



Determinants of Expected Rate of Return on Common Stock: An Empirical Study in Sri Lanka

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Abstract

Identifying the factors related to the expected rate of return on common stock is a puzzle for investors in an increasingly competitive market. To solve this puzzle, this study investigates how the market risk premium, firm size, price-earning ratio, and industry effect affect the expected rate of return on common stock of publicly listed companies in Sri Lanka. The study was based on fifteen publicly listed companies over six years for the period from 2006 to 2011 in Hotel and Travel, and Chemical and Pharmaceutical industry of the Colombo Stock Exchange in Sri Lanka. The findings of the study revealed that the market risk premium has a significant positive relationship with the expected rate of return on common stock. Moreover, firm size and PE ratio negatively correlate with the expected rate of return on common stock. However, The findings of the study revealed that industry effect is not important in determining the expected rate of return on common stock. Therefore, market risk premium, firm size, and PE ratio can be considered as determinants of the expected rate of return on common stock. The study provides valuable insights for financial managers and investors to develop finance and investment strategies that may enable them to gain an optimal return from their investment in the increasingly competitive market settings.

Keywords: *expected rate of return; firm size; market risk premium; PE ratio*

1. Introduction

How much return should be earned from an investment is a puzzle for investors in an increasingly competitive market. Therefore, investing in a stock market is getting an additional risk to the funds of individuals or firms, since stock market volatility arises from different aspects (Bekaert & Harvey, 1997). Arditti (1967) states that the investment to be profitable, it must increase the owner's equity value. In other words, when determining an investment, individuals or firms must choose the investment in such a way that the return of the investment exceeds its cost. However, in determining the capitalized value of an investment, the investor must be able to estimate the cash inflows and cash outflows over the investment period (Arditti, 1967). Not only that, other factors also have to be considered in determining the investment since various risks and uncertainties are associated with an investment within a rapidly changing market. The market risk premium, systematic risk (Merton, 1980), firm size (Banz, 1981; Lakonishok & Shapiro, 1986), and PE ratio (Basu, 1977; Fairfield, 1994) are key factors in determining the expected rate of return on common stock.

Importantly, the market risk premium explains the difference between the expected return of the common stock and the return on risk-free asset (Carleton & Lakonishok, 1985). In other words, investors expect a higher return beyond the return on risk free assets from their investment. This excess return on common stock will be different in different economic backgrounds such as developed, emerging, and less developed countries, since the volatility of the stock market relates to the changes in the level of financial development of the country (Esqueda, Assefa, & Mollick, 2012). Therefore, relaxing foreign policies, changing exchange rate regimes, new financial rules and regulations in a country, and so on will significantly affect the stock

market return. Conversely, Market risk (systematic risk) arises from unexpected changes in market prices or market rates. Accordingly, market risk consists of interest rate risk, equity risk, exchange rate risk, commodity price risk, and so on (Dowd, 2005). Consequently, it is important for investors/managers to understand the behaviour of the market to maximize the return and to minimize the risk associated with the investment.

As far as Sri Lankan context is concerned, the inflation rate in Sri Lanka has been highly volatile in the period of 2003 to 2008, since the growth of money supply, interest rate, budget deficit, and depreciation of the Sri Lankan's currency against the US dollar. The inflation rate was at a peak rate of 22.6 percent in the year 2008 (Kesavarajah, 2009). In this context, it seems to be higher interest rate and inflation rate in Sri Lanka as compared to the developed countries' interest rate. Importantly, this economic condition in the country would affect the stock return. Thus, the expected rate of return depends on the interest rate and the inflation rate (Merton, 1980). However, it is a question how studies in other economic backgrounds are applicable in the Sri Lankan context. Conversely, many studies are based on mature stock market such as the UK and the US to measure the relationship between risk and return. When looking at developing country's stock market, those implications cannot be applied to the Sri Lankan context. Moreover, a little or no published research has addressed the problem of interrelationship between the market risk premium, firm size and PE ratio and expected rate of return on common stock in the Sri Lankan context. In view of the above discussion, the study aims to investigate the effect of the market risk premium, firm size, PE ratio, and industry on the expected rate of return on common stock in Sri Lanka.

