0.013	0.006
	(0.007)	(0.009)	(0.008)	(0.008)	(0.004)
Observations	166	166	166	166	166
R2	0.313	0.313	0.274	0.357	0.287
Adjusted R2	0.308	0.309	0.270	0.353	0.283
Residual Std. Error (df = 164)	0.089	0.118	0.109	0.107	0.051
F Statistic (df = 1; 164)	74.598***	74.829***	61.980***	91.207***	66.140***
Note:					*p<0.1; **p<0.05; ***p<0.01

Table 5: The Table reports the results obtained by estimating the following time series (first-pass) regression: $R_{pit} = \alpha_i + \beta_i(R_{pmt}) + \varepsilon$. R_{pit} *represents the risk premium for stock* i ($i = 1,2,3 \ldots 24$) *for month* t ($t = 1,2,3 \ldots 166$). R_{pmt} *represents the risk premium of the market for month* t ($t = 1,2,3 \ldots 166$). β_i *represents the beta estimated via first pass regressions,* α_i *and* β_1 *represents the regression parameters,* ε *represents the residual term. The monthly returns of twenty-four randomly selected stocks (Data ranging from January, 2000 to December, 2013) are used to calculate risk premiums and are regressed against the risk premiums of the market represented by Sample Equally Weighted index in twenty four separate time series regressions to obtain betas and Jensen's alphas (intercept).*

Regression Results

	Dependent variable:			
	Adobe RiskPremium	Abbott RiskPremium	AT&T RiskPremium	Amazon RiskPremium
	(1)	(2)	(3)	(4)
Equally Weighted RiskPremium	1.624***	0.229***	0.470***	1.647***
	(0.140)	(0.080)	(0.094)	(0.179)
Alpha	-0.003	0.005	-0.002	0.003
	(0.008)	(0.004)	(0.005)	(0.010)
Observations	166	166	166	166
R2	0.452	0.048	0.133	0.340
Adjusted R2	0.449	0.042	0.128	0.336
Residual Std. Error (df = 164)	0.097	0.056	0.065	0.125
F Statistic (df = 1; 164)	135.451***	8.189***	25.134***	84.334***
Note:				*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	PepsiCo RiskPremium	HP RiskPremium	Home Depot RiskPremium	Intel RiskPremium	J&J RiskPremium
	(5)	(6)	(7)	(8)	(9)
Equally Weighted RiskPremium	0.366***	1.367***	0.878***	1.422***	0.287***
	(0.062)	(0.113)	(0.090)	(0.109)	(0.067)
Alpha	0.003	-0.013**	-0.005	-0.014**	0.003
	(0.003)	(0.006)	(0.005)	(0.006)	(0.004)
Observations	166	166	166	166	166
R2	0.175	0.472	0.368	0.511	0.099
Adjusted R2	0.170	0.469	0.364	0.508	0.094
Residual Std. Error (df = 164)	0.043	0.078	0.062	0.076	0.047
F Statistic (df = 1; 164)	34.679***	146.864***	95.439***	171.406***	18.031***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	Invesco RiskPremium	Kellog RiskPremium	LM RiskPremium	McDonald RiskPremium	MHFI RiskPremium
	(10)	(11)	(12)	(13)	(14)
Equally Weighted RiskPremium	1.743***	0.236***	1.413***	0.440***	0.698***
	(0.109)	(0.071)	(0.105)	(0.081)	(0.097)
Alpha	-0.009	0.005	-0.008	0.003	0.001
	(0.006)	(0.004)	(0.006)	(0.004)	(0.005)
Observations	166	166	166	166	166
R2	0.610	0.064	0.523	0.151	0.240
Adjusted R2	0.608	0.058	0.520	0.146	0.235
Residual Std. Error (df = 164)	0.076	0.049	0.073	0.057	0.067
F Statistic (df = 1; 164)	257.048***	11.133***	179.948***	29.168***	51.787***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	MNST RiskPremium	Moody RiskPremium	NextEra RiskPremium	Nike RiskPremium	Nvedia RiskPremium
	(15)	(16)	(17)	(18)	(19)
Equally Weighted RiskPremium	0.772***	0.828***	0.326***	0.635***	2.426***
	(0.197)	(0.111)	(0.078)	(0.109)	(0.217)
Alpha	0.032***	0.007	0.008*	0.008	0.0001
	(0.011)	(0.006)	(0.004)	(0.006)	(0.012)
Observations	166	166	166	166	166
R2	0.086	0.252	0.096	0.173	0.432
Adjusted R2	0.080	0.248	0.090	0.167	0.428
Residual Std. Error (df = 164)	0.137	0.077	0.054	0.076	0.151
F Statistic (df = 1; 164)	15.436***	55.393***	17.416***	34.189***	124.592***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	Oracle RiskPremium	Yahoo RiskPremium	BAC RiskPremium	ADSK RiskPremium	MMM RiskPremium
	(20)	(21)	(22)	(23)	(24)
Equally Weighted RiskPremium	1.226***	1.605***	1.246***	1.522***	0.594***
	(0.122)	(0.162)	(0.156)	(0.150)	(0.074)
Alpha	-0.007	-0.014	-0.007	0.001	0.002
	(0.007)	(0.009)	(0.009)	(0.008)	(0.004)
Observations	166	166	166	166	166
R2	0.383	0.374	0.279	0.385	0.284
Adjusted R2	0.379	0.370	0.275	0.381	0.279
Residual Std. Error (df = 164)	0.085	0.113	0.109	0.105	0.051
F Statistic (df = 1; 164)	101.716***	97.873***	63.511***	102.501***	64.956***
Note:					*p<0.1; **p<0.05; ***p<0.01

