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A Test of Fame and French Three Factor Model in Pakistan Equity Market

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Abstract - There is a view that investor who want to make investment in stock exchange should make a decision maximize their wealth. For this purpose the investor not only want to know which factor will impact the return but also want to understand the relative weight of various factors level, and which sub factor will impact more for giving factors. So they analyze all relevant factors while making decision that affect the return from investment in future. Variation in stock market return was determined by various theories. It was started with Sharp (1964), Linter (1965), Black (1972) who present Capital Asset Pricing Model (CAPM) which shows how to be related between the average return of stock and market risk factor. Other researcher did not agree because there is other factor more than one factor.

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A Test of Fame and French Three Factor Model in Pakistan Equity Market

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I. Introduction

There is a view that investor who want to make investment in stock exchange should make a decision maximize their wealth. For this purpose the investor not only want to know which factor will impact the return but also want to understand the relative weight of various factors level, and which sub factor will impact more for giving factors. So they analyze all relevant factors while making decision that affect the return from investment in future.

Variation in stock market return was determined by various theories. It was started with Sharp (1964), Linter (1965), Black (1972) who present Capital Asset Pricing Model (CAPM) which shows how to be related between the average return of stock and market risk factor. Other researcher did not agree because there is other factor more than one factor. Many anomalies have been identified in CAPM. Base (1977) finds high earning to price (E/P) ratio companies having higher return than low earning to price ratio. Bans (1981) told small stock outperform than large stock. Stuntman (1980) argued that company with high book to market value outperforms companies with low book to market value.

After that Ross (1976) proposed the Arbitrage pricing theory (APT) that developed the model of many factor for assessing the return of stock. APT does not specify the name and number of factors. Arbitrage pricing theory does not deal with the issue of portfolio efficiency. It is more efficient than CAPM. But it depends on economic condition and positive business So APT is not very famous as it should be.

Fame and French (1992) propose a three factor model that suggest as an alternative explanation for the stock market return. They combined these factors market risk premium size and book to market ratio to explain the return of stock. Market risk premium is the difference between the risk free rate and the expected return on the market portfolio, Size premium is that the return of small company stock to be higher than the large stock company, They use SMB (small minus big) to address size risk and HML (high minus low) for value Risk. Value premium is the greater risk adjusted return of value stock over growth stock. The high book to market Ratio stocks are termed as value stock while low book to market stock are growth stock. Fame and French studied for correct and efficiency of model in many times. Fame and French did an empirical test in 1996 and they found out that two classes of stocks were giving more return or performance better than market as a whole. This includes stock with high book to market ratio and small market capitalization. Fame and French commented that since these stocks yield higher return. So this phenomenon is explained by the existence of value premium and size premium in addition to market risk premium as used in traditional capital asset pricing model (CAPM).

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II. Research Questions

- Does CAPM accurately predict the risk/ return trade off in KSE.
- Do Fame and French accurately predict the risk/ return trade off in KSE.

a) Objectives

- To provide insight about application of CAPM in Pakistan equity market.
- To explain the role of size for predicting the equity market returns.
- To explore the relation of value premium in explaining stock market return.

III. Significance

Pakistan has been classified as an emerging market and its equity market is of special interest for several reasons. Its geopolitical situation suggests that it has a great potential for economic activities if it achieves political stability and utilize its resources efficiently. Therefore future investor interested to know the risk and return because as there will be high risk then there will be high return. Therefore such study is needed to explain investor behavior either company worker are foreign invester.This study identify the factor that effect the equity return in Pakistan the relationship between equity return and factor value premium, size premium both to equity market has been investigated. As it is obvious that greater information always preferred over less, so this study is intended to analyze the stock return prediction process by using Capital asset pricing model (CAPM) and Fama & French three factor model. The study will contribute to help investor to make better investment decisions. As this study will make clear whether the market premium is enough to explain the stock market dynamics or other factor predict the stock market return.

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IV. Methodology

This study is an explanatory in nature as Fame and French Three Factor Model is an extension of single factor model CAPM and tries to relate individual security return with the market return. Besides the traditional beta it takes into account two additional factors that are value premium and size premium. Secondary data has been collected from KSE-100 index and was used as benchmark and data of 100 firms has been used. Therefore in this study sample period was from 1st January 2001 to 31st December 2008.