This study empirically advances the body of knowledge on the related factors that determine the expected return on common stock in the Sri Lankan context where there is a substantial knowledge gap on the topic due to lack of related previous studies. Thus, the findings of the study will benefit investors/financial managers that use these findings in determining their optimal investment decisions in the market. Thereby, it will help in the development of the stock market in the country. Ultimately, the findings of the study will lead the economy of the country towards a positive direction.

The study uses the historical data, which represent the effect of the past economic incidents that positively or negatively affect the market. Therefore, the findings may not be compliant with the current situation due to the inability to use data on current economic incidents. Moreover, many factors will simultaneously affect of changing the market condition. However, in the study, a few factors have been considered such as, market risk premium, PE ratio, firm size effect and industry effect. Moreover, this study based on only two industries out of twenty industries in the Colombo Stock Market (CSE). Therefore, the findings of the study limit to the only two industries.

Section two presents the relevant literature while Section three describes the study design and methods. Section four provides a comprehensive analysis and discussions of the findings. Section five provides a summary of the findings and makes managerial implications and suggestions for further research.

2. Review of Related Literature

Capital Assets Pricing Model (CAPM) was introduced by Sharpe (1964) and Lintner (1965) as one of models that has been used by many studies in the area of corporate finance, even though there are many criticisms on the CAPM. However, investors must be aware of the expected rate of return on the market and its standard deviation to choose the optimal mix between the market portfolio and the risk free asset (Merton, 1980), since right investment decisions magnify the return on the investment. Previous studies have pointed out that "CAPM is a static model of portfolio allocation under uncertainty and risk aversion" (Mankiw & Shapiro, 1987, p. 6). Moreover, it shows a positive relationship between risk and return (Li, 1998; Lin, Wang, & Wu, 2011; Xing & Howe, 2003). Basically, the expected rate of return is measured using the following formula in the literature.

$$E(R_i) = R_f + \beta_i (E(R_m) - R_f)$$

Where $E(R_i)$ is the expected return on the capital asset; R_f is the risk-free rate of interest; $E(R_m)$ is the expected return of the market and,

$$\beta_i = \frac{Cov(R_i, R_m)}{Var(R_m)}$$

The graphical illustration of the CAPM is represented by the Security Market Line (SML). On the SML, it shows the relationship between beta and expected rate of return. The intercept of SML is the risk-free rate available in the market, while the slope is the market risk premium. Some empirical studies on CAPM and SML have found that when beta positively correlates with the market risk premium, the relationship between beta and the market risk premium significantly deviates from expected relationship. Moreover, a very high and a very low beta on common stock are shown in these deviations (Jensen, 1972; Jensen & Scholes, 1972). It is evident that the beta of common stock has a greater impact on its expected rate of return (Merton, 1980). Importantly, controllable and uncontrollable risk factors affect the expected rate of return on a common stock.

The market risk premium, the extra return beyond the risk-free rate expected by investors, is more important in corporate finance theory, such as CAPM, for determining the cost of equity and weighted average cost of capital. Fernandez (2006) points out that market risk premium has been measured differently in the literature such as required market risk premium, historical market risk premium and expected market risk premium. The required market risk premium is that the extra market return over the return on treasury bonds expected by an investor. The historical market risk premium is that the historical discrepancy between the return of the stock market and treasury bonds. The expected market risk premium is that the expected discrepancy between the return of the stock market and treasury bonds. Many financial practitioners assume that the expected market risk premium is equal to the historical market risk premium and to the required market risk premium. The CAPM assumes that the required market risk premium is equal to the expected market risk premium. However, the historical market risk premium is equal for all investors (Fernandez, 2006).

Importantly, Harris and Marston (1999) state that the market risk premium is important in determining safe and average risk assets for investors. It is a crucial factor in selecting a portfolio mix in the debt and equity instruments. Moreover, they point out that variations in the market risk premium indicate an important signal for investors who are making financial decisions. Banz (1981) and Lakonishok and Shapiro (1986) explore a study to measure the effect of firm size on expected rate of return on securities in the New York Stock Exchange (NYSE). Market risk premium and firm size were considered as main variables in measuring the expected rate of return in both studies. The finding was that the market risk premium has a positive relationship with the expected rate of return on securities. Moreover, Chen et al. (2006) study the risk and return relation including equity market risk premium and variance of the equity market portfolio during the period of 1976 -1998 in the US. The finding was that realized stock market return significantly and positively correlates with the equity market risk premium.