Table 6: The Table reports the results obtained by estimating the following time series (first-pass) regression: $R_{pit} = \alpha_i + \beta_i(R_{pmt}) + \varepsilon$. R_{pit} *represents the risk premium for stock* i ($i = 1,2,3 \dots 24$) *for month* t ($t = 1,2,3 \dots 166$). R_{pmt} *represents the risk premium of the market for month* t ($t = 1,2,3 \dots 166$). β_i *represents the beta estimated via first pass regressions,* α_i *and* β_1 *represents the regression parameters,* ε *represents the residual term. The monthly returns of twenty-four randomly selected stocks (data ranging from January, 2000 to December, 2013) are used to calculate risk premiums and are regressed against the risk premiums of the market represented by Sample Value Weighted index in twenty four separate time series regressions to obtain betas and Jensen's alphas (intercept).*

Regression Results

	Dependent variable:			
	Adobe RiskPremium	Abbott RiskPremium	AT&T RiskPremium	Amazon RiskPremium
	(1)	(2)	(3)	(4)
Value Weighted RiskPremium	1.725***	0.412***	0.635***	1.722***
	(0.173)	(0.090)	(0.106)	(0.218)
Alpha	0.0004	0.004	-0.002	0.006
	(0.008)	(0.004)	(0.005)	(0.010)
Observations	166	166	166	166
R2	0.378	0.114	0.180	0.275
Adjusted R2	0.375	0.109	0.175	0.271
Residual Std. Error (df = 164)	0.103	0.054	0.063	0.131
F Statistic (df = 1; 164)	99.828***	21.102***	35.901***	62.282***
Note:				*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	PepsiCo RiskPremium	HP RiskPremium	Home Depot RiskPremium	Intel RiskPremium	J&J RiskPremium
	(5)	(6)	(7)	(8)	(9)
Value Weighted RiskPremium	0.471***	1.599***	0.958***	1.787***	0.404***
	(0.070)	(0.130)	(0.108)	(0.114)	(0.076)
Alpha	0.003	-0.011*	-0.003	-0.013**	0.003
	(0.003)	(0.006)	(0.005)	(0.005)	(0.004)
Observations	166	166	166	166	166
R2	0.214	0.480	0.325	0.599	0.146
Adjusted R2	0.210	0.477	0.321	0.596	0.141
Residual Std. Error (df = 164)	0.042	0.078	0.065	0.068	0.046
F Statistic (df = 1; 164)	44.752***	151.310***	78.893***	244.643***	28.071***
Note:				*p<0.1; **p<0.05; ***p<0.0	

	Dependent variable:				
	Invesco RiskPremium	Kellog RiskPremium	LM RiskPremium	McDonald RiskPremium	MHFI RiskPremium
	(10)	(11)	(12)	(13)	(14)
Value Weighted RiskPremium	1.871***	0.232***	1.423***	0.483***	0.689***
	(0.140)	(0.083)	(0.138)	(0.096)	(0.117)
Alpha	-0.005	0.006	-0.004	0.004	0.003
	(0.007)	(0.004)	(0.007)	(0.005)	(0.006)
Observations	166	166	166	166	166
R2	0.522	0.045	0.394	0.135	0.173
Adjusted R2	0.519	0.039	0.390	0.130	0.168
Residual Std. Error (df = 164)	0.084	0.050	0.083	0.057	0.070
F Statistic (df = 1; 164)	178.825***	7.782***	106.485***	25.578***	34.384***
Note:				*p<0.1; **p<0.05; ***p<0.01	

	Dependent variable:				
	MNST RiskPremium	Moody RiskPremium	NextEra RiskPremium	Nike RiskPremium	Nvedia RiskPremium
	(15)	(16)	(17)	(18)	(19)
Value Weighted RiskPremium	0.523**	0.758***	0.277***	0.610***	2.346***
	(0.235)	(0.137)	(0.093)	(0.130)	(0.280)
Alpha	0.036***	0.009	0.009**	0.010	0.007
	(0.011)	(0.006)	(0.004)	(0.006)	(0.013)
Observations	166	166	166	166	166
R2	0.029	0.157	0.051	0.118	0.299
Adjusted R2	0.023	0.152	0.046	0.113	0.295
Residual Std. Error (df = 164)	0.141	0.082	0.056	0.078	0.168
F Statistic (df = 1; 164)	4.953**	30.544***	8.892***	21.976***	70.103***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	Oracle RiskPremium	Yahoo RiskPremium	BAC RiskPremium	ADSK RiskPremium	MMM RiskPremium
	(20)	(21)	(22)	(23)	(24)
Value Weighted RiskPremium	1.516***	1.737***	1.455***	1.577***	0.672***
	(0.135)	(0.196)	(0.181)	(0.185)	(0.086)
Alpha	-0.006	-0.011	-0.006	0.005	0.003
	(0.006)	(0.009)	(0.009)	(0.009)	(0.004)
Observations	166	166	166	166	166
R2	0.434	0.324	0.282	0.306	0.270
Adjusted R2	0.431	0.320	0.278	0.302	0.265
Residual Std. Error (df = 164)	0.081	0.117	0.109	0.111	0.052
F Statistic (df = 1; 164)	125.909***	78.697***	64.504***	72.350***	60.572***
Note:					*p<0.1; **p<0.05; ***p<0.01

