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The Analysis on Fama and French Asset- Pricing Model to select stocks in Tehran Security and Exchange Organization (TSEO)

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Abstract

Employing quantitative techniques has been dramatically increased in financing industry during 20 recent years. These models have been primarily utilized in risk management and through measurement models of risk different sources. Fama-French Asset Pricing Model has been explored to select stocks in Tehran Security and Exchange Organization (TSEO) in this study. The time period (2008-2012) has been used to test hypotheses. Statistical population of this study includes stocks in all admitted enterprises in Bourse Market. Stocks of some enterprises have entered in and also exited from bourse market within period of this survey. Some constraints have been exerted to exclude these enterprises from domain of this study in order to improve reliability of study as well as reducing negative effects of such stocks. In this course, multivariate and three- variable regression model was primarily employed to compute expected efficiency rate and then the given portfolios were compared according to criteria including portfolio real efficiency, portfolio risk, and market efficiency index. The monthly, quarterly, and annual time-series of data have been utilized to test hypotheses. Statistical techniques were used to test hypotheses along with three- variable regression, Kolmogorov- Smirnov test and Durbin- Watson statistic, and also P-P Plot and scatter diagram (homogeneity of variance) as well as Pearson's correlation coefficient test.

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Keywords: Expected return; Real return; Variance; Risk, Portfolio

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1. Introduction

Selection of appropriate stocks for profitable investment is deemed as one of issues, which have been always noticed in financial markets. If an investor makes decision logically in selection of stocks, s/he may achieve return more than mean rate in the given market. Fama-French Asset- Pricing Model has been examined to select stock in Tehran Security and Exchange Organization (TSEO) in this study.

2. Theoretical bases and a review over research history

The capital investment is the foremost factor in economic advancement. On the one hand, developing investment causes attraction of ineffective capitals and leading them two productive economic sectors; and on the other hand, with respect to orientation of investors, it will lead to investment in industries with higher profits or less risk and this trend finally causes optimal allocation of resources (Khajavi et al, 2005).

To invest in Tehran Bourse (TSEO) that is ineffective due to some reasons including lack of data transparency, existing data rent, and randomized subsequent changes in stock price, the actors in financial market need to analyze corporate stocks based on indices and criteria, which show stocks real value [3]. One of the main and important parameters in determination of intuitive value of corporate stocks is analysis of industrial status to which the given enterprise belongs. In fact, the industry with relative advantage will possess higher efficiency than other industries. Therefore, determination of the position of industries in TSEO may remarkably contribute to diversification and adequacy of information toward more effective capital market.

In his MA thesis titled 'Comparison of performance of Capital Assets Pricing Model (CAPM) with Fama-French three-factor in prediction of the expected return in Tehran Bourse Market', Rebatmili (2007) concluded that the variance of expected mean return to real efficiency in CAPM model is smaller than three-factor model in long run; namely, CAPM model acts better in long run. Alternately, Fama- French three-factor model operates better in short term as well.

Jensen et al (1972) explored Security Market Line (SML) and they concluded that based on assumptions in CAPM model if market portfolio was efficient, SML would have positive and fully- linear gradient while results of their test approved CAPM model.

Fama and Macbeth conducted study similar to above investigation but it differed from it in that they intended to predict future return rate of portfolio based on estimated risk variable. Their studiers verified CAPM model as well.

Souad Ajili (2002) tested three-factor model in French bourse market and came to this result that the three-factor may provide better results than CAPM model because of adding variables of 'size of company' and 'Book-to-Market value' to market factor.

Darasteanu (2010) carried out a study on testing CAPM model in stock transaction in bourse market at Bucharest. One of the paramount issues currently exists in capital market is that whether capital asset pricing model is still reliable or not. Sharp (1965) and Lintner (1966) proposed CAPM well-known model that shows risk real rate for beta share. The time afterwards, in many essays this approach has been supported but some other group employs Fama- French model. The question which is often asked today is that 'Is Beta dead?' Fama and French deduced that beta might no longer consider the risk real value and some of empirical evidences have demonstrated that the gradient is negative in equation used in CAPM model. Similarly, some of authors in literature of financial market have argued that CAPM model might be employed for exchange of emerging stocks and beta was not significant. The given study analyzes CAPM value relating to Bucharest bourse market. This survey studies if the investor could trust in beta rate in process of making their decision or not.

Lina Zhang and Qian Li (2012) have compared CAPM and APT (Arbitrage Pricing Theory) in Chinese stock market. Since stock market plays an essential role in world economy and Chinese economy is gradually converted into noticeable sector in world economy thus when we compared these methods in stock market, we selected to use CAPM and APT model in Chinese stock market. With conducting a lot of studies in main board of directors in Chinese stock market, we focused our attention on SME and ChiNext groups in Chinese stock market. We entered some samples of SME and ChiNext groups in regression models, which were based on CAPM and APT models and as a result we could use regression models to predict long-run efficiency. We may find that CAPM model and or APT model may predict better in SME and ChiNext groups. Systematic risk is the only variable that we explored regression