The CAPM explains that the level of the systematic risk of stock determines the expected rate of return on any stock (Morelli, 2011). Moreover, it forecasts that investors expect a risk premium for compensation of the systematic risk that cannot be diversified away (Chen, Guo, & Zhang, 2006). Therefore, the CAPM, which determine the expected rate of return on stock, market risk premium, and systematic risk in a well-diversified portfolio, is very important for financial managers and investors in determining a particular investment portfolio from groups of companies or industries, rather than as individual companies (Carleton & Lakonishok, 1985). However, if the investor invests in different investment portfolios, market risk premium will not be a case due to the fact that unsystematic risk can be diversified away in a portfolio where the assumption of the selection of investment portfolio is very efficient. In such case, the systematic risk is more important in determining the return on common stock.

Conversely, investors in small firms are less diversified as compared to investors in larger firms (La-

konishok & Shapiro, 1986). Therefore, firm size is important in determining the expected rate of return on common stock. Banz (1981) introduces the size effect on the stock return in the study based on NYSE common stocks during the period of 1926 -1975. He concludes that if the market value of the firm is smaller, there is a higher return of common stock. The finding of Banz has been confirmed in several studies (Handa, Kothari, & Wasley, 1989; Lakonishok & Shapiro, 1986). Moreover, small firm's investors must earn a higher return to bear the total risk rather than to bear systematic risk due to lack of diversification of small firm's investors (Lakonishok & Shapiro, 1986). However, Martikainen and Perttunen (1991) point out that if the market value of the firm is smaller, there is a lower return of common stock in the European Stock Market.

The PE ratio is important in determining the expected rate of return on common stock. Fairfield (1994) states that PE ratio is the estimated changes in future return. Moreover, he points out that the relationship between PE ratio and changes in current earnings is negative as reported in the literature. Therefore, a higher (lower) PE ratio has a lower (higher) percentage changes in earnings (Basu, 1977; Fairfield, 1994).

3. Study Design and Methods

The data were gathered from fifteen publicly listed companies of Hotels and Travel industry (HTI) and Chemical and Pharmaceuticals industry (CPI) in the CSE of Sri Lanka. Two industries out of twenty industries in the CSE were randomly chosen to make a better sense regarding the industry effect. The selected industry sectors totally have different business operations. In this context, it is easy to measure whether the selected theoretical concepts are similar in different industrial settings, as well as, to make a better comparison between the industry figures. Fifteen listed companies were randomly chosen from the selected industries. In the process of choosing the company sample, newly listed companies and de-listed companies during the period of 2006 to 2011 were dropped from the sample to maintain the consistency across the study period.

The data set for the analysis consists of fifteen publicly listed companies out of 31 publicly listed companies in both selected industries over a six-year period. Accordingly, ten publicly listed companies from HTI and five from CPI were randomly chosen for the sample. The data were gathered from databases of CSE and the Central Bank in Sri Lanka. The Databases of CSE are not publicly available. However, the Databases of Central Bank of Sri Lanka are publicly available.

The market risk premium is the excess market return beyond the risk free rate. This was measured market return minus risk free rate. Market return has been measured as percentage of stock market indices (Friend & Blume, 1970; Merton, 1980). Therefore, the monthly returns of All Share Price Index (ASPI) of CSE were used to measure the market return. It was measured by dividing the difference between the end of the month's ASPI and the beginning of the month's ASPI by the beginning of the month's ASPI. Finally, sum of monthly return was considered as the market return of the year. Moreover, the twelve-month Treasury bill rate was considered as the risk free rate (Carleton & Lakonishok, 1985; Friend & Blume, 1970; Merton, 1980). Therefore, risk free rate was directly taken from the central bank reports. To measure monthly return on common stock for each company, dividend per share is first added with the difference between the end of the month share price and the beginning of the month share price. The resulted figure is then divided by the beginning of the month share price of the company.

All of gathered data were tabulated, computed, and analysed to test the hypotheses between the selected variables. Multiple regression analysis was used to measure the relationship between dependent and independent. Results of regression coefficient (β), standard error of coefficients, F-test and coefficient of determination (R^2) used to interpret the significance of findings at 95% confidence level.