Table 7: The Table reports the results obtained by estimating the following time series (first-pass) regression: $R_{pit} = \alpha_i + \beta_i(R_{pmt}) + \varepsilon$. R_{pit} *represents the risk premium for stock* i ($i = 1,2,3 \dots 24$) *for month* t ($t = 1,2,3 \dots 166$). R_{pmt} *represents the risk premium of the market for month* t ($t = 1,2,3 \dots 166$). β_i *represents the beta estimated via first pass regressions,* α_i *and* β_1 *represents the regression parameters,* ε *represents the residual term. The monthly returns of twenty-four randomly selected companies (Data ranging from January, 2000 to December, 2013) are used to calculate risk premiums and are regressed against the risk premiums of the market represented by Optimal Portfolio (with Short-selling) index in twenty-four separate time series regressions to obtain betas and Jensen's alphas (intercept).*

Regression Results

	Dependent variable:			
	Adobe RiskPremium	Abbott RiskPremium	AT&T RiskPremium	Amazon RiskPremium
	(1)	(2)	(3)	(4)
Optimal Portfolio (with shorting)	0.650***	0.340***	0.150	0.917***
	(0.212)	(0.091)	(0.116)	(0.244)
Alpha	-0.00000	0.0001	0.0001	-0.0004
	(0.011)	(0.005)	(0.006)	(0.013)
Observations	166	166	166	166
R2	0.054	0.079	0.010	0.079
Adjusted R2	0.049	0.073	0.004	0.073
Residual Std. Error (df = 164)	0.127	0.055	0.070	0.147
F Statistic (df = 1; 164)	9.434***	13.995***	1.673	14.080***
Note:				*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	PepsiCo RiskPremium	HP RiskPremium	Home Depot RiskPremium	Intel RiskPremium	J&J RiskPremium
	(5)	(6)	(7)	(8)	(9)
Optimal Portfolio (with shorting)	0.291***	0.107	0.230*	0.079	0.279***
	(0.076)	(0.179)	(0.129)	(0.179)	(0.079)
Alpha	0.0001	0.00005	-0.0002	-0.0001	0.00000
	(0.004)	(0.009)	(0.007)	(0.009)	(0.004)
Observations	166	166	166	166	166
R2	0.083	0.002	0.019	0.001	0.070
Adjusted R2	0.077	-0.004	0.013	-0.005	0.065
Residual Std. Error (df = 164)	0.046	0.108	0.078	0.108	0.048
F Statistic (df = 1; 164)	14.849***	0.356	3.160*	0.196	12.435***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	Invesco RiskPremium	Kellog RiskPremium	LM RiskPremium	McDonald RiskPremium	MHFI RiskPremium
	(10)	(11)	(12)	(13)	(14)
Optimal Portfolio (with shorting)	0.449**	0.330***	0.341*	0.348***	0.405***
	(0.198)	(0.080)	(0.174)	(0.098)	(0.124)
Alpha	0.0001	0.00004	-0.0001	-0.00004	-0.0001
	(0.010)	(0.004)	(0.009)	(0.005)	(0.006)
Observations	166	166	166	166	166
R2	0.030	0.093	0.023	0.071	0.061
Adjusted R2	0.024	0.088	0.017	0.065	0.055
Residual Std. Error (df = 164)	0.119	0.048	0.105	0.059	0.075
F Statistic (df = 1; 164)	5.131**	16.866***	3.852*	12.546***	10.607***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	MNST RiskPremium	Moody RiskPremium	NextEra RiskPremium	Nike RiskPremium	Nvedia RiskPremium
	(15)	(16)	(17)	(18)	(19)
Optimal Portfolio (with shorting)	1.757***	0.689***	0.495***	0.640***	1.155***
	(0.194)	(0.138)	(0.086)	(0.128)	(0.320)
Alpha	-0.0002	-0.0001	0.0001	-0.00003	0.0004
	(0.010)	(0.007)	(0.005)	(0.007)	(0.017)
Observations	166	166	166	166	166
R2	0.335	0.131	0.166	0.132	0.073
Adjusted R2	0.331	0.126	0.161	0.126	0.068
Residual Std. Error (df = 164)	0.117	0.083	0.052	0.077	0.193
F Statistic (df = 1; 164)	82.463***	24.752***	32.720***	24.852***	13.001***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	Oracle RiskPremium	Yahoo RiskPremium	BAC RiskPremium	ADSK RiskPremium	MMM RiskPremium
	(20)	(21)	(22)	(23)	(24)
Optimal Portfolio (with shorting)	0.283	0.189	0.292	0.791***	0.371***
	(0.177)	(0.236)	(0.211)	(0.212)	(0.096)
Alpha	-0.0001	-0.001	0.00005	-0.0001	-0.00003
	(0.009)	(0.012)	(0.011)	(0.011)	(0.005)
Observations	166	166	166	166	166
R2	0.015	0.004	0.011	0.078	0.083
Adjusted R2	0.009	-0.002	0.005	0.072	0.077
Residual Std. Error (df = 164)	0.107	0.142	0.127	0.128	0.058
F Statistic (df = 1; 164)	2.543	0.641	1.906	13.871***	14.852***
Note:					*p<0.1; **p<0.05; ***p<0.01

