01/16/17 Simin Hojat, PhD, Mphil

The Application of a Quantitative Inquiry into a Research.

I conducted this research in 2015 that was aimed at developing and testing an enhanced capital asset pricing model (CAPM*) in which I included some monetary policy variables as well as company size (measured by market capitalization) to the traditional CAPM. I developed a multifactor asset pricing model consisting of one dependent variable and five independent variables (risk factors) that were tested against empirical data to provide a better explanation of the factors that determine stocks' rates of return in the equity market. The dependent variable was the expected rate of returns of publicly traded companies in the stock market, and the five independent variables were the overall rate of return for the whole stock market, company size, the change in money supply M2, change in the Federal Funds Rate and change in Federal Funds Futures. The focus of the study was determining risk factors that affect the expected rates of return of common stocks of publicly traded corporations, finding the nature of the relationship between risk and return, and estimating the relevant coefficients in the derived relationships.

This study was quantitative with an ex post facto design. I used existing panel data (time series of cross sections) to examine the relationship between independent variables and the dependent variable. Ex post facto design was appropriate for this study because the data were historical data and there was no intervention involved. I analyzed the data using multiple regression models appropriate for panel data (time series of cross section) analysis. Therefore, the research design in this study involved conducting a multiple regression analysis to examine the relationship among variables. The findings of this study may help investors to make more informed investment decisions and may assist monetary policy authorities in assessing the impact of monetary policy on the stock market and thus preempting stock market crashes.

As this research employs the causal-comparative design using existing data, the result of the study could be affected by operational definitions of the concepts and by the way they are measured. The estimated risk premiums for the market, the company size, in the regression analysis depend on how these variables are defined and measured; however, the two interest rate and M2 as independent variables are very well defined in economic literature. Furthermore, in this study the S&P 500 Stock Index was chosen as the proxy for the market portfolio. Using other proxies for the market portfolio could affect the results reported in this study. As the empirical data used to test the hypotheses are related to the common stocks of public companies trading in the US stock market, the conclusions of this study cannot be generalized to assets other than stocks, to stocks of nonpublic companies, to the stocks trading in other countries stock markets, and to periods other than the sample period.

Background

Since the outset of the industrial revolution, the equity market has played an instrumental role in the progress of economic production. This role has become much stronger with the growing complexity of the economic structure, particularly since the financial crisis of 2008 (Borys, 2011; Chiarella, Dieci, He, & Li, 2013; Dempsey, 2013; Doh & Connolly, 2013; Kolozsi, 2013). Thus, capital asset pricing and how equilibrium is established in the equity market have become the focus in all asset pricing models. Yet because asset markets are forward looking, asset pricing in the equity market is distinct from pricing mechanisms in other markets.

In the equity market, the time pattern of expected cash flows and the time difference between asset purchase and future cash flows incorporate the elements of risk and expectations into the asset pricing models. Therefore, the important challenge in asset pricing models is to find out which factors determine the risks inherent in a specific asset. To answer this question, I developed a multifactor model for asset price determination in the U.S. equity market, with special emphasis on the change in monetary policy instruments of the Federal Reserve (the Fed).

In the current economy, most individuals are directly or indirectly involved in the stock market. Each day, individual and institutional investors, such as mutual fund managers and insurance company representatives, invest funds in the stock market. Thus, to decide which stock to buy or sell, investors need to be able to estimate the expected rate of return on various stocks and the amount of risk inherent in each stock. On the other side of the spectrum, business corporations that try to raise capital by offering new securities to the market need to know how to decide on the price of the new securities. This research project was designed to study how the investors in the equity market decide on allocating their investment funds in various stocks—in other words, how they make choices on what stocks to buy or sell in order to obtain an optimum portfolio of stocks that maximizes their return and minimizes their risk.

Traditionally, the mandated goal of monetary policy has been price stability and optimal output and employment in the economy. To achieve this goal, central banks can manipulate some monetary policy instruments, such as by changing short-term interest rates and the volume of money supply. However, the effect of monetary policy on the so-called real economy develops through the broad channel of financial markets, including the equity market. In fact, monetary policy affects investors' asset allocation decision making, and subsequently this effect will be transmitted into the real economy. Therefore, knowledge of how monetary policy affects the financial market, and more specifically the equity market, is essential for understanding how monetary policy affects the broader economy. Because stock prices are highly sensitive to economic conditions and their values are volatile, this sensitivity can cause large swings in stock prices, lead to bubbles, and damage the whole economy (Borys, 2011).

Investors' decisions on what securities to purchase or sell in the equity market depend on three factors: (a) changes in the current and future dividends of the company, (b) changes in short-term interest rates, and (c) the element of risk involved in investing in a specific asset. The role of central banks and monetary policy implementation is essential for all three factors. For example, by changing short-term interest rates, the Fed sends signals to investors about the current and future economic outlook, which affect investors' buy and sell decisions in the stock market. Subsequently, investors' decisions to buy and sell affect the asset prices, which, in turn, impact the asset allocation in the broader macroeconomy. Moreover, any signal about a riskier macroeconomic environment in the future will reduce asset prices in the equity market (Chiarella et al., 2013).

Investors require a higher rate of return for investing in a specific asset if they expect the Fed to increase interest rates or if they expect a higher degree of uncertainty in the stock's future cash flows. Bernanke and Kuttner (2003), in their seminal research, indicated that the elements of risk and expectations are the most significant factors in asset price determination. In other words, the diversion of actual pay-offs from expected pay-offs makes one asset riskier than the other, and this differentiates the investors' expected or required rates of return for different assets. This relationship suggests that there is always a trade-off between the expected rate of return and risk of different assets: More risk requires more return. Hence, analyzing the risk-return relationship has historically been the theoretical foundation of all asset pricing models (Nyberg, 2012). This relationship also served as the framework for the model in this dissertation.

The theoretical explanation of asset pricing equilibrium in the equity market was accomplished by Markowitz (1952) and Sharpe (1964), each of whom won the Nobel Prize for his work. The capital asset pricing model (CAPM), which was built upon the previous theory of modern portfolio theory (MPT) by Markowitz, thoroughly explained the relationship between risk and rate of return for any specific asset in the equity market. y making some specific assumptions about operation of the capital market and investors, CAPM concluded that rational investors would seek a portfolio of assets that would yield the highest expected return in excess of the risk-free rate. In addition, CAPM indicates a linear relationship between the expected rate of return of a specific stock and its risk. To fill the existing gap, I added four factors to the standard CAPM. Three factors were monetary instruments of the Federal Reserve, namely M2, the Federal Funds Rate, and the Federal Funds Future.

