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Influence of economic and non-economic factors on firm level equity premium: Evidence from Pakistan

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Abstract

This paper examines the relationship between economic, non-economic factors and equity premium in Pakistan stock market using annual data of 306 non-financial firms. Equity premium is considered as one of the most important factors in finance literature. Information of the equity premium is a significant statistic for the resourceful distribution and valuation of capital resources. We explored firm level equity premium and its multi level determinants in the context of Pakistan stock market. We have considered a set of economic (micro and macro variables) and non-economic factors including terrorism and political instability as determinants of firm level equity premium. During the selected sample period the average market premium of Pakistan Stock Exchange (PSX) KSE100 Index was 20 percent. However, the average firm-level equity premium of individual firms was 8 percent. The estimated result shows that there is a significant impact of company fundamentals and macroeconomic factors on firm level equity premium. Additionally, terrorism, political instability, government regime change and financial crises also severely affect the firm level equity premium. Overall company fundamental (micro level factors) have more effect on EP followed by Non- Economics and Macroeconomic variables.

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Influence of economic and non-economic factors on firm level equity premium: Evidence from Pakistan

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Abstract

Equity premium is considered as one of the most important factors in finance literature. Information of the equity premium is a significant statistic for the resourceful distribution and valuation of capital resources. In this study we have explored firm level equity premium and its multi level determinants in the context of Pakistan stock market. We have considered a set of economic and non-economic factors including terrorism and political instability as determinants of firm level equity premium. We used a sample of 306 firm-level data for this study. During the selected sample period the average market premium of Pakistan Stock Exchange (PSX) KSE100 Index was 20 percent. However, the average firm-level equity premium of individual firms was 8 percent. The estimated result shows that there is a significant impact of company fundamentals and macroeconomic factors. Additionally, terrorism, political instability, regime change and financial crises also severely affect the firm level equity premium. Overall company fundamental has more effect on EP followed by Non Economics and Macroeconomic variables.

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1. Introduction

Equity premium is perhaps the single most important number in financial economics (Welch (2000). In recent times, equity premium has become prominent and remains a topical issue in advanced corporate finance and financial economics. Equity premium is the additional return that investors anticipate from investing in risky stocks instead of investing in money market. It drives the total expected stock returns and is a key determinant of the cost of equity. Fama and French (2002) describe equity premium as the difference between expected market portfolio return and money market return with zero risk. Similarly, according to Mehra and Prescott (1985, 2003) the difference of market portfolio of stock and the risk free rate of return is called equity premium.

Equity premium (EP) plays an important part in investor's investment decision. EP also affects savings, spending manners and allocation of investors` portfolios between risk free and risky assets. In every risk-return model, equity premium play a major role in estimating costs of equity and cost of capital in both economics and corporate finance estimation models (Damodaram, 2012). Besides its significance and importance, it is astonishing that how randomly the calculations of equity premiums remains in practice (Damodaram, 2016). The investment made in risky stocks are expected to produce higher expected returns than those investment opportunities which have very low or even no risk. It is usually discussed in the existing literature that equity premium is high in developing markets than in developed countries' stock markets (Shackman, 2006; Erbas and Mirakhor, 2007). This is because investing in emerging markets is usually more risky, which has to be rewarded in terms of a higher expected return. According to Damodaram (2008) equity premium is a central number that investors insist on for investing in the stock market for having higher risk than money market investment. More recently, Damodaram (2016) reinforces the importance of equity premium as before and empirically explored, by using the data for period 1926 to 2015 and found that the average equity premium for this period was only 3.68 percent with a standard deviation(SD) of 1.91 percent.