V. Model Specification

Fame and French three factor model is an extension of single factor CAPM. Besides this it includes two additional factors that are size and value premium.

$$R_{it} = R_f + \beta_{it}(R_{mt}-R_f) + \beta_{it}(SMB) + \beta_{it}(HML) + e$$

Where Rit represents expected return on stock i, and Rm-Rf shows market premium, SMB represents size premium and HML represents value premium. The coefficient is the risk sensitivities for the market risk followed by size and value. The market risk coefficient is similar to Sharpe's CAPM but different in the sense that in the three factor model explanatory function will be shared by two other risk factors namely SMB and HML.

VI. Literature Review

The variation in stock return plays vital role for judgment of investor behavior. Sharp (1964) argued that the expected return on a stock based on the systematic risk. CAPM concluded that expected return on an asset above the risk free rate is proportional to the systematic risk and the market beta alone is sufficient to explain security returns and that there is a positive expected premium for investing in beta risks. Ross (1976) presented arbitrage pricing theory (APT) which explains the multifaceted relationship between risk and return. It explained that the expected return of any security can be molded as a linear function of a variety of macro-economic factors, where factor-specific beta coefficients correspond to sensitivity to change in each factor.

Fame and French (1992) studies the cross section of expected return and determine the additional factors of size and book to market equity to identify the stock return other than beta that CAPM was unable to explain. Data was collected from the year 1963 to 1990.It concluded that size was unrelated when variation in beta occurs and book to market has stronger effect than size factor on return. Fame and French (1995) explained the factors that related in explaining the stock return. Average returns on stock are related to firms' characteristics like cash flow/price, past sales growth, size, long term past returns, earnings/price, book-to-market equity and short term past returns. These factors are not explained by CAPM. According to Fame and French APT better measures stock return than CAPM. Fame and French (1996) conducted their study that CAPM wanted, dead or alive. They conducted this study against the claim that beta (systematic risk) from annual return generate stronger positive relation between beta and average return than beta from monthly return. Data was collected from 1928 to 1993 from NYSE. The findings rejected that CAPM explained expected return and concluded that failure of CAPM can only be explained by multifactor APT.

Bun doo (2006) applied Fame and French model (1993) on Stock Exchange of Mauritius. The empirical evidences confirmed that Fame and French model holds for Stock Exchange of Mauritius. This study also found that Fame and French three factor model is vigorous in consideration of time varying betas and they found that both size effect and a book-to-market equity are present on the stock exchange of Mauritius. An augmented Fame and French three-factor model for the SEM shows that the time-variation in beta is priced returns on the SEM are better described by the Fame and French three-factor model.

Fame and French (2000) studied Chara-cteristics, Covariance and Average Returns from the period 1929 to 1997. This result shows that the value premium in average stock returns is robust and the three-factor model is just a model and thus an incomplete description of expected returns.

Was mullah et al. (2011) studied Fame and French three factor models: Empirical evidence from financial market of Pakistan. Multivariate regression analysis was used made on the basis of size and book to market value. Monthly data of 20 banks were taken for the period of five years starting from January 2006 to December 2010. Results showed that Fame and French three factor model explained the variations in returns.

Hasan and jived (2011) studied the relationship among size premium, value premium and equity returns in Pakistani equity market for the period of June 2000 to June 2007 by using Fame and French (1992, 1993) methodology. This is the first study in Pakistan that explores the relationship among stated variables by employing a large sample of more than 250 stocks listed at the Karachi Stock Exchange. An analysis of the results revealed that Size factor is found significantly positively related to portfolio.

Davis et al. (2000) for the period of 1929 to 1997 examined the covariance and average returns. The data was divided in two phases first from July 1929 to June 1963 and second from July 1963 to June 1997. Three factor model was used and the positive relation between average return and book-to-market equity is as strong for 1929 to 1963 and this is close to the premium for July 1963 to June 1997.They found that value premium was higher than size premium.

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Aleati et al. (2000) investigated the relationship common risk factors and average returns for Italian stocks. Data was collected from 1981 to 1993 and time series regression was used. They found that changes in market index, changes in interest rates and SMB and HML represent a good summary of risk captured by cross section of average Italian returns.

Drew and Veeraraghavan are graven (2002) studied the relationship among firm size and book to market equity with stock returns from the 1991 to 1999. They found that single risk factor is not enough in describing the cross section of stock returns. They examined the Explanatory power of a single index model with the multifactor asset-pricing model of Fama and French (1996) for Hong Kong, Korea, Malaysia and the Philippines and they conclude that Fama and French model better explained the stock return than CAPM.

Iqbal and Brooks(2007) studied the effect of CAPM and two step Fama and French procedure on the Karachi Stock Exchange for the period of September 1992 to April 2006.In this study, they found that beta explained the cross sectional variation in expected returns, especially with individual stocks, size and beta portfolios.