Different assets have different degrees of uncertainty, as defined by the diversion of actual return from the expected return, which implies different degrees of risk for different assets. Thus, two assets with the same cash flows might have different prices in the equity market if investors decide that one is riskier than the other. Therefore, the relationship between the expected rate of return of an asset and the risk inherent in the asset is one of the fundamental issues of asset pricing, both theoretically and practically. The CAPM that has been the most controversial and referenced theory in theories of investment has thoroughly analyzed this relationship between risk and expected rate of return.

The capital asset pricing model started with the single-factor CAPM model, which developed a simple linear relationship between the investors' expected rate of return from a security and the systematic risk inherent in that security. This model was later developed into several specific multifactor models. As noted by Sehgal and Balakrishnan (2013), studies with a firm-specific emphasis were Basu et al., Stattman, and Rosenberg et al. Other researchers focused on the relationship between monetary factors and change of stock prices in the equity market and found significant results indicating a significant relationship between monetary factors and stock prices in the equity market (Berger & Kibmer, 2009; Febrian & Herwany, 2010; Doh & Connolly, 2013; Gwilym, 2013; Kolozsi, 2013).

Furthermore, the role of money has changed immensely since the revolutionary growth of information technology. That role has grown as the economic structure has become more complex, specifically since the financial crisis in 2008. Thus, along with the changes in the structure of financial markets, the role of the Federal Reserve System broadened. The Fed now has the authority both to act upon economic activities through its various policy instruments and to regulate and supervise the whole monetary system, including commercial banks. Announcements by the Federal Reserve—even the way that they are worded—affect future economic forecasts as well as stock prices throughout the world (Kolozsi, 2013).

Moreover, along with these changes, the role of monetary policy instruments has changed. Since the early1990s, and specifically after the seminal work of Bernanke and Blinder, the Federal Funds Rate has been the most used policy instrument by the Fed (Chiarella et al., 2013). Therefore, researchers are now more focused on using the Federal Funds Rate in their research to investigate the effect of monetary policy on the equity market (Chiarella et al., 2013; Dempsey, 2013; Febrian & Herwany, 2010; Gabaix, 2011). Moreover, as noted by Chen (2007), the newly used instrument for analyzing the effect of equity markets' expectations and the future course of monetary policy, the Federal Funds Futures, came from a study conducted by Bernanke and Kuttner. Their research showed that the elements of monetary policy changes that are unexpected by the public have a significant effect on equity prices by changing the equity premium.

The model constructed was based on five hypotheses related to the relationships between rates of return on stocks of publicly traded companies and relevant risk factors. I collected time series of cross-section data (panel data) on the realized rate of return on the equity of a sample of publicly traded U.S. corporations as well as data on overall U.S. market rate of return on equity, the change in money supply, M2, change in the Federal Funds Rate, and change in Federal Funds Futures, over the 10-year period 2005-2015. I analyzed data using multiple regression models appropriate for panel (time series of cross-section) data analysis.

Problem Statement

The important issue in asset pricing models is to identify the factors that determine the risks involved in the purchase of a specific asset (Sharpe; Linter; Mossin; as cited in Chiarella et al., 2013). The general problem addressed in this research was the factors that influence investors' decision making in the equity market and how equilibrium is established in this market. The financial and economic crisis of 2007-2008, which surprised many economists and financial authorities, was considered to indicate a deficiency of the classical and neoclassical approach to understanding financial problems in the economy (Kolozsi, 2013). Furthermore, the literature has inadequately addressed the impact of monetary policy on the equity market

(Abdymomunova & Morleyb, 2011; Alves, 2013; Berger, 2011; Febrian & Herwany, 2010; Levy, 2012). Therefore, the specific problem under study in this research was the impact of monetary policy factors, while controlling for macro and firm specific factors, on the equity market. This problem was important to address because the impact of monetary policy on the economy and economic resource allocation via the equity market is significant.

This research is an enhancement of the work of Bernanke and Kuttner (2003). However, the current model enhances Bernanke and Kuttner's model with the addition of the monetary aggregate M2 and the Federal Funds Rate. As a result, I seek to contribute to the field in developing a model consisting of five independent variables: M2, or the level of quantitative easing of the Federal Reserve; the Federal Funds Rate; Federal Funds Futures; companies' size as firm-specific risk; and the expected rate of return on the overall stock market as the systematic risk.

Purpose of the Study

In this quantitative study, I examined the effect of the independent variables market return, company size, change in money supply (M2), change in the Federal Funds Rate, and change in Federal Funds Futures on the dependent variable, the expected rate of return of companies' equity. In this ex post facto design, I collected time series of cross-section data (panel data) on the realized rate of return on the equity of a sample of publicly traded U.S. corporations. The data, from publicly available sources, covered the 10-year period of 2005-2015. I analyzed data using multiple regression models appropriate for panel data (time series of cross section) analysis. The findings are intended to help individual and institutional investors make more informed investment decisions and to assist monetary policy authorities in evaluating the impact of monetary policy on the stock market and thus taking preemptive actions to prevent stock market crashes.

Methodology

Multiple Regression

Multiple regression is a statistical technique that allows one to assess the relationship between one dependent variable or criterion and several independent variables or predictors. Both the dependent variable and independent variables should be continuous; however, it is possible to include discrete or dichotomous variables as dummy variables. Multiple regression is an extension of bivariate regression in which several independent variables are included to predict a value on a dependent variable. Multiple regression is a flexible technique, and it can be used with experimental, observational, and survey research. Multiple regression can determine the strength of the association between a set of predictors and criteria. In addition, it can indicate the statistical significance of each of the independent variables in predicting the dependent variable.

The Assumptions

The assumptions of multiple regressions follow:

1. Outliers can impact the precision of results in multiple regression and must be dealt with prior to conducting research.
2. The ratio of cases to predictors: Multiple regression can be sensitive to sample size, and if the sample is too small, the results will not be accurate. In order to be able to accurately test for multiple correlation and regression coefficients, it is essential to

have a sample size greater than 104 plus the number of predictors in multiple regression.

3. The third assumption is multicollinearity: Multiple regression is sensitive to multicollinearity, which is when at least two of the independent variables in the equation are highly correlated with each other. Multicollinearity makes the regression equation unreliable and can yield large standard errors.
4. Assumption 4 is normality of variables: Although there is no need for variables to be normally distributed, the prediction equation is enhanced if all of the variables are normally distributed.

The Types of Multiple Regression

There are three types of multiple regression:

1. Standard type, simultaneous or direct multiple regression is the most widely used type of multiple regression. In this type all predictors are entered into the equation at the same time, that is, the overlapping variance refers to the overlap that is shared among the predictors.
2. The second type of multiple regression is sequential in which the predictors enter into the equation according to an order determined by the researcher, overlapping variance is assigned to the predictors in the order of entry into the regression equation.
3. The third type of multiple regression is statistical or stepwise multiple regression in which the order of entry for the independent variables depends on statistical criteria. The software package SPSS decides which predictor to put into the equation at each step based on statistical criteria that the researcher decides on.