Equity premium is estimated in many asset pricing models like capital asset pricing model (CAPM) and arbitrage pricing theory (APT), three factor models and multifactor models. Markowitz (1952) research work was the first study to lay down the base line for this kind of analysis. Many studies have empirically examined the CAPM model in different capital markets (Elton and Gruber, 1995; Joshi, 2003; Ross et. al, 2005; Brealey, 2006, Mengyun et. al, 2018). Markowitz theory was further developed and constructed into capital asset pricing model (CAPM) by Treynor (1961), Sharpe (1964), Linter (1965) and Mossin (1966). The CAPM has been extensively used by the financial research experts. It is adopted in portfolio management as a standard of rating the performance of portfolio managers. The “Capital Asset Pricing Model” is explained by the following equation.

$$E(R_i) = R_f + \beta\left[E(R_m) - R_f\right] \dots\dots\dots\dots\dots (1)$$

1.1. Significance of the Study

Previously, many studies have explored the effect of economic factors and stock market returns but no study is available related to firm-level equity premium and its different determinants. This study examines the impact of economic and non-economic variables on the firm-level equity premium. Furthermore, in Pakistan, prior work has been done on stock market return and its determinants like (Hassan and Javeed, 2011; Imran and Abbas, 2013; Khan, 2014; Zeshan, 2016) studied the relationship between macroeconomic variables and

KSE100 index and found the GDP, exchange rate and inflation are positively related to stocked prices and negatively related to interest rate. Similarly, company factors and stock return has also been studied in many stock markets (Damodaram, 2012, 2016; Fama and French, 2002, 2014). The previous works done were mostly based on stock return rather than considering an important factor of equity premium. Therefore, there is still room for examining the economic, non-economic variables and firm-level equity premium. For the first time, inclusion of non-economic variables is examined on firm-level equity premium. During our sample period, there were several problems such as terrorism, political instability, political corruption, internal and external conflicts. These factors are studied with stock returns in the many developed markets (Apergis, 2016).Another point of significance of this study is that there are some other hidden variables in the economic market which also effect equity premium as explained by Fama and French (2002). The hidden variables may include macroeconomic or non-economic variables.

1.2. Drivers of Equity premium

Fama and French (2003) discussed that the market sensitivity (risk) is calculated with beta. The product of beta and market premium produced the total equity premium for a stock market investment. In the risk and return models of the period like arbitrage pricing theory (APT) developed by Roll and Ross (1976) and multi-factor model by Fama and French (1996) betas are calculated against individual market risk factors and each factor has its own price (risk premium). Literature has highlighted many factors which can drive the equity premium and these can be categorized into two broader groups i.e. economic factors and non-economic[1] factors of equity premium. In this research we further divide the economic factors in micro economic (company level) and macroeconomic along with non-economic factors.

2. Theory of Preference and Model

2.1. Arbitrage Pricing Theory (APT)

Roll (1976) and Rose (1977) criticised the CAPM and argued that a single index risk model proxy is not enough to capture the true magnitude of risk in the market. Ross (1976) introduced arbitrage pricing theory (APT) as an alternative technique to capital asset pricing model (CAPM). APT forecasts the association between portfolio returns and a single asset returns through a linear combination of different macroeconomic variables, for example, interest rate, GDP, prices of commodities and oil prices. APT differs from CAPM because it has less assumptions. It allows to interpret (rather than count) the return on assets model. It assumes that each investor will have a unique portfolio, with its own beta family, rather than the same "market portfolio." In some ways, CAPM can be considered as a "special case" of APT, where the safety market line represents a single factor model of asset prices where the value of β is exposed to changes in market value. The APT was initiated by Ross (1976).

$$E(R_i) - \lambda_0 = \beta_1\lambda_1 + \beta_2\lambda_2 + \ldots\ldots\ldots + \beta_n\lambda_n \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where $E(R_i)$ is the expected return, λ_0 is the risk free interest rate, λ_i is the risk premium of i^{th} factor, β_i is the sensitivity of asset to i^{th} factor.

In our previous studies (Mengyun et al., 2018; Imran et al., 2019) each set of economic and non-economic variables has been dealt with. However, in this study we used the APT concept

[1]Political instability, terrorism, law and order, financial crises and government regime changes.

and combined the significant variables into one model. This will give an idea about optimal arbitrage model for valuation of securities in Pakistan.