Table 8: The Table reports the results obtained by estimating the following time-series (first-pass) regression: $R_{pit} = \alpha_i + \beta_i(R_{pmt}) + \varepsilon$. R_{pit} *represents the risk premium for stock* i *(*$i = 1,2,3 \ldots 24$*) for month* t *(* $t = 1,2,3 \ldots 166$ *).* R_{pmt} *represents the risk premium of the market for month* t *(* $t = 1,2,3 \ldots 166$ *).* β_i *represents the beta estimated via first pass regressions,* α_i *and* β_1*represents the regression parameters,* ε *represents the residual term. The monthly returns of twenty-four randomly selected stocks (data ranging from January, 2000 to December, 2013) are used to calculate risk premiums and are regressed against the risk premiums of the market represented Optimal Portfolio (without short-selling) index in twenty-four separate time series regressions to obtain betas and Jensen's alphas (intercept).*

Regression Results

	Dependent variable:			
	Adobe RiskPremium	Abbott RiskPremium	AT&T RiskPremium	Amazon RiskPremium
	(1)	(2)	(3)	(4)
Optimal Portfolio (without shorting)	1.065***	0.474***	0.594***	1.264***
	(0.238)	(0.103)	(0.126)	(0.278)
Alpha	-0.003	0.00004	-0.006	-0.0003
	(0.010)	(0.005)	(0.006)	(0.012)
Observations	166	166	166	166
R2	0.109	0.114	0.119	0.112
Adjusted R2	0.104	0.108	0.114	0.107
Residual Std. Error (df = 164)	0.124	0.054	0.066	0.145
F Statistic (df = 1; 164)	20.110***	21.040***	22.139***	20.747***
Note:				*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	PepsiCo RiskPremium	HP RiskPremium	Home Depot RiskPremium	Intel RiskPremium	J&J RiskPremium
	(5)	(6)	(7)	(8)	(9)
Optimal Portfolio (without shorting)	0.539***	0.861***	0.667***	0.849***	0.458***
	(0.081)	(0.196)	(0.142)	(0.196)	(0.088)
Alpha	-0.002	-0.012	-0.006	-0.012	-0.001
	(0.004)	(0.009)	(0.006)	(0.009)	(0.004)
Observations	166	166	166	166	166
R2	0.213	0.105	0.119	0.102	0.142
Adjusted R2	0.208	0.100	0.114	0.097	0.137
Residual Std. Error (df = 164)	0.042	0.102	0.074	0.102	0.046
F Statistic (df = 1; 164)	44.265***	19.303***	22.216***	18.693***	27.096***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	Invesco RiskPremium	Kellog RiskPremium	LM RiskPremium	McDonald RiskPremium	MHFI RiskPremium
	(10)	(11)	(12)	(13)	(14)
Optimal Portfolio (without shorting)	1.411***	0.461***	1.203***	0.607***	0.665***
	(0.205)	(0.091)	(0.181)	(0.108)	(0.139)
Alpha	-0.013	-0.00003	-0.012	-0.002	-0.002
	(0.009)	(0.004)	(0.008)	(0.005)	(0.006)
Observations	166	166	166	166	166
R2	0.225	0.136	0.213	0.161	0.122
Adjusted R2	0.220	0.130	0.208	0.156	0.117
Residual Std. Error (df = 164)	0.107	0.047	0.094	0.056	0.072
F Statistic (df = 1; 164)	47.478***	25.725***	44.391***	31.512***	22.837***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	MNST RiskPremium	Moody RiskPremium	NextEra RiskPremium	Nike RiskPremium	Nvedia RiskPremium
	(15)	(16)	(17)	(18)	(19)
Optimal Portfolio (without shorting)	2.424***	0.947***	0.684***	0.878***	1.597***
	(0.199)	(0.155)	(0.096)	(0.144)	(0.364)
Alpha	-0.0001	-0.00001	0.0001	0.0001	0.0004
	(0.009)	(0.007)	(0.004)	(0.006)	(0.016)
Observations	166	166	166	166	166
R2	0.476	0.185	0.237	0.185	0.105
Adjusted R2	0.472	0.180	0.233	0.180	0.100
Residual Std. Error (df = 164)	0.104	0.081	0.050	0.075	0.190
F Statistic (df = 1; 164)	148.772***	37.296***	51.062***	37.186***	19.241***
Note:					*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	Oracle RiskPremium	Yahoo RiskPremium	BAC RiskPremium	ADSK RiskPremium	MMM RiskPremium
	(20)	(21)	(22)	(23)	(24)
Optimal Portfolio (without shorting)	0.589***	1.157***	1.040***	1.088***	0.520***
	(0.201)	(0.258)	(0.232)	(0.241)	(0.109)
Alpha	-0.003	-0.016	-0.011	0.00003	-0.0001
	(0.009)	(0.011)	(0.010)	(0.011)	(0.005)
Observations	166	166	166	166	166
R2	0.050	0.109	0.109	0.110	0.122
Adjusted R2	0.044	0.103	0.104	0.105	0.117
Residual Std. Error (df = 164)	0.105	0.135	0.121	0.126	0.057
F Statistic (df = 1; 164)	8.541***	20.030***	20.069***	20.342***	22.767***
Note:					*p<0.1; **p<0.05; ***p<0.01