The Biases in Multiple Regression

Multiple regression provides an estimate of the effect on *Y* due to arbitrary changes in *X*. If an omitted variable can be measured and included, multiple regression is a solution to omitted variable bias. In the case of multiple regression, it is possible to infer the statistical inferences about causal effects from one population and settings to other population and settings. The threats to the internal validity of regression are omitted variable bias, sample selection bias, errors-in-variables bias, and simultaneous causality bias (Nachimas & Nachimas, 2008). Omitted variable bias exists if an omitted variable is both determined by *Y* and is correlated at least to one independent variable. The logical solution to omitted variable bias is to measure the variable and include it as an independent variable in the multiple regression.

If an interaction term is omitted incorrectly, then there is the problem of wrong functional form, and it can use nonlinear specifications (Trochim, 2006). When there is an error in data measurement such as data entry errors and recollection errors in surveys, the errors-in-variables bias occurs. The researcher can prevent variable bias by checking on data to be precise and by adopting a better procedure for measuring the data, in other words, cross-check the subsample of data through various administrative records. Sample selection bias is caused by random sampling of the population. Moreover, sample selection bias causes correlation between an independent variable and the error term. Simultaneous causality bias is a bias caused when both *X* causes *Y* and *Y* causes *X*. This bias can be controlled through randomization (Trochim, 2006).

Rationale for the Particular Method Chosen

I investigated the relationships between the dependent variable and the five independent variables by employing ex-post facto research design. I chose the ex-post facto design because the independent variables of the model cannot be experimentally manipulated and, therefore, it was impossible to collect data through experimentation and employ experimental designs (Campbell & Stanley, as cited in Trochim 2006). The ex-post facto design using existing data was the most appropriate design for this study. This design has been used before in the literature; in fact, most of the studies in this area used regression coefficient for testing their variables. I considered this design as the best fit for my study.

Research design is “the glue that holds the research projects together” (Trochim, 2006, p. 171). In other words, it shows how the research is structured and how the whole procedure of research is put together. “Internal validity is the approximate truth about inferences regarding causal relationship” (p. 172). A strong design minimizes the threat to internal validity. The researcher has the flexibility to minimize the threat to internal validity by changing the research design. In order to evaluate different research designs, a researcher needs some criteria and a definition for a good design. “A good design is a design that is doing one thing at a time” (Singleton & Strait, 2005, p. 187). This means that a good design is one in which only independent variable produces the outcome and nothing else. To allow only one factor, the independent variable varies and controls the rest. However, distortions occur in all research, either because a researcher is not aware of all the facts or because there are other concerns. Therefore, one must redefine a good design as one that minimizes the threat to internal validity.

A researcher has the flexibility to minimize the threat to internal validity by changing the research design; therefore, design selection is important in research (Trochim, 2006). That means the type of research design that researchers construct determines whether there will be a causal or correlational relationships in the research. Therefore, on the basis of this criterion, one can rank the research designs based on their internal validity, or their approaches towards randomization, because randomization is the factor that determines the internal validity of the designs (Trochim, 2006).

Panel Data Design

A panel dataset consists of observations on multiple units (entities, companies, individuals, etc.), which is the unit that is observed at two or more points in time. The general model framework for regression analysis using panel data approach is:

$$Y_{jt} = \beta_{0j} + \beta_j X_{jt} + \varepsilon_{jt} \qquad (5)$$

where, $j= 1,2,\ldots\ldots N$ represents individual items in the cross sections, $t=1, 2, 3,.T$ represents time, β_{0j} is the intercept for unit j, β_j is the row vector of regression coefficients, X is the N-by-T matrix of observations on N units, and ε_{it} is the error term. The error tem has two dimension, one for the units and one for time.

The general model expressed in Equation (5) can take three possibilities (Beck, 2001):

1. Beck (2001) defined pooled Regression without Individual effects as:

If β_{0j} contains only a constant term for all the units, that is individual units have the same intercept, then ordinary least square approach provides consistent and efficient estimates of the common α and the slope vector β, provided assumptions of OLS are met. (p. 24)

In this model, both slopes and intercepts are the same for all units. The pooled regression model can be expressed as follows:

$$Y_{jt} = \beta_0 + \beta_j X_{jt} + \varepsilon_{jt} \qquad (6)$$

2. Fixed Effects (FE): In the FE model each unit ***j*** has its distinct intercept β_{0j} and each β_{0j} is a nonrandom constant. The OLS is applied to solve the regression equation by including *N-1* dummy variables in the model which take values of 1 if $i = j$ and **0** if $i \neq j$. This model is often referred to as Least Square with Dummy Variables (LSDV). The slope is the same for all units and the intercepts differ according to cross-sectional units, or time, or both cross-sectional units and time. The fixed effect model can be expressed as:

$$Y_{jt} = \beta_{0j} + \beta X_{jt} + \varepsilon_{jt} \tag{7}$$

3. "Random Effects (RE): In RE model it is assumed that each intercept β_{0j} contains a constant term, which is the same for all units, and a random term, which is different for each unit. So, the RE model would be" (Beck, 2001, p. 26):

$$Y_{jt} = (\beta_0 + u_j) + \beta_j X_{jt} + \varepsilon_{jt} \tag{8}$$

Other variants of the random effect model include fixed intercept, random slope as shown in Equation (9) and random intercept, random slope as shown in Equation (10):

$$Y_{jt} = \beta_0 + (\beta_j + v_j) X_{jt} + \varepsilon_{jt} \tag{9}$$

$$Y_{jt} = (\beta_0 + u_j) + (\beta_j + v_j) X_{jt} + \varepsilon_{jt} \tag{10}$$

The RE model is solved "using general least square (GLS) approach" (Beck, 2001, p. 27).

Research Questions and Hypotheses

The research question (RQ) in this study is:

RQ: How do the independent variable market rate of return, company size, the change in money supply, M2, change in Federal Fund Rate, and change in Federal Fund Future affect the expected rate of return of companies' equity?

This RQ leads to the following hypotheses:

Hypothesis 1

H0: There is no relationship between the independent variable market rate of return and the dependent variable companies' expected rate of return on equity.

H1: There is a relationship between the independent variable market rate of return and the dependent variable companies' expected rate of return on equity.

Hypothesis 2

H0: There is no relationship between the independent variable company's size and the dependent variable companies' expected rate of return on equity.