Brayant and Eleswarapu (1997) studied the cross sectional determinants of New-Zeeland share market returns. The study was done from the period of 1971 to 1993 on security return, beta, firm size and book to market ratio. They found that betas calculated having little explanation of stock market return and there was positive impact between book to market ratio and average return.

Chordia and avramou (2006) examined the asset pricing model and anomalies size value premium and momentum anomalies were used to explain the asset pricing model. The analysis done over the period of 1964-2001.It concluded that size, book to market value and past returns explained by various asset pricing model.

Yassalou and Liew (2000) examined book to market, size and momentum be risk factors they investigated that the profitability of value premium, size premium and momentum linked to future GDP growth. It concluded that value premium and size premium contained significant information about future GDP growth.

References References References

1. Aftab, M., Ahamad, S., Ullah, W., & Sheikh, R. A. (2011). The impact of bank efficiency on share performance: Evidence from Pakistan. *African Journal of Business Management*, *5*(10), 3975-3980.
2. Aleati, A., Gottardo, P., & Murgia, M. (2000). The pricing of Italian equity returns. *Economic Notes*, *29*(2), 153-177.
3. Avramov, D., & Chordia, T. (2006). Asset pricing models and financial market anomalies. *Review of Financial Studies*, *19*(3), 1001-1040.
4. Banz, R. W. (1981). The relationship between return and market value of common stocks. *Journal of financial economics*, *9*(1), 3-18.
5. Basu, S., 1977. Investment performance of common stocks m relation to their price-earmngs.
6. Bryant, P. S., & Eleswarapu, V. R. (1997). Cross-sectional determinants of New Zealand share market returns. *Accounting & Finance*, *37*(2), 181-205.
7. Bundoo, S. K. (2008). An augmented Fama and French three-factor model: new evidence from an emerging stock market. *Applied Economics Letters*, *15*(15), 1213-1218.
8. Chan, L. K., Karceski, J., & Lakonishok, J. (1998). The risk and return from factors. *Journal of Financial and Quantitative Analysis*, *33*(2).
9. Chui, A. C., & Wei, K. C. (1998). Book-to-market, firm size, and the turn-of-the-year effect: Evidence from Pacific-Basin emerging markets. *Pacific-Basin finance journal*, *6*(3), 275-293.
10. Davis, J. L., Fama, E. F., & French, K. R. (2000). Characteristics, covariances, and average returns: 1929 to 1997. *The Journal of Finance*, *55*(1), 389-406.
11. Drew, M. E., Naughton, T., & Veeraraghavan, M. (2002). Firm size, book-to-market equity and security returns: Evidence from the Shanghai Stock Exchange. *Australian Journal of Management*, *28*(2), 119-139.
12. Fama, E. F., & French, K. R. (1992). The cross-section of expected stock returns. *the Journal of Finance*, *47*(2), 427-465.
13. Fama, E. F., & French, K. R. (1995). Size and book-to-market factors in earnings and returns. *The Journal of Finance*, *50*(1), 131-155.
14. Fama, E. F., & French, K. R. (1996). The CAPM is wanted, dead or alive. *The Journal of Finance*, *51*(5), 1947-1958.
15. Hassan, A., & Javed, M. T. (2011). Size and value premium in Pakistani equity market. *African Journal of Business Management*, *5*(16), 6747-6755.
16. Iqbal, J., & Brooks, R. (2007). A test of CAPM on the Karachi Stock Exchange. *International Journal of Business*, *12*(4), 429-444.
17. Jensen, M., & Scholes, M. (1972). The capital asset pricing model: Some empirical tests. ratios. A test of market efficiency, *Journal of Finance* 32, June. 663-682.
18. Liew, J., & Vassalou, M. (2000). Can book-to-market, size and momentum be risk factors that predict economic growth? *Journal of Financial Economics*, *57*(2), 221-245.
19. Maroney, N., & Protopapadakis, A. (2002). The book-to-market and size effects in a general asset

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pricing model: evidence from seven national markets. *European Finance Review*, *6*(2), 189-221.
20. Mirza, N. (2008). Size and Value Premium in Karachi Stock Exchange. *Available at SSRN 1122943(FS01)*
21. ROSS, S. A. (1976). The Arbitrage Theory of Capital Asset Pricing. *Journal of economic theory, 13*, 341-360.
22. Stattman, D. (1980). Book values and stock returns. *The Chicago MBA: A journal of selected papers*, *4*, 25-45.

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