

Investigating the Relation Between Systematic Risk and Efficiency Indicators Based on Pricing the Financial Assets