H1: There is a relationship between the independent variable company's size and the dependent variable companies' expected rate of return on equity.

Hypothesis 3

H0: There is no relationship between the independent variable change in money supply (M2) and the dependent variable companies' expected rate of return on equity.

H1: There is a relationship between the independent variable change in money supply (M2) and the dependent variable companies’ expected rate of return on equity.

Hypothesis 4

H0: There is no relationship between the independent variable change in Federal Funds Rate and the dependent variable companies’ expected rate of return on equity.

H1: There is a relationship between the independent variable change in Federal Funds Rate and the dependent variable companies’ expected rate of return on equity.

Hypothesis 5

H0: There is no relationship between the independent variable change in Federal Funds Futures and the dependent variable companies’ expected rate of return on equity.

H1: There is a relationship between the independent variable change in Federal Funds Futures and the dependent variable companies’ expected rate of return on equity.

The above hypotheses were tested by running the following multiple regression model:

$jt\ 0\ 1\ t\ 2\ j\ 3\ t\ 4\ t\ 5\ t\ jt\ RR = \beta + \beta\ MR + \beta\ S + \beta\ MS + \beta\ FFR + \beta\ FFF + \varepsilon$ (3)

where

*RRj*t = Rate of return on company's ***j*** stock during year *t.*

MRt = Rate of return on the overall stock market during year *t.*

Sj = Company's *j* size, a dummy variable 1 if company is small cap and 0 if company is large cap.

*MS**t*** = Change in money supply M2 during year *t.*

FFRt = Change in the Federal Funds Rate during time *t.*

FFFt = Change in Federal Fund Futures during period *t.*

ε *jt* = Regression residual.

The rate of return on company's *j* stock during year *t*, $RR_{jt,,}$ is calculated using Equation (4):

$$RR_{jt} = \frac{P_{jt} - P_{j(t-1)} + D_{jt}}{P_{j(t-1)}}$$

where P_{jt} and $P_{j(t-1)}$ are price of company *j* stock in years *t* and (*t-1*), respectively, and D_{jt} is the dividends paid by company *j* during year *t*.

The regression model will be conducted using methods developed for panel data analysis.

$$RR_{jt} = \beta_0 + \beta_1 MR_t + \beta_2 S_j + \beta_3 MS_t + \beta_4 FFR_t + \beta_5 FFF_t + \varepsilon_{jt}$$

Where,

RR_{jt} = rate of return on company's j stock during year t

MR_t = Rate of return on the overall stock market during year t

S_j + Company's j size

MS_t = Change in money supple M2 during year t

FFR_t = Change in federal fund rate during time t

FFF_t = Change in federal fund futures during period t

□ = Regression residual.

Population

The target population included publicly trading companies in the United States whose securities are traded in the New York Stock Exchange (NYSE) or NASDAQ. However, the sampling frame chosen for this target population was the list of companies whose stocks belong to U.S. companies and not to the stocks of non-U.S. companies that trade in the U.S. stock market. To fulfill this purpose, I chose the list of companies that constitute the Russell 3000 Stock Index, which includes about 98% of the investable U.S. equity market (www.russell.com). Therefore, the unit of analysis in this study was each company in the Russell 3000 Index that has been operating as public company for the period of 2005- 2014 The data, that is, the characteristics or variables of the units of analysis that I studied, were monthly rates of return of the stocks and the companies' market capitalization.

Sampling and Sampling Procedures

I used stratified random sampling method for this study “to ensure that different groups of the population are represented adequately in the sample” (Nachmias & Nachmias, 2008, p. 171). The target population of the study was publicly trading companies in the United States whose securities are traded in New York Stock Exchange (NYSE) or NASDAQ. However, the sampling framework was the list of companies that constitute the Russell 3000 Stock Index; the unit of analysis was each company in the Russell 3000 Stock Index. The stratification was based on companies’ market capitalization (size). The Russell 3000 stock index consists of 1,000 large capitalization and 2,000 small capitalization stock. Therefore, one third of the sample was taken from large cap stocks and two thirds from small cap stocks.

The sample period was from January 2005 to January 2015, and time-series data on the selected companies was collected for this period. This time period was chosen because (a) it provided the opportunity to test the effect of monetary policy on equity market for both pre- and post-2008 crisis, and (b) it covered the era of post financial crisis where general economic conditions were completely different.

Sample size determination is based on the sampling theory. The sampling theory addresses sampling distribution of parameters of the population. Each population parameter has a specific sampling distribution. For example, sampling distribution of the mean of a large population is normal and sampling distribution of multiple correlation coefficient is the F distribution. In the test of hypothesis procedure, there are mathematical relationships between the following elements: (a) sample size, (b) type I error, (c) appropriate power of the test, and (d) required effect size. The type of the mathematical relationship between above elements depends on the parameter that one intends to estimate. Power of the test is the probability of rejecting the null hypothesis when it is false, in other words, it is the probability of detecting an effect when the effect does exist. To determine the minimum required sample size in a study tone must know the parameter that one intends to estimate, a type I error, the required power of the test, and the effect size. Conversely, if for any reason the sample size is predetermined then we can calculate the power of the test for that sample size.

My research involved a multiple regression with five predictors. The parameters were the regression coefficient (the betas), and the multiple regression coefficients (*2*). To determine the minimum sample size, the conventional practice is to have a type I error of 5% and a minimum power of 80%. According to Cohen (1988, p. 412) the effect size in a regression model is defined as (a) small effect = 0.02, (b) medium effect = 0.15, and (c) large effect = 0.35. The effect size measures percentage of variations in the dependent variable explained by the independent variables divided by percentage of variation in the dependent variable not explained by the independent variables and is calculated through Equation (11):

$$f^2 = \frac{R^2}{1-R^2} \tag{11}$$

where, f^2 is the square of the effect size and R^2 is the square of coefficient of multiple regression.

To calculate minimum required sample size for my study, I used GPower 3.1. I selected linear multiple regression, fixed model, single regression coefficient. Following their instructions on their manual (2014), for a two-tail test with medium effect size of 0.15, number of predictors 5, alpha 5%, and power 0.80, the software gave me sample size of 55. If I increase my power to 95%, then the required sample size would be 89. Minimum sample size for different effect sizes and a range of powers is shown in Table 1.

Table 1

Minimum Sample Size for Selected Powers and Effect Sizes

	Power			
Effect size				
	0.8	0.85	0.90	0.95
Small (0.02)	395	451	528	652
Medium (0.15)	55	62	73	89
Large (0.35)	25	29	33	40

To see how sample size and power are related one can plot them for any specific effect size and type I error. The relationship between sample size and power for medium effect size of 0.15 and alpha of 5% is shown in Figure 1.