Apart from the above studies, in this study we have estimated a model consisting of the highly significant variables from all the three to analyze an optimal arbitrage pricing model as follow.

$$EP_{it} = \beta_0 + \beta_{i1}((R_{mt} - R_{ft}) + \beta_{i2}(InterestRate_t) + \beta_{i3}(GDP_t) + \beta_{i4}(\mathrm{ROE_T}) + \beta_{i5}(\mathrm{DPR_T}) + \beta_{i6}(\mathrm{DER_T}) + \beta_{i7}(\mathrm{ATR_T}) + \beta_{i8}\, ln(TSM_{it}) + \beta_{i9}\, ln(PS_{it}) + \beta_{i10} GRC_{it} + \beta_{i11} FC_{it} + \mu_{it} \ldots\ldots\ldots \quad (3)$$

Where EP is the equity premium, ROE represents return on equity, DPR represents dividend payout ratio, DER denotes debt to equity ratio, ATR represents account receivable turnover in days, TSM is terrorism in Pakistan, PS represents political stability, GRC means government regime change and FC represents financial crises.

This is our proposed optimal arbitrage pricing theory model for Pakistan capital market including company fundamentals, macroeconomic and non-economic variables of our study.

3. Data and Methodology

We have considered 306 non-financial firms listed on the Pakistan Stock Exchange and calculated firm-level equity premium. The data for the study have been collected from Pakistan Stock Exchange (PSX) official website[2], business recorder, economic survey of Pakistan, balance sheet analysis, global terrorism database and international country risk guide.

3.1 Calculation of stock returns

The study calculates the equity premium for Pakistan Stock Exchange (KSE100) Index as well as for each non-financial firm included in our sample. We have used the assumption of continuous returns for KSE100 index and the asset prices of each firm. The continuously compounded returns formula is expressed as follow:

$$Futurevalue = Presentvalue \times e^{in} \ldots\ldots\ldots\ldots\ldots \quad (4)$$

Continuously compounded returns are computed for each asset by using the following formula:

$$R_t = ln\left(P_t / P_{t-1}\right) \ldots\ldots\ldots\ldots\ldots\ldots \quad (5)$$

Where R_t is the continuously compounded return, P_t Is the price of asset at period "t", P_{t-1} Is the price of asset at period "$t-1$" and Ln is the natural logarithm.
Using Fama and French (2002) method we calculate EP as follow.

$$EP_i = R_m - R_f \ldots\ldots\ldots\ldots\ldots\ldots (6)$$

Where EP_i is equity premium, R_m is the return of the market, R_f Is the risk-free rate of return

3.2. Panel Data Econometrics

A panel or longitudinal data is a data set which comprises repeated measure of a given sample or same variable over time, like individuals, firms, persons, cities, countries are

[2] www.kse.gov.pk

observed at numerous points in time, days, months, quarterly or years before and after treatment (Hsiao, 2003; Christopher, 2006; Long et al., 2015; Luo et al., 2017).

The general model for panel data can be written as,

$$Y_{it} = \beta_0 + \beta_1 X_{it} + v_{it} + u_{it} \ldots\ldots\ldots\ldots\ldots (7)$$
$$t = 1,2, \ldots, T$$
$$i = 1,2, \ldots, N$$

Where Y_{it}, is the dependent variable, $\beta_0$is the intercept and independent from i and t, $\beta_1$is the $K \times 1$ vector of unknown parameter to be estimated, X_{it} is the $1 \times k$ vector of explanatory variable observations and $u_{it}$is the disturbance or error term.

The fundamental class of models that can be estimated using panel techniques may be written as the following function:

$$Y_{it} = f(X'_{it}\beta) + \delta_i + \gamma_t + \epsilon_{it} \ldots\ldots\ldots\ldots\ldots (8)$$

The most important case involves a linear conditional mean specification, so that we have the following function:

$$Y_{it} = \alpha + X'_{it}\beta + \delta_i + \gamma_t + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots (9)$$

Where Y_{it} is the dependent variable and X_{it} is a $k - vector$ of regressors, and ϵ_{it} are the error term for $i = 1, 2, 3, \ldots\ldots\ldots N$ cross-sectional units observed for dated periods i.e. $t = 1,2,3, \ldots\ldots T$.