Table 9: The Table reports the results obtained by estimating the following cross sectional (second-pass) regression: $\mathrm{E}(\mathrm{R_{pi}}) = \alpha_i + \beta_j(\beta_i) + \varepsilon$. $\mathrm{E}(\mathrm{R_{pi}})$ *represents the* expected (average) excess return *for stock* i ($i = 1,2,3 \ldots 24$). β_i *represents the beta estimated via first pass regressions,* α_i *and* β_j *represents the regression parameters,* ε *represents the residual term. The monthly average excess stock returns of twenty-four randomly selected stocks (data ranging from January, 2000 to December, 2013) are regressed against the betas obtained from first-pass regressions in a cross-sectional (second-pass) regressions to obtain seven separate betas and intercepts in an attempt to observe if betas from the seven different market proxies explain the average excess returns of the stocks entirely.*

Regression Results

	Dependent variable:		Dependent variable:
	E(Ri)		E(Ri)
S&P Beta i	0.002	CRSP Equal Beta i	0.003
	(0.003)		(0.003)
Alpha (Constant)	0.009***	Alpha (Constant)	0.009**
	(0.004)		(0.003)
Observations	24	Observations	24
R2	0.013	R2	0.035
Adjusted R2	-0.031	Adjusted R2	-0.009
Residual Std. Error	0.009 (df = 22)	Residual Std. Error	0.009 (df = 22)
F Statistic	0.299 (df = 1; 22)	F Statistic	0.796 (df = 1; 22)
Note:			*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:		Dependent variable:
	E(Ri)		E(Ri)
CRSP Value Beta i	0.002	Equal Weighted Beta i	0.004
	(0.003)		(0.003)
Alpha (Constant)	0.009**	Alpha (Constant)	0.007**
	(0.004)		(0.003)
Observations	24	Observations	24
R2	0.022	R2	0.062
Adjusted R2	-0.022	Adjusted R2	0.019
Residual Std. Error	0.009 (df = 22)	Residual Std. Error	0.009 (df = 22)
F Statistic	0.497 (df = 1; 22)	F Statistic	1.433 (df = 1; 22)
Note:			*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:		Dependent variable:
	E(Ri)		E(Ri)
Value Weighted Beta i	0.001	Optimal With Shorting Beta i	0.023***
	(0.003)		(0.0001)
Alpha (Constant)	0.010**	Alpha (Constant)	-0.00004
	(0.004)		(0.0001)
Observations	24	Observations	24
R2	0.006	R2	0.999
Adjusted R2	-0.039	Adjusted R2	0.999
Residual Std. Error	0.009 (df = 22)	Residual Std. Error	0.0002 (df = 22)
F Statistic	0.138 (df = 1; 22)	F Statistic	49062.330*** (df = 1; 22)
Note:			*p<0.1; **p<0.05; ***p<0.01

	Dependent variable:
	E(Ri)
Optimal Without Shorting Beta i	0.015***
	(0.002)
Alpha (Constant)	-0.003
	(0.003)
Observations	24
R2	0.633
Adjusted R2	0.616
Residual Std. Error	0.005 (df = 22)
F Statistic	37.913*** (df = 1; 22)
Note:	*p<0.1; **p<0.05; ***p<0.01

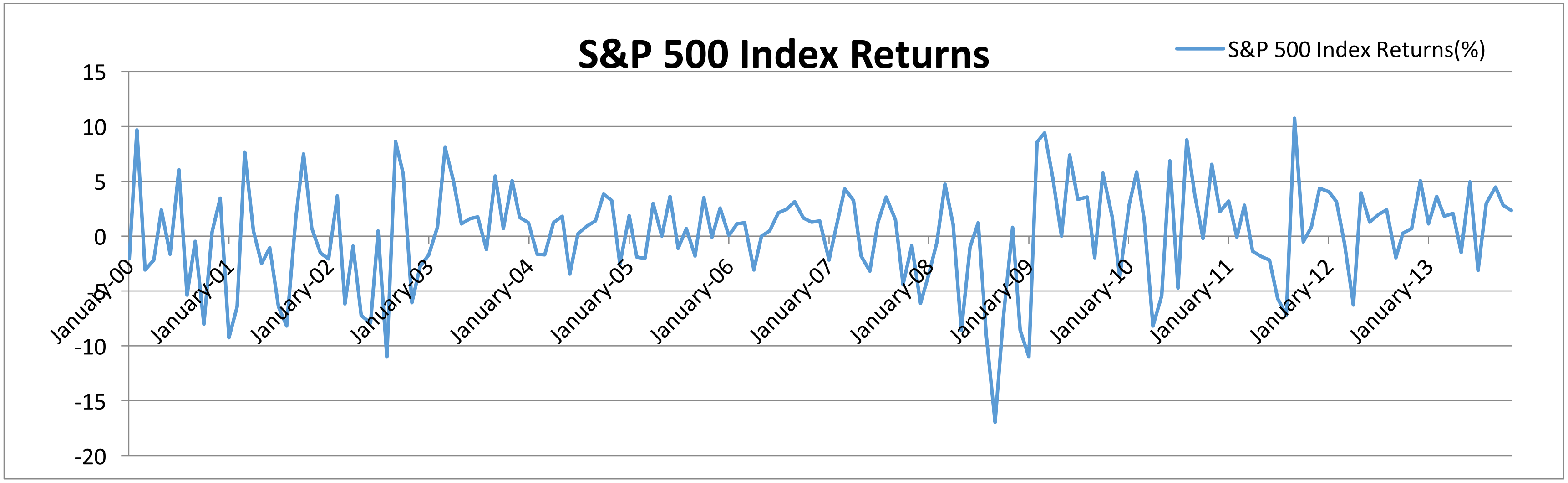

Figure 1: *S&P 500 return rate for the period 2000-2013. This figure plots the values for the S&P500 rate in percentages. It is highly volatile and there are periods of both positive and negative returns*