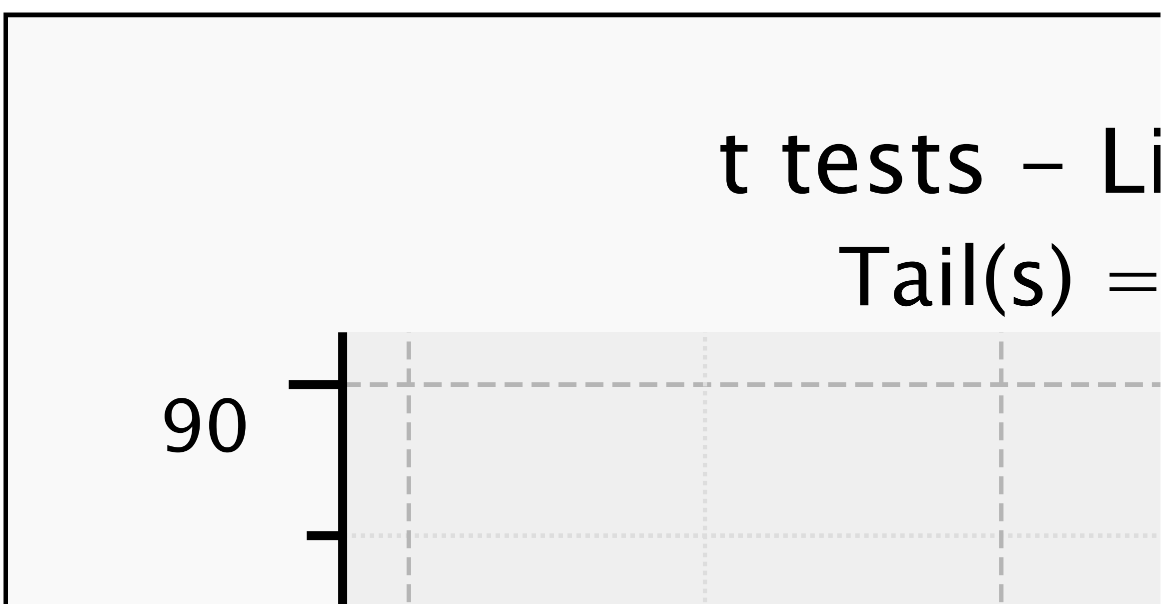

Figure 1. Relationship between power and sample size.

For the purpose of my study I decided with a sample size based on medium effect size and 95% power which as shown in Table 1 is 89 units. So I selected 90 companies for ease of stratification. Therefore, stratified sample consisted of 30 large cap corporations randomly drawn from Russell 1000 Stock Index and 60 small cap corporations randomly drawn from Russell 2000 Stock Index.

Recruitment, Participation, and Data Collection (Primary Data)

In this research data was obtained from the existing financial databases and the data collection process did not require use of survey instruments or interviews. The required data were obtained from different sources: Companies' balance sheets were obtained from Securities and Exchange Commission (SEC); monthly stock prices for every company was attained from Yahoo -finance website; and the stock market volatility index was retrieved from Chicago Board of Options Exchange (CBOE) website. For recording and storing data Excel worksheets was used and the various features of Excel will be utilized to analyze the data and test the hypotheses.

The scope of CAPM, single factor or multifactor, can include all risky assets, such as stocks and bonds of public and nonpublic corporations, real estate, foreign exchange, gold, and so on. However, typically, testing of CAPM has been done for stocks that are publicly traded in the stock market. Therefore, the scope of my research was confined to all publicly traded companies in the U.S. security market. The variables of the units of analysis was retrieved from the stock market databases and the Federal Reserve website.

Data Analysis Plan

Data analysis was conducted using SPSS software and to test hypotheses for the existence and form of relationships between variables and verification of statistical significance of correlation and regression coefficients. In the SPSS environment, panel data can be analyzed using Analyze – Mixed Models – Linear. SPSS which applies Maximum Likelihood approach for doing panel data analysis. Sample statistics required for data analysis were calculated from the collected data and were reported in tables, histograms, and charts. The results of data analysis were reported in tables containing estimated correlation and regression coefficients, relevant test statistics, and the significance levels (*p*-values).

How Data Were Screened and Cleaned

To clean the data, I looked at the value of *z* scores. If the absolute value of *z* scores of some data was greater than 3.29, then those data were removed. The dependent variable was the expected rate of returns of publicly trading companies in the stock market, and the five independent variables were the overall rate of return for the whole stock market, which is the basic CAMP theory, company size as measured by the companies' market capitalization, the change in money supply M2, change in the Federal Funds Rate, and change in Federal Funds Futures. I employed linear regression, and all independent variables were put into SPSS simultaneously (the option, enter). I showed the model fit by normality plot.

Threats to Validity

Conclusion Validity

A threat to conclusion validity is when the researcher reaches a conclusion about the relationship that is not correct. Here, there are two types of errors about relationships: (a) to conclude there is no relationship when in fact there is one, and (b) to conclude there is a relationship when in fact there is not. In most cases, when the data sample is not as big, the researcher misses the relationship that exists because it might be hard to find relationships in the data at all. “We tend to have more problems finding the needle in the haystack than seeing things that aren't there” (Trochim, 2006, p. 65).

In the first type of error, no relationship is found while there is a relationship because of “the tiny needle and too much hay” or “signal-to-noise ratio problem” (Trochim, 2006). This happens when there are too many factors that make it hard to see the relationship. The noises that create threat to conclusion validity result from low reliability of measures due to, for example, poor wording in the questionnaire or a bad instrument design (Trochim, 2006). Noise is caused by, for example, disturbances outside the research area and other irrelevant events that can distract the researcher or the participants (Trochim, 2006).

Sometimes the researcher finds a relationship when there is not one. Researchers manipulate the data to get the results they wanted for support of their hypotheses. In other words, they are "fishing" for a specific result and they get it through analyzing the data repeatedly under slightly differing conditions or assumptions. Statistically, the researcher sets an arbitrary value for the level of significance. More importantly, there are errors due to the variety of assumptions that the researcher makes. In quantitative research this is referred to as the violated assumptions of statistical tests (Trochim, 2006).

Trochim (2006) suggested the following for conclusion validity. Good statistical power means to have the statistical power greater than 0.8 in value, which can be achieved by collecting more information and using a larger sample size. The second is to raise alpha level, for example, using 0.10 significance level instead of a 0.05 significance level. Finally, one can increase the effect size.