3.3. Two Stage Least Square Method

Two-stage least squares (TSLS) is a particular case of instrumental variables regression. As the name suggests, there are two discrete stages in two-stage least squares. In the first stage, TSLS finds the portions of the endogenous and exogenous variables that can be attributed to the instruments. This stage involves estimating an ordinary least square (OLS) regression of each variable in the model on the set of instruments. The second stage is a regression of the original equation, with all of the variables replaced with their instruments. The coefficients of this regression are the two stage least square estimates".

The standard regression model is-

$$y = X\beta + \epsilon \ldots\ldots\ldots\ldots\ldots\ldots (10)$$

where"y" is the "T" dimensional vector containing observations of the dependent variable, X is a T x k matrix of independent variables, β is a $k\text{-}vector$ of coefficient, and ε is a $T\text{-}vector$ of disturbances. T is the number of observations and k is the number of right hand side regressors.

The least squares regression coefficient b are computed by the standard OLS formula:

$$b_{OLS} = (X'X)^{-1}X'y \ldots\ldots\ldots (11)$$

Let Z be the matrix of instruments, and let y and X be the dependent explanatory variables. The linear TSLS objective function is given by

$$\Psi(\beta) = (y - X\beta)'Z(Z'^{Z})^{-1}Z'(y - X\beta) \ldots\ldots (12)$$

Then the coefficients computed in two-stage least square are given by,

$$b_{TSLS} = X'Z(Z'Z)^{-1}Z'^{X^{-1}}X'Z(Z'Z)^{-1}Z'y \ldots\ldots\ldots (13)$$

And the standard estimated covariance matrix of these coefficient may be computed using

$$\widehat{\sum TSLS} = Ş^2(X'Z(Z'Z)^{-1}Z'X)^{-1}X'Z(Z'Z)^{-1}Z'Y \ldots\ldots\ldots (14)$$

Where $Ş^2$ Is the estimated residual variance (square of the standard error of the regression).

The following assumptions must be testified before performing two stage least square method. The variance of error term for all variables must be homoskedastic, i.e. Equal$Var(v_{ij}) = \sigma^2$. Error terms must be normally distributed i.e. $v_{ij} \sim N(0, \sigma^2)$.Model should be properly and correctly defined.

- It is assumed that observations should be independent from each other.
- It is assumed that unusual observations i.e. Outliers are removed from the data set.

Two stage least square (2SLS) method is used for the analysis and estimation for the data set. Firstly, to assess the normality of dependent variable i.e. equity premium, Kolmogorov- Smirnov test is applied for normality. The results are presented in Table 1.

Table. 1. Normality test of dependent variable (Equity Premium)

H_0: Equity premium is normal	Kolmogorov-Smirnov		
	Statistic	P-value	Decision
	0.659	0.076	Retain Null Hypothesis