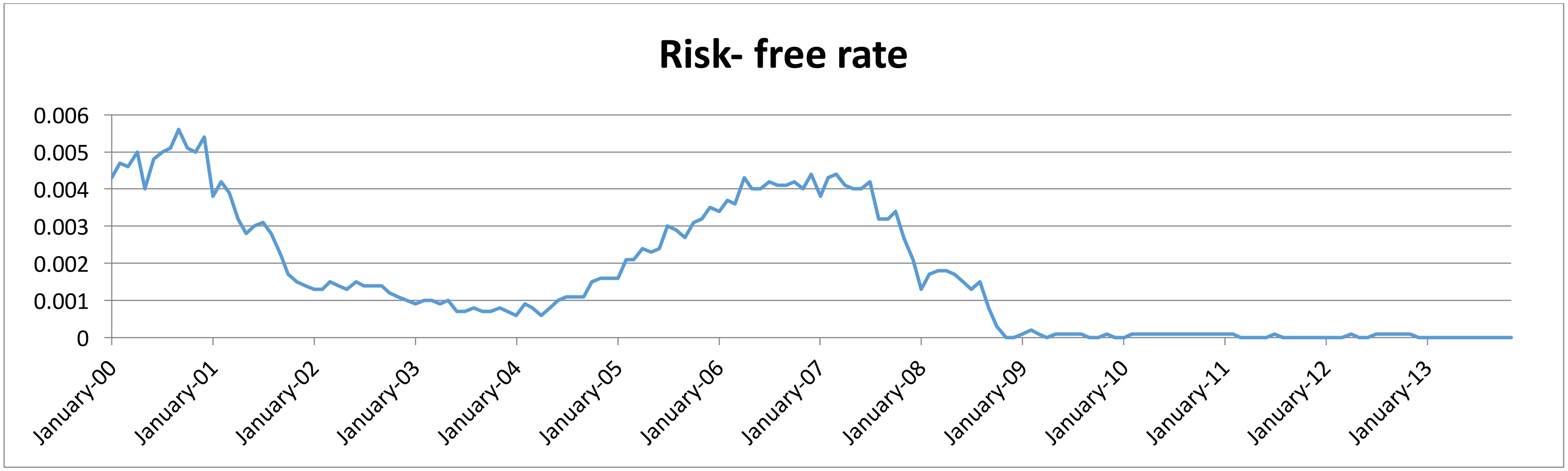

Figure 2 *Risk free rate for the period 2000-2013*

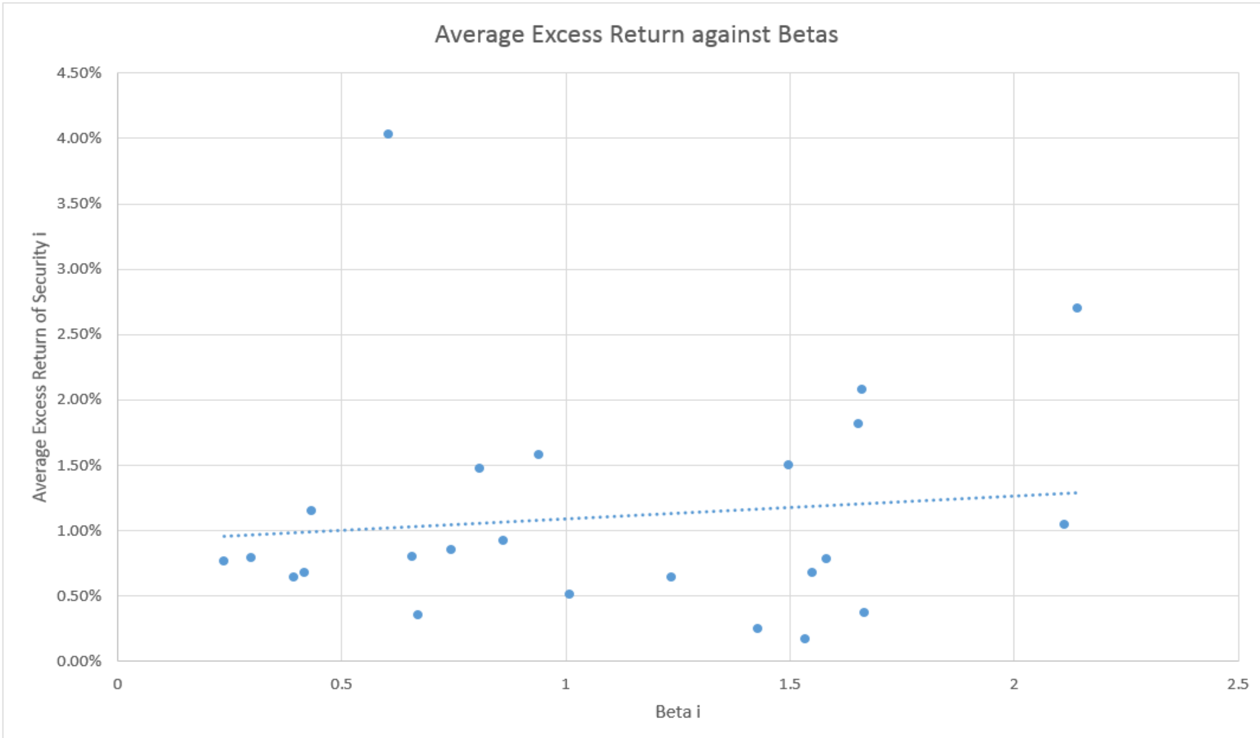

Figure 3: *Plot of average excess returns against betas obtained from first pass regressions using S&P 500 Index as market proxy*