External Validity

External threat to validity is when researcher draws incorrect inferences from the sample data to other past and future situations. Threat to external validity impedes the generalization of the research findings. Cronbach (as cited in Trochim, 2006) has framed the issues related to external validity in two ways: generalizing from the finding of research to the cause and effect that they represent, and generalizing from the categorizing represented in a study to different categories. External validity is when the statistical inferences can be generalized from the population and setting studied to other populations and settings. Randomization and the appropriate sample size will eliminate the effects of intrinsic factors in the experiment. In this study, I used randomization and appropriate sample size to avoid threats to external validity in my research.

Internal Validity

Internal validity in causal relationship means the researcher can demonstrate that the only variable that caused the outcome was the independent variable and nothing else. Trochim (2006) explained that in order to have a causal relationship there must be “temporal precedence, co-variation of cause and effect, and no plausible alternative explanations” (p. 173). Even if one has the first two in a causal relationship, it is not certain that the intervention has caused the effect. These alternative explanations are threats to internal validity, and the researcher must rule them out to get a valid causal relationship. Internal validity exists if the effect is caused by independent variables and not by some extraneous variables. In this research, because I implemented random sampling, there was no threat to internal validity. Also, in my research, there was no measuring instrument; therefore, there was no threat to construct validity.

Ethical Procedures

In this research, there was no treatment of human participants; therefore, there were no ethical procedures. The data that I used were from public sources.

Summary

Asset pricing models have been the center of attention both in the academic circles and among financial practitioners. The emergence of modern finance theories started with the seminal works of Markowitz's mean-variance analysis and Sharpe's and Linter's capital asset pricing model (CAPM). From here, the famous expected return-beta relationship of CAPM is deduced (Sharp, 1964). The expected excess return of any security is linearly related to the beta of the security and the expected excess return on the market portfolio.

The analysis of asset pricing and its understanding has a lot of implications for investors in the stock market. Investors buy undervalued stocks and sell overvalued stocks every day and making correct decisions makes a difference for gain or loss for investors and on a macro level will help or hurt the overall economic stability. Moreover, the intertwining reaction between macroeconomic factors and micro decisions are a topic that has to be given more attention in the economic- financial research. Inclusion of time, business cycles, and unexpected shocks into asset pricing models were an effective way of solving the problem 3). Thus, what was needed was a comprehensive asset pricing model that encompasses all the relevant macroeconomic factors with the goal of a unified model of macro-finance asset pricing model. Therefore, I developed a multifactor model based on CAPM assumptions but one more elaborate and suitable for current economic conditions. I focused on monetary factors and selected three key instrument of monetary policy for my project. This decision was based on two reasons: 1- The evolution of information technology has changed the nature of capital market and specifically, the equity market tremendously and has accelerated their role in economic growth. 2- Since the great recession, the importance of Federal Reserve and monetary policy in combating the recession and on the macro economy as a whole has grown.

***For learning the results and more about the subject, please read:**

The impact of monetary policy on equity market (www.alphabetaresearch.com)

The CAPM (www.alphabetaresearch.com)

Bibliography

APA *Publication Manual of the American Psychological Association* sixth edition. American Psychological Association, 750 First st. NE Washington, D.C. 20002

Aristotle. (350 BC). *Metaphysics*. Retrieved from http://classics.mit.edu//Aristotle/metaphysics.html

Benninga, S. (2000). *Financial modeling.* Cambrige, MA: The MIT Press

.

Bernanke, Ben S., and Kenneth N. Kuttner (2003). "What explains the Stock Market's reaction to Federal Reserve Policy?" Mimeo, Board of Governors and Federal Reserve Bank of New York. Bomfim, Antulio N. (2001). "

Black, F. (1972). Capital market equilibrium with restricted borrowing. *Journal of Business, 45*, 444-455.

Bohacek, R., &, Mendizabal, H., R. (2007). Credit Markets and the propagation of monetary policy shocks. Journal of Money, Credit and Banking, 39(6), 1429-1455 URL: http://www.jstor.org/stable/4494304 Accessed: 20/ 01/2013 13:37

Bory, M. M. (2011). Testing multi-factor asset pricing models in the Visegrad Countries. *Journal of Economics and Finance*, 61(2), 118-139.

Brealy, R. A., Myers, S. C., & Marcus, A. J. (2004). *Fundamentals of corporate finance* New York: McGraw-Hill Irwin.

Buchner, A., Faul, F., & Erdfelder, E. (n.d.) *G*Power*. Retrieved January 29, 2010, from http://www.gpower.hhu.de

Burns, W. E. (2011). *Science in World History*. Pearson Educated inc. 1 Lake St. N.J. 07458.

Campbell, D.T. and Stanley, J.C. (1963, 1966). *Experimental and Quasi-Experimental Designs for Research*. Chicago, Ill.: Rand McNally.

Canuto, O. 2011a. “How Complementary Are Monetary Policy and Prudential Regulation?” *Economic Premise* 60, World Bank,October.

Chan, L., Y. Hamao, & Lakonishok, J. (1991) “Fundamentals and Stock Returns in Japan,” *Journal of Finance*, vol. 46, p. 1739-1764

Charmoz, K. (2006). *Constructing Grounded theory: A practical guide through qualitative analysis*. Sage publication, London.

Chen, N.-F., R. Roll, and S.A. Ross (1986). Economic Forces and the Stock Market.

Journal of Business 59: 383-403.

Chen, S., S. (2007). Does monetary policy have asymmetric effects on stock returns. Journal of Money, Credit and Banking, 39(2), 667-688. URL: http://www.jstor.org/stable/4494266 .Accessed: 20/01/2013 13:31

Chiarella, C., Dieci, R., He, X. Z., & Li, K. (2013). An evolutionary CAPM under heterogeneous beliefs. *Ann Finance*, *9*, 185–215.doi:10.1007/s10436-012-0215

Cochrane, J. (2001). *Asset pricing*. Princeton, NJ: Princeton University Press.

Cochrane, J. H., and Piazzesi, M. (2002), "The Fed and interest rates: A high frequency identification," *American Economic Review Papers and Proceed ings*, 92, 90-101.

Creswell, J.W. (2013). *Qualitative inquiry and research design choosing among five traditions*. Sage publication, Thousand Oak CA 91320

Creswell, J.W. (2014). *Research Design, Qualitative, Quantitative, and Mixed Methods Approaches***.** Sage Publication, inc. Thousand Oak CA 91320

Glaser, B. G., & Strauss, A. L. (1967) *The Discovery of Grounded Theory*. Hawthorne, NY:

DEMPSEY, M. (2013).The CAPM: A case of elegance is for tailors? *ABACUS*, *49*, 82-87. doi:10.1111/j.1467-6281.2012.00389.x

www.KansasCityFed.org.