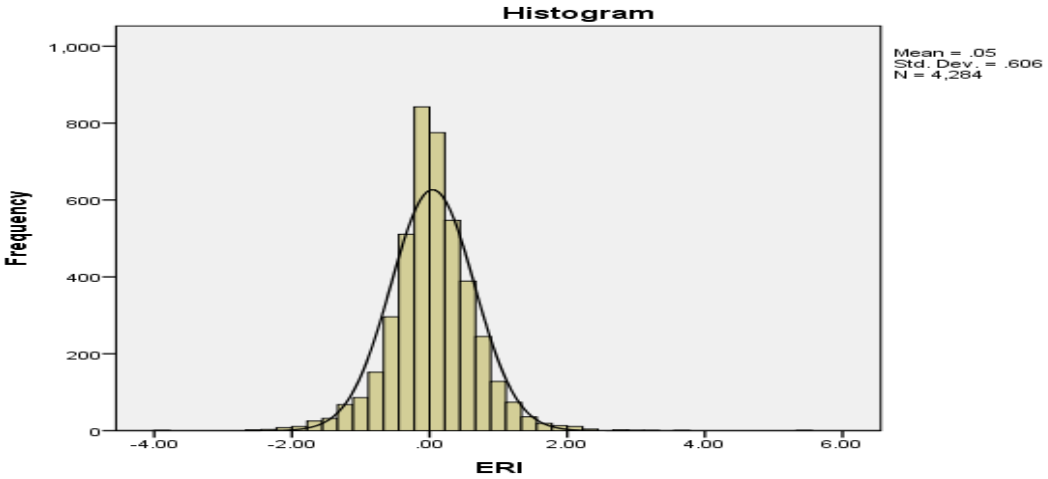

Figure 1 Normality Plot of Firm Level Equity Premium

To examine the structural break in the equity premium data we have divided the data into two periods, before and after the 2008 global financial crises. Period 1 consists of data from January 2001 to July 2008 and period 2 consists of data from August 2008 to December 2015. The period 2 contains the crises period followed by the normal bullish market trend. Paired t-test is applied to check the differences of equity premium before the 2008 financial crises and after the financial crises. Table 2 presents the paired t-test results.

Table 2. Paired Sample Test

Variable	**Paired Samples Statistics**			**Paired Correlations**	
Equity Premium	Mean	S.D	S.E Mean	Statistic	Sig
Pair -1	0.0468	0.60087	0.01298	0.249	0.000
Pair -2	0.0434	0.61049	0.01319		

Paired Differences								
	Mean	S.D	S.E Mean	95% C.I		T	Df	Sig
				Lower	Upper			
Pair 1-2	0.003	0.742	0.0160	-0.028	0.035	0.208	2141	0.836

The results illustrate that two pairs of equity premium are weakly and positively correlated ($r = 0.243$, $p = 0.00$). Furthermore, there is no significant difference in average in period 1 and in period 2. However, the average of pair 1 of equity premium is 0.0033 point higher than average of pair 2. The p-value of t-statistics is insignificant (0.836), which implies that the null hypothesis is accepted, i.e. there is no significant difference in returns before and after the global financial crises.

4. Estimation and Interpretation of Results

4.1. Hausman Test Result

For the selection of a model between fixed effect and random effect, the Hausman test is applied. Table 3 presents the Hausman test results. The statistically insignificant value of Hausman test indicates that random effect model is better than fixed effect model due to its higher efficiency.

Table 3. Correlated Random Effects - Hausman Test

Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. D.f.	Prob.
Cross-section random	3.28	4	0.63

The following Table 4 presents the estimated results of the random effect model. The statistically highly significant positive coefficient market premium indicates that for one percent increase in market premium the firm-level equity premium increases by more than 0.18 percent. Among the macroeconomic variables, the negative highly statistically significant coefficient of T-bill rate indicates that an increase in interest rate decreases the firm-level market premium of the non-financial firms listed on Pakistan Stock Exchange. For one percent change in interest rate the firm-level equity premium decreases by 0.18 percent. The real income (GDP) has positive and statistically significant coefficient, which indicates that an increase in the real income causes an increase in the stock returns. The company fundamental variables in this collective model include return on equity (ROE) of the firms has positive and statistically significant effect, which demonstrates that an increase in ROE has a positive effect on the firm-level equity premium. However, the coefficients of dividend payout ratio and account receivables in days are insignificant in this model. Similarly, the non-economic factors were also added to this model to examine the combined effect of these three different types of variables. The positive and statistically significant coefficient of government stability indicates that government stability boosts the stock market and having a positive effect on the firm-level equity premium. One percent increase in government stability causes 0.80 percent growth in the firm-level equity premium. These results are consistent with findings of previous studies of Qureshi (2010),Tabassam et al. (2016) and Mengyun et al. (2018).The sign of coefficient of terrorism is positive but close to zero. The sign is against with our theoretical expectation but agrees with some of the studies of specific sectors . In our tested model terrorism has very minimal effect on the firm-level equity premium. The government regime change has a positive and statistically significant coefficient, which indicates that regime change from autocratic leadership to democratic leadership affects the stock market positively. The negative coefficient of the financial crises indicates that one percent increase in the crises of 2008 decreases the equity premium by 0.58 percent. The findings of this model are consistent with previous findings except terrorism variable, which shows an opposite with very low coefficient. This may be due to the continuous terrorism activities, sometimes the market absorbs a terrorist act without affecting the stock market returns. This gives an insight to investors that despite of terrorism, stay in the market and enjoy high returns.