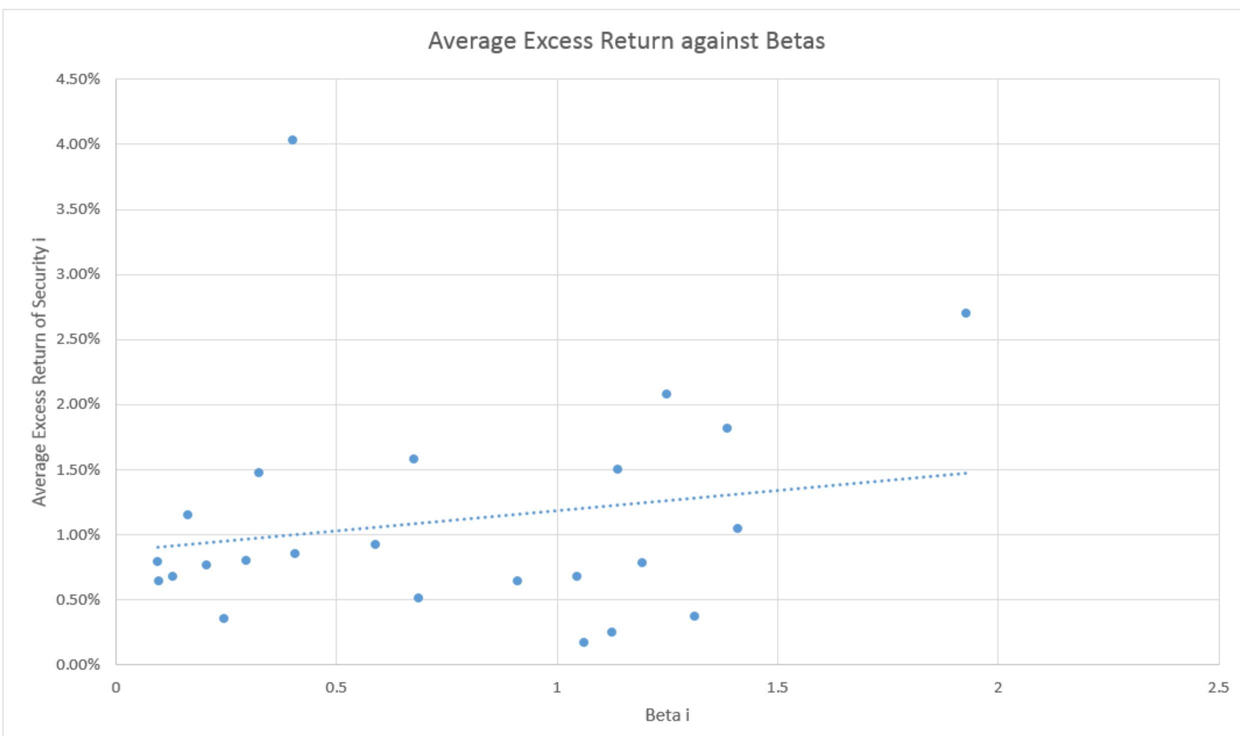

Figure 4: *Plot of average excess returns against betas obtained from first pass regressions using CRSP Equally Weighted Index as market proxy*