To measure the impact of the market risk premium, firm size, PE ratio, and industry on the expected rate of return common stock, the study uses the following regression models.

Model A,

$$RCS_{it} = \alpha + \beta_1 MRP_{it} + \beta_2 PE_{it} + \beta_3 LMV_{it} + \varepsilon_{it}$$

Model B,

$$RCS_{it} = \alpha + \beta_1 MRP_{it} + \beta_2 PE_{it} + \beta_3 LMV_{it} + \beta_4 DIND + \varepsilon_{it}$$

Where *RCS* denotes the return on common stock, whereas *I* indexes publicly listed companies and *t* indexes time. Further, the *MRP* denotes market risk premium. *LMV* denotes the logarithm of market value. To measure market value, the share price of the stock is multiplying the number outstanding share at the end of the year. Banz (1981), Lakonishok and Shapiro (1986) and Martikainen and Perttunen (1991) includes in their studies market value as a variable in measuring stock return. *PE* denotes price to earnings ratio, which is measured by dividing the share price of the market by the earnings per share. Model B measures the impact of industry, *DIND* is a dummy variable, on the return on common stock. It differentiates between industries where it takes the value 1 if the industry is *HTI* and zero, if the industry is the *CPI*. Finally, β denotes regression coefficients, ε_{it} denotes the random error, and α denotes the intercept.

4. Data Presentation and Discussion

Descriptive statistics of the variables in the study are displayed in Table 01. These statistics display that *MRP* is around 9% on average. However, the *MRP* volatility prevails in the range from - 68% to + 79% over the period. Importantly, *MRP* has been reported as a negative figure in some periods. This unfriendly investment environment has been created, since Sri Lanka has reported a higher inflation rate in some years, i.e. the inflation rate was at 22.6 percent in 2008. Thus, investors lose the return in investing under such environment. As far as the standard deviation of return on common stock is concerned, both industries have same figure. It implies that the volatility of return on common stock is same.

Conversely, firm size in term of market value is slightly at a higher level in *HTI* as compared to *CPI*. Moreover, *PE* ratio in both industries significantly differs from each other. *HTI* has a higher standard deviation as well as a higher mean score in the *PE* ratio than *CPI*. It implies that there is a larger difference between the share price on common stock and earnings per share in *HTI*. Thus, *HTI* has an unfriendly investment environment as compared to *CPI*. Importantly, the difference between the share price on common stock and earnings per share must be at a lower level to be a profitable investment.

Regression results have been illustrated in table 02. Model A assesses the impact of *MRP*, *LMV*, and *PE* ratio on return on common stock, whereas model B assesses the impact of industry effect on the relationship of the model A during the period of 2006 to 2011. According to the *F*-test at the $p \leq 0.01$ levels, both models are statistically significant. Moreover, 56.5% and 56.9% of the variation in the return on common stock is explained by the variations in independent variables of both models, respectively. However, it is not evident that there is a significant change in R^2 due to the introduction of the effect of industry in the model B.

Model A shows statistically significant evidence that *MRP* has a positive significant relationship with return on common stock ($\beta = 0.7261, p \leq 0.01$). It means that an increase in unit of variation in the *MRP* will result 72.6 percent variation in future return on common stock with the assumption that investor invests in individual securities. However, if the investor invests in different investment portfolios, *MRP* will not be a case due to the fact that unsystematic risk can be diversified away in a portfolio. It is assumed that the selection of investment portfolio is very efficient. In such case, the systematic risk, beta coefficient of the *MRP*, is more important in determining the return on common stock. In other words, systematic risk has a greater impact on its expected rate of return (Merton, 1980). However, small firm's investors must earn a higher return to bear the total risk rather than to bear systematic risk due to lack of diversification of small firm's investors (Lakonishok & Shapiro, 1986). Therefore, the total risk should be considered in the case of smaller firm size instead of systematic risk.