Table 4 Random Effect Model- Firm Level Equity Premium

Variable	Coefficient
C	-6.3366
	(-14.5640)***
Market Premium	0.1848
	(3.5359)***
T-Bill Rate	-1.1855
	(-6.0000)***
Industrial Production Index	-0.0269
	(-6.7837)***
Return on Equity	0.3112
	(2.9515)**
Dividend Payout Ratio	-0.0011
	(-0.9249)
Account Receivable Turnover	0.0064
	(-0.7124)
Government Stability	0.8066
	(-13.1660)
Terrorism	0.0008
	(-10.9706)***
Regime Change	0.5807
	(6.7068)***
Financial Crises	-0.5933
	(-9.3167)***
R-squared	0.3285
Adjusted R-squared	0.3257
S.E. of regression	0.5565
F-statistic	108.3998
Prob(F-statistic)	0.0000
Instrument rank	16
Durbin-Watson stat	2.4161
Prob(J-statistic)	0.0000

Note: *(**)(***) indicates that variable is significant at 10%(5%)(1%) level of significant.

The coefficient of determination, R^2 explains that more than 32 percent of the variation is explained by the explanatory variables. The adjusted R^2 indicates that more than 32 percent of change in the relationship is explained by the model. The highly statistically significant value of F-test indicates that the model fits the data well. The Durbin-Watson statistic value is close to the theoretical expected value of2, which indicates that there is no serious problem of autocorrelation in the variables.

5. Discussion and Conclusion

Equity premium is considered as one of the most important factors in finance literature. Information on equity premium is a significant statistic for the resourceful distribution and valuation of capital resources. Equity premium can be used for evaluating cost of equity as well as for the calculation of expected return from an investment. The study explores equity premium and its determinants in the

context of Pakistan stock market. The study calculates the market premium, the individual asset premium for 306 non-financial firms listed in Pakistan's stock exchange and sector premiums for 17 non-financial sectors using data for the period of 01/2001-12/2015. During the selected sample period the average market premium of Pakistan Stock Exchange (PSX) KSE100 Index was20 percent. However, the average equity premium of individual firms was 8 percent. The sector-wide equity premium ranged between -2 percent to 61 percent annually.

In this paper, we have considered three different kinds of factors as determinants of equity premium. This study is part of a series of ongoing research. In previous studies (Mengyun et at., 2018), we have examined the relationship between equity premium and its determinants ranging from company fundamentals (micro level), to macroeconomic and non-economic level. In this current study we have combined the significant variables which affect firm-level equity premium into a single model to be able to get an optimal arbitrage pricing model.

The estimated result shows that statistically highly significant positive coefficient market premium and return on equity as company fundamentals indicate positive change in the firm level equity premium. The signs of company level variables are found according to the theoretical expectations and supported from the previous literature. Among the macroeconomic variables, the negative highly statistically significant coefficient of T-bill rate indicates that increase in interest rate decreases the firm-level market premium of the non-financial firms listed on Pakistan Stock Exchange. However, the real income (GDP) positive and statistically significant coefficient indicates that increase in the real causes increase in the stock returns. The macroeconomic variables are not under the control of the firm's management. These are the external factors which affect the company as well as the overall market returns.