Denzin, N. K. & Lincoln, Y. S. (2013). *Collecting and Interpreting Qualitative Materials.* Sage Publications inc. 2455 Teller Road Thousand Oaks, California 91320

Dewalt, K. M. & Dewalt, B. R. (2002). *Participant observation: a guide for fieldworker*s. Altamira Press, Rowman & Littlefield Publishers, UK.

Doh, T. & Connolly, M. (2013). Has the effect of monetary policy announcements on asset prices changed? *Federal Reserve Bank of Kansas City.*

www.KansasCityFed.org

Döpke, J., Hartmann, D., & Pierdzioch, C. (2006). Forecasting stock market volatility with macroeconomic variables in real time. *Banking and Financial Studies, 1,* 1-25.

Ehrmann, Michael, and Marcel Fratzscher (2003). "Monetary Policy Announcements and Money Markets:A TransatlanticP erspective."I nternationalF inance 6, 309-328.

Ehrmann, M., & Fratzscher, M. (2004). Taking stock: Monetary policy transmission to equity markets. *Journal of Money, Credit and Banking, 36*(4) 719-737. URL: http://www.jstor.org/stable/3839039 .Accessed: 20/01/2013 13:32Your use

123–143.

Fama, E. F. & French, K. R. (1992). The cross-section of expected stock returns. *The Journal of Finance*, *47*, 427-464.

Fama, E. F. & French, K. R. (1995). Size and book-to-market factors in earnings and returns. *The Journal of Finance*, *50*, 131-155.

Fama, E. F. and French, K. R. (FF) (2006). The value premium and the CAPM. *Journal of Finance 61*, 2163–85.

Fama, E. F. and French, K. R (2008). Dissecting anomalies. *Journal of Finance, 63*, 1653–1678.

Febrian, E., & Herwany, A. (2010). The performance of asset pricing models before, during, and after an emerging market financial crisis: Evidence from Indonesia. *The International Journal of Business and Finance Research, 4*(1), 85-97.

Field, A. (2013). *Discovering Statistics Using IBM SPSS Statistics* (4th ed.). London: Sage Publication, inc. Thousand Oak CA 91320

Frankfort-Nachmias, C., & Nachmias, D. (2008). *Research methods in the social sciences (7th ed.*). New York, NY: Worth.

Gabaix, X. (2011). Disasterization: A simple way to fix the asset pricing properties of macroeconomic models. *American Economic Review, 101(3),* 406–409

Goodfreind, M. (2009). “Central Banking in the credit turmoil: An Assessment of Federal Reserve practice.” *Carnegie Mellon University and NBER.*

Gharghori, P., Lee, R. & Veeraraghavan, M. (2009) “Anomalies and Stock Returns: Australian Evidence,” *Accounting and Finance, 49*(3), 555-576.

Gitman, L. J. (2000). *Principles of managerial finance.* New York: Addison Wesley

Gordon, M. J. (1989). Corporate finance under MM theorems. *Financial Management*, *2*, 19-28.

Graham, J. R. & Harvey, C. R. (2001). The theory and practice of corporate finance: Evidence from the field. *Journal of Financial Economics*, 60, 187-243.

Graham, J. R. & Harvey, C. R. (2002). How do CFOs make capital budgeting and capital structure decisions? *Journal of Applied Corporate Finance*, 15, 1-28.

Groat, L. & Wang, D. (2013). *Architectural Research Methods*. John Wiley and Sons, inc. Hoboken, NewJersey

Gürkaynak, R., S., Sack, B., P., & Swanson, E., T.(2007). Market-based measures of monetary policy expectations. *Journal of Business & Economic Statistics*, *25*(2), 201-212.

Gwilym, R. A., (2013). The monetary policy implications of behavioral asset bubbles. *Southern Economic Journal, 80*(1), 252-270. doi:10.4284/0038-4038-2011.242

Harjoat S., Bhamra, H., S., Kuehn, L., A., & Strebulaev, I., A. (2010).The aggregate dynamics of capital structure and macroeconomic risk. *The Review of Financial Studies, 23*(12). doi:10.1093/rfs/hhq075

Haugen, R. A. (2001). *Modern investment theory*. Upper Saddle River, NJ: Prentice Hall.

Humpe, A., & Macmillan, P. (2007). Can macroeconomic variables explain long term stock market movements? A comparison of the US and Japan. CENTRE FOR *DYNAMIC MACROECONOMIC ANALYSIS WORKING PAPER SERIES*, 1-15.

Janesick, V. J. (2011). *Stretching exercises for qualitative researchers (3rd ed.*). Thousand Oaks, CA. Sage Publications.

Kauppi, H., and P. Saikkonen (2008). “Predicting U.S. Recessions with Dynamic Binary Response Models. ”*Review of Economics and Statistics*, *90*, 777–791.

Kim, S.-W. & Lee, B.S.(2008). “Stock Returns, Asymmetric Volatility, Risk Aversion, and Business Cycle: Some New Evidence.” *Economic Inquiry*, 46), 131–148.

Kolb, R. W. (1997). *Futures, options, and swaps*. Oxford UK: Blackwell publishers

Kolozsi, P., P. (2012). Monetary policy, interest groups, financial crisis. *JEl*, 35-55.

Krueger, J. T., and Kuttner, K. N. (1996), "The Fed Funds Futures Rate as a Pre dictor of Federal Reserve Policy," Journal of Futures Markets, 16, 865-879.

Kumar, R. (2014). *Research Methodology*. Sage Publication, inc. Thousand Oak CA 91320

Lakonishok, J., Shleifer, A. and Vishny, R. W. (1994) Contrarian investment, extrapolation and risk. *Journal of Finance*, *49*, 1541–78.

Levy, H. (2010). The CAPM is alive and well: A review and synthesis. *European Financial Management*, *16*(1) 43–71. doi:10.1111/j.1468-036X.2009.00530.x

Levy, H. (2012). Two paradigms and Nobel Prizes in economics: A contradiction or coexistence? *European Financial Management*, *18*(2), 163–182.

doi: 10.1111/j.1468-036X.2011.00617.x

Liew, J. and Vassalou, M. (2000). Can book-to-market, size and momentum be risk factors that predict economic growth? *Journal of Financial Economics*, *27*, 221–45.

Lind, D. A., Marchal, W., G. & Mason, R., D. (2002). *Statistical Techniques in Business & Economics.* McGraw-Hill, Irwin

Linter, j. (1965). The valuation of risky assets and the selection of risky investments in stock portfolios and capital budgets. *Review of Economics and Statistics*, *47*, 13-37.

Magni, C. A. (2010). CAPM and capital budgeting: Present/future, equilibrium/disequilibrium, decision/valuation. *Journal of Financial Economics, 8*(1 & 2), 7-32.