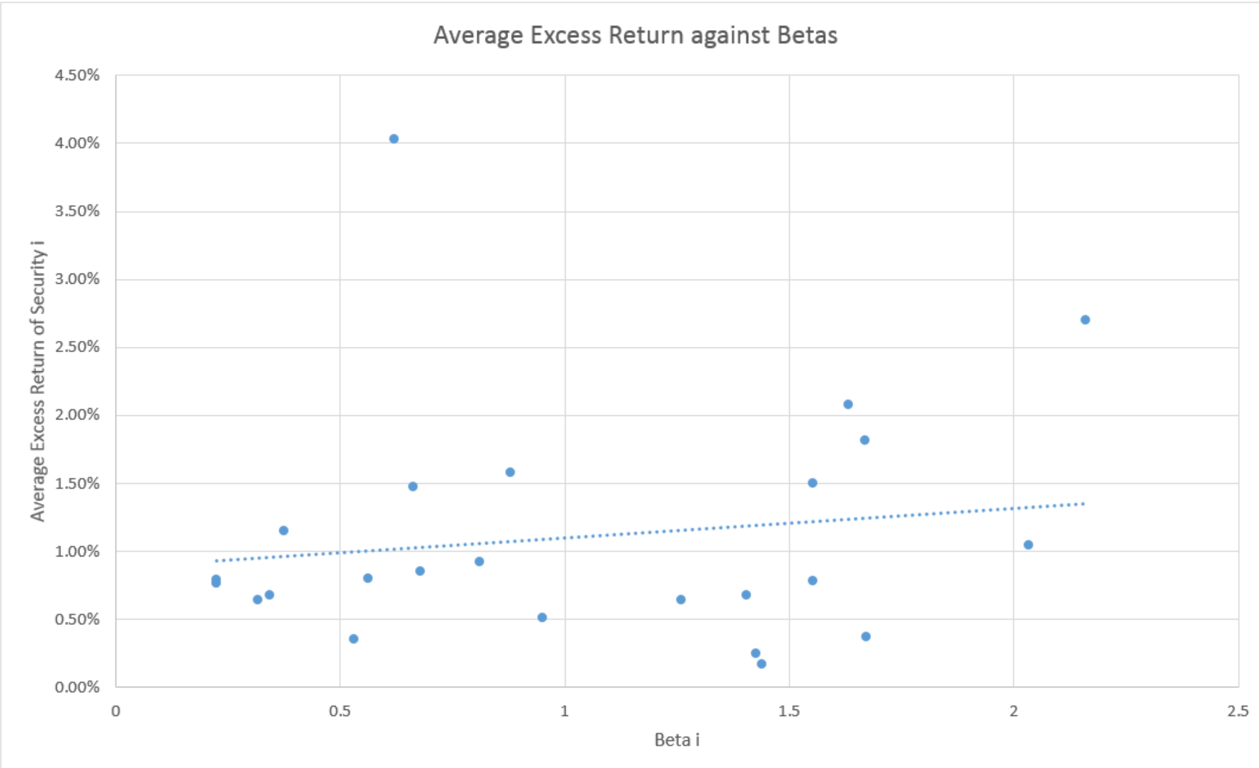

Figure 5: *Plot of average excess returns against betas obtained from first pass regressions using CRSP Value Weighted Index*

Figure 6: *Plot of average excess returns against betas obtained from first pass regressions using Sample Equally Weighted Portfolio as the market proxy*

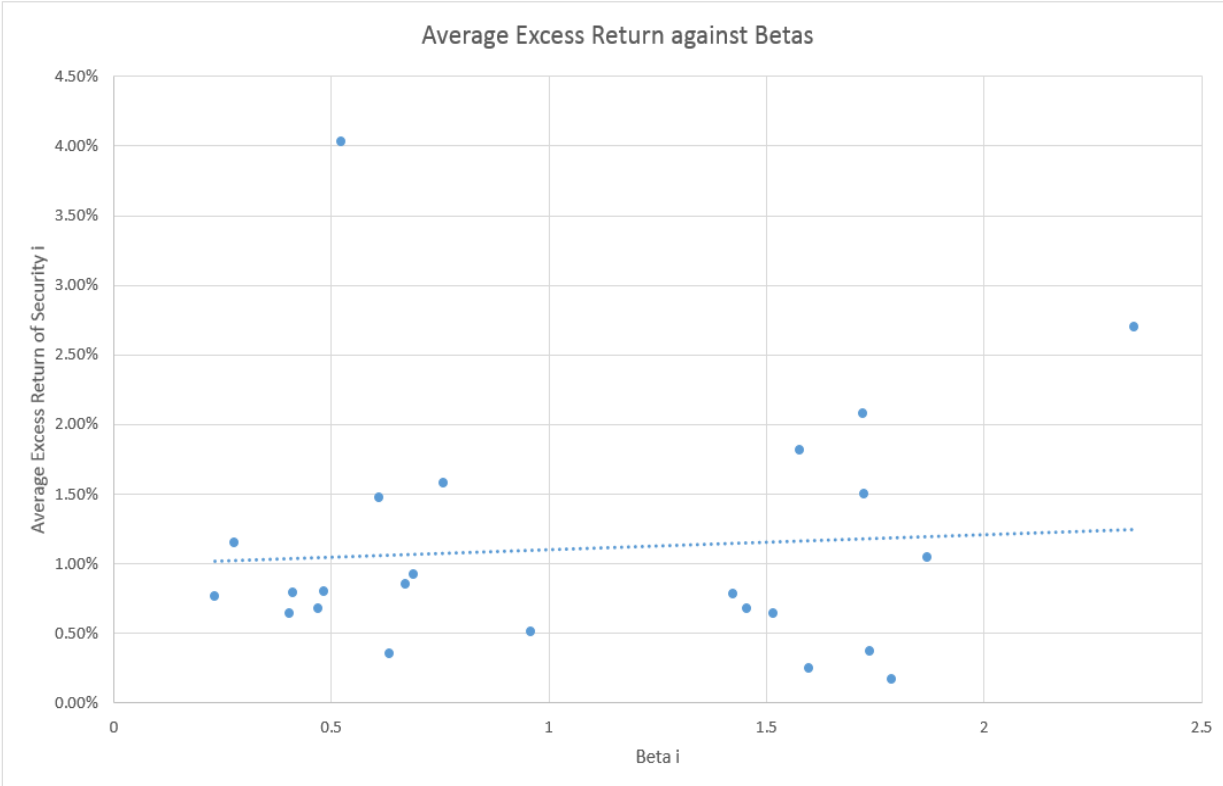

Figure 7: *Plot of average excess returns against betas obtained from first pass regressions using Sample Value Weighted Portfolio as market proxy*

Figure 8: *Plot of average excess returns against betas obtained from first pass regressions using Optimal Portfolio (With Short-Selling) as market proxy*

Figure 9: *Plot of average excess returns against betas obtained from first pass regressions using Optimal Portfolio (without short-selling) as market proxy.*