Similarly, the non-economic factors were also added to this model to examine the combine effect of these three different types of variables. The positive and statistically significant coefficient of government stability indicates that government stability boost the stock market and having a positive effect on the firm level equity premium. These results are consistent with the previous findings of Qureshi (2010), Tabassam et al., (2016) and Mengyun et al,. (2018). The sign of coefficient of terrorism is positive but close to zero. The sign is against the theoretical expectation but agree with some of the studies of a specific sectors. In our tested model the terrorism has very minimal effect on the firm level equity premium. The government regime change has a positive and statistically significant coefficient which indicates that regime change from autocratic leadership to democratic leadership affect the stock market positively. The negative coefficient of the financial crises indicates that one percent increase in the crises of 2008 decreases the equity premium by 0.58 percent. The findings of this model are consistent with the previous findings of this study except terrorism variable which shows an opposite with very low coefficient. This is may be due to the continuous terrorism activities, sometimes the market absorb a terrorist act without affecting the stock market returns.

The study concludes that the investors and policy makers need to review but not limited to the company fundamentals, macroeconomic variables and the non-economic factors as determinants of equity premium. This can help in better industry diversification and calculation of expected rate of returns. The firms can greatly benefit from the analysis for better financial management decisions.

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References

Ahmad and Javeed, (2008).Testing Multifactor Capital Asset Pricing Model in Case of Pakistani Market. International Research Journal of Finance and Economics, 25, 114-123

Apergis, E., Apergis, N., (2016). The 11/13 Paris terrorist attacks and stock prices: the case of the international defence industry. Financ. Res. Lett. 17, 186–192.

Bellelahet. Al (2016) Does the equity premium puzzle persist during financial crisis? The case of the French equity market. Research in International Business and Finance, 39 (1), 851-866

Brealey, R. A., Myers, S. C., & Allen, F. (2006).Principles of Corporate Finance. The McGraw-Hill (8th ed.). New York, NY: McGraw-Hill/Irwin

Damodaram, A. (2008), Equity Risk Premiums (ERP): Determinants, Estimation and Implications – The 2008 Edition (working paper)

Damodaram, A. (2011), Equity Risk Premiums (ERP): Determinants, Estimation and Implications – The 2011 Edition(working paper)

Damodaram, A. (2012), Equity Risk Premiums (ERP): Determinants, Estimation and Implications – The 2012 Edition(working paper)

Damodaram, A. (2016), Equity Risk Premiums (ERP): Determinants, Estimation and Implications – The 2016 Edition(working paper)

Elton, E.J., Gruber, M.J., Brown, S.J., &Goetzmann, W. N. (2011), Modern portfolio theory and investment analysis (8th ed.), Hoboken, N.J. : Wiley.

Erbas, S.N. and A. Mirakhor (2007).The Equity Premium Puzzle, Ambiguity Aversion, and Institutional Quality. International Monetary Fund Working Paper, no. 07-230, Washington

Essaddam, N., Karagianis, J.M., (2014). Terrorism, country attributes, and the volatility of stock returns. Res. Int. Bus. Financ. 31, 87–100

Essaddam, N., Mnasri, A., (2015). Event-study volatility and bootstrapping: an international study. Appl. Econ. Lett. 22 (3), 209–2013.

Estrada, M.A.R., Koutronas, E., (2016). Terrorist attack assessment: Paris November 2015 and Brussels March 2016. J. Policy Model 38 (3), 553–571

Ewijk, C., De Groot, H.L.F., Santing, A.J., (2012). A meta-analysis of the equity premium, Journal of Empirical Finance 19, Is. 5, pp. 819830

Fama, E. And K. French (2002). The Equity Premium. Journal of Finance, 57(2), 637–659

Fama, E. F. And J. D. Macbeth (1973) 'Risk, Return, and Equilibrium: Empirical Tests', Journal of Political Economy, Vol. 81, No. 3, pp. 607

Fama, E.F., and G. W. Schwert (1977). Asset Returns and Inflation. Journal of Financial Economics. 5:115 - 14

Fama, E.F., and French, K.R., (1993). 'Common risk factors in the returns on stocks and bonds', Journal of Financial Economics, Vol. 33, pp. 3–56.

Fama, E.F., French, K.R. (1993), "The cross-section of expected stock returns", Journal of Finance, Vol. 47 pp.427-65.

Fama, E.F., French, K.R. (1996), "Size and book-to-market factors in earnings and returns", Journal of Finance, Vol. 50 pp.131-56.

Fama, Eugene F. And Kenneth R. French. (2004). "The Capital Asset Pricing Model: Theory and Evidence." Journal of Economic Perspectives 18(3): 25-46.

Imran et al (2019), Interplay Between Macroeconomic Factors and Equity Premium: Evidence Pakistan Stock Exchange. International Journal of Arts and Social Science www.ijassjournal.com ISSN: 2581-7922, Volume 2(3) pp. 7-17

Joshi, M. S. (2003). The Concepts and Practice of Mathematical Finance. Cambridge, U.K: Cambridge University Press

Kees et.al (2016) Investing in Systematic Factor Premiums, European Financial Management, 22(2), 193–234

Lintner, J. (1965). The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. Review of Economics & Statistics, 47(1), 13-37

Long et al., (2015).Non renewable energy, renewable energy, carbon dioxide emissions and economic growth in China from 1952 to 2012.Renewable and Sustainable Energy Reviews 52 (2015) 680–688

Luo et al., (2017).Decoupling CO2 emissions from economic growth in agricultural sector across 30 Chinese provinces from 1997 to 2014.Journal of Cleaner Production Vol. 159 220-228

Markowitz, H. (1952). Portfolio Selection. The Journal of Finance, 7(1), 77-91.

Mehra, R. And E. C. Prescott (1985) 'The Equity Premium', Journal of Monetary Economics, 15(2), 145-61.

Mehra, R. and E. Prescott, (2003), "The Equity Premium in Retrospect," NBER Working Paper, 9525, National Bureau of Economic Research, Cambridge, MA

Mengyun et al. (2018), Impact of Terrorism and Political Instability on Equity Premium: Evidence from Pakistan. *Physica A, 492*, 1753-1762

Neely, C. and Rapach, D.J., Zhou, G. (2011). Forecasting Equity Risk Premium. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1568267 Last visited on June 2, 2011

Qureshi, M. N., Ali, K., & Khan, I. R. (2010). Political instability and economic development: Pakistan time-series analysis. International Research Journal of Finance and Economics, 56, 179-192.

Roll, R. (1977). Critique of Asset Pricing Theory Test: Past and Potential Testability of Theory. Journal of Financial Economics, 4(2), 129-176

Roll, R., & Ross, S. A. (1994). On the Cross-sectional Relation between Expected Returns and Betas. Journal of Finance, 49(1), 101-121.

Rosenberg, B., Reid, K., Lanstein, R. (1985), "Persuasive evidence of market inefficiency", Journal of Portfolio Management, Vol. 11 pp.9-17

Ross, S.A. (1976), "The arbitrage theory of capital asset pricing", Journal of Economic Theory, Vol. 13 pp.341-60

Rubinstein, M. (2002). Markowitz's "Portfolio Selection": A Fifty-Year Retrospective. The Journal of Finance, 57(3), 1041

Shackman, J.D. (2006). The Equity Premium and Market Integration: Evidence from International Data. Journal of International Financial Markets, Institutions and Money, 16(2), 155–179.

Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. Journal of Finance, 19(3), 425-442

Tabassum, A. H., S. H. Hashmi and F. U. Rehman (2016) Nexus between Political Instability and Economic Growth in Pakistan, Procedia - Social and Behavioural Sciences; 230: 325-334

Tobin, J. (1958), "Liquidity preference as behaviour towards risk", Review of Economic Studies, Vol. 26 pp.65-86.

Treynor, J. L. (1961). Market Value, Time, and Risk. Unpublished Manuscript dated August, 8, 1961.

Welch, I. (2000), "Views of Financial Economists on the Equity Premium and on Professional Controversies," Journal of Business, 73(4). 501-537.

Zeshan and Abdullah (2016) Capital Asset Price Model Empirical Evidence from Karachi Stock Exchange, Journal of Research in Business and Management. 4 (10) pp.61-67.