Markowitz, H. M. (1952). Portfolio selection. *Journal of Finance*, *7*, 77-91.

Markowitz, H. M. (1999). The early history of portfolio theory: 1600-1960. *Financial Analysts Journal*, *55*, 5-16.

Maxwell, J. (2013). *Qualitative Research Design,* Sage publication, Thousand Oak CA 91320

Maysami, R., C., Howe, L., C, & Hamzah, M., A. (2004). Relationship between macroeconomic variables and stock market indices: Cointegration evidence from stock exchange of Singapore's All-S Sector Indices. *Jurnal Pengurusan 24,* 47-77

Miles, M. B., Huberman, A. M., &Seldana, J. (2014) *Qualitative Data Analysis: A method Source Book*. Sage Publications inc. 2455 Teller Road Thousand Oaks, California 91320

Modigliani, F. & Miller, M. H. (1958). The cost of capital, corporation finance, and the theory of investment. *The American Economic Review*, 49, 261-297.

Modigliani, F. & Miller, M. H. (1961). Dividend policy, growth, and valuation of shares. *Journal of Business*, 34, 411-433.

Modigliani, F. & Miller, M. H. (1963). Corporate income taxes and the cost of capital: A correction. *American Economic Review*, 53, 433-43.

Mossin, Jan. (1966). Equilibrium in a capital asset market. *Econometrica*, *34*, 768-784.

Newman, I., Ridenour, C., S., Newman, C., & DeMarco, G., M., P. (2003). A typology of research purposes and its relationship to mixed methods. *Journal of Mixed* Nyberg, H. (2010a) "Dynamic Probit Models and Financial Variables in Recession Forecasting." *Journal of Forecasting*, 29 (2010a), 215–230.

Newell, A. (1990). *Unified theories of cognition*. Cambridge, MA: Harvard University Press.

Nyberg, H. (2010b). "QR-GARCH-M Model for Risk-Return Tradeoff in U.S. Stock Returns and Business Cycles." HECER Discussion Paper 294, University of Helsinki

Nyberg, H. (2011)."Forecasting the Direction of the U.S. Stock Market with Dynamic Binary Probit Models."*International Journal of Forecasting*, 27, 561–578.

Nyberg, H. (2012). Risk-Return Tradeoff in U.S. Stock Returns over the Business Cycle

JOURNAL OF FINANCIAL AND QUANTITATIVE ANALYSIS 47(1) 137–158.

doi:10.1017/S0022109011000615

Methods Research, *1*(3), 167-187.

Onwuegbuzie, A.J., Leech, N.L. (2005). On becoming a pragmatic researcher: The importance of combining quantitative and qualitative Research Methodologies. *Social Research Methodology*, 18 (5) PP.375-387

Pascale, C. M. (2011).*Cartographies of knowledge: Exploring Qualitative Epistemologies*. Sage Publications Inc. 2455 Teller Road Thousand Oaks, California 91320

Patton, M. Q. (2002). *Qualitative Research & Evaluation Methods (3rd Ed).* Thousand Oaks, CA, Sage Publications.

Privitera, G.j. 2015). Statistics for the Behavioral Sciences. Sage Publication, inc. Thousand Oak CA 91320

Rao, S., V., D., N., & Ramachandran, V., S. (2010). Stock Returns and Macro Variables: The Indian evidence. *International Journal of Business Insights &* Reilly, F. K. & Brown, K. C. (1997). *Investment analysis and portfolio management.* New York: The Dryden Press.

Ross, S. A., Westerfield, R. W., & Jordan, B. D. (2001). *Essentials of corporate finance*. New York: McGraw-Hill Irwin.

Rudebusch, G. D. & Williams J. C (2009) . “Forecasting Recessions: The Puzzle of the enduring power of the Yield Curve.” *Journal of Business and Economic Statistics*, 27), 492–503.

Rosenberg, A. (2001). *Philosophy of Science*. 29 West 35th Street, New York, NY 10001.

Russell, B. (1961). *History of Western Philosophy*. George Allen & Unwin LTD.

Samuel B. Green, S. B. & Salkind, N. J. (n.d). *Using SPSS for Windows and Macintosh: Analyzing and Understanding Data*, Sixth Edition. Prentice Hall, Pearson Education inc.

Sangmi, M., U., D., & Hassan, M. M. (2013). Macroeconomic variables on stock market interactions: The Indian experience. *Journal of Business and Management, 11*(3), 15-28.

Schonlau, M., Fricker, R.D., & Elliott, M.N. (2002). *Conducting research surveys via e-mail and the web*. Washington, DC: RAND.

Sehgal, S., & Balakrishnan, A. (2013). Robustness of Fama-French three factor model: Further evidence for Indian stock market. *SAGE Publications 17*(2) 119–127. doi:10.1177/0972262912483526

Silverman, D. (2000). *Doing Qualitative Research – A Practical Handbook*. London: SAGE.

Singleton, R.A.,& Straits, B.C., (2005). *Approaches to Social Research*. Oxford University Press, 198 Madison Ave. NewYork, NewYork, 10016

Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *The Journal of Finance*, *19*, 425-442.

Spyroua, S., & Kassimatis, K. (2009). Time-variation in the value premium and the CAPM: Evidence from European markets. *Applied Financial* Economics, *19*, 1899–1914

Stake, R.E. (1995). *The art of case study research.* Sage Publications inc. 2455 Teller Road Thousand Oaks, California 91320

Strauss, A. L., & Corbin, J. (1998) *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, 2nd edition. Thousand Oaks, CA: SAGE

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson.

Tashakkori,A., & Teddlie, C., (2010). *Methods of mixed methods in Social and Behavioral Reseach.* Sage Publications inc. Thousand Oaks, 2455 Teller Road, California 91320

Trochim, W. M. (2006). *The Research Methods Knowledge Base, (2nd Ed).* Retrieved from http://www.socialresearchmethods.net/kb/ (version current as of 06/03/11)

Trochim, W.M.K. (2006). *Factorial designs*. Retrieved from http://www.socialresearchmethods.net/kb/expfact.php

Trochim, W.M.K. (2006). *Time in research*. Retrieved from http://www.socialresearchmethods.net/kb/timedim.php

Trochim, W.M.K. (2006). *Covariance designs*. Retrieved from http://www.socialresearchmethods.net/kb/expcov.php

Yalçın,A., & Ersahin, N.(2011). Does the conditional CAPM work? Evidence from the Istanbul stock exchange. *Emerging Markets Finance & Trade, 47*(4), 28–48. doi:10.2753/REE1540-496X470402

Yin, R.K. (2009). *Case study research: design and methods (4th ed.)*: Sage Inc. Thousand Oaks, 2455 Teller Road, California 91320