Moreover, the regression results show a negative relationship between *LMV* and return on common stock ($\beta = -0.1803, p \leq 0.05$). Therefore, a variation of firm size in term of market value will affect a variation

in future return on common stock by 18%. Thus, when firm size in term of market value is smaller, the future return on common stock will go up. Therefore, when the market is going up and down, small firms have a higher return as compared to larger firms (Lakonishok & Shapiro, 1986). PE ratio also has an inverse relationship with the return on common stock ($\beta = -0.1877$, $p \leq 0.05$). Therefore, when the PE ratio is lower, the return on common stock will go up. In other words, the difference between the share price of common stock and earnings per share must be lower to earn a higher return on common stock. Importantly, α is the risk free rate according to the CAPM. It is statistically significant with the return on common stock in the Model A.

Table 1: Descriptive Statistics of the Variables During 2006 - 2011

Variables	Industry	N	Mean	Std. Deviation	Minimum	Maximum
RCS	HTI	55	0.2174	0.6847	-1.04	1.79
	CPI	30	0.3879	0.6887	-0.65	2.19
	Total	85	0.2742	0.6869	-1.04	2.19
MRP	HTI	55	0.0936	0.5222	-0.68	0.79
	CPI	30	0.0936	0.5267	-0.68	0.79
	Total	85	0.0936	0.5207	-0.68	0.79
LMV	HTI	55	3.3975	0.6203	2.41	4.68
	CPI	30	3.0342	0.5480	2.31	4.17
	Total	85	3.2764	0.6185	2.31	4.68
PE Ratio	HTI	55	14.1364	37.6525	1.40	125.00
	CPI	30	8.4107	6.6575	3.09	30.93
	Total	85	12.1155	30.5658	1.40	125.00

Table 2: Model Estimation – Regression Results

	Model A			Model A	
	Std. Error	Beta		Std. Error	Beta
α	0.2594	0.853 **	0.3379	0.65	
MRP	0.0942	0.7261 **	0.0944	0.7228 **	
LMV	0.0788	-0.1803 *	0.082	-0.1603	
PE Ratio	0.0016	-0.1877 *	0.0016	-0.1848 *	
Industry			0.1052	0.072	
F- test		35.016 **		26.443 **	
R Sq		0.565		0.569	

** Significant at 1%, * Significant at 5%.

Furthermore, if industry effect is introduced into the model B, the firm size variable loses its statistical significance. The other coefficients also slightly reduce in their significant level. Moreover, the result of the model suggests that there is not statistically significant difference in return on common stock in both industries, even though both industries have totally different business operations.

5. Conclusions and Implications

A considerable amount of studies has not been conducted to measure the determinants of the expected rate of return on common stock in Sri Lanka. Therefore, The study empirically investigated related factors that determine the expected rate of return on common stock. Mainly, market risk premium, firm size in term market value, PE ratio, and industry effect were considered in the study. This study focuses two different industries, HTI and CPI, over the six-year period ranging from 2006 to 2011.

The finding of the study suggests that the market risk premium positively correlates with return on common stock as reported in the studies of Banz (1981), Lakonishok and Shapiro (1986) and Chen et al. (2006). Therefore, the market risk premium is an important signal for investors making financial decisions as mentioned by Harris and Marston (1999). Moreover, firm size in term of market value has a negative relationship with the return on common stock. This finding is supported by Banz (1981), Lakonishok and Shapiro (1986), and Handa, Kothari, and Wasley (1989). Therefore, investors in small firms should expect a higher return to compensate the total risk instead of systematic risk as mentioned by Lakonishok and Shapiro (1986).

PE ratio also negatively correlates with the return on common stock. This finding is confirmed by Basu (1977) and Fairfield (1994). Therefore, investors should expect to invest in firms having a lower PE ratio for earning a higher return. However, if industry effect is introduced into the model A, the firm size variable loses its statistical significance. Moreover, industry effect does not show a statistically significant impact on return on common stock. Therefore, market risk premium, firm size in term of market value, and PE ratio can be considered as determinants of the expected rate of return on common stock in the Sri Lankan context.

This study aimed to identify the determinants of the expected rate of return on common stock in HTI and CPI of Sri Lanka. Therefore, this study limited to look at only two different industries. Thus, the findings of this study do not allow generalizing for all publicly listed companies in Sri Lanka. Hence, extending this study up to many industries is important. Moreover, this study focused several factors related expected rate of return on common stock. Therefore, doing a comprehensive study including most important factors related expected rate of return on common stock is important in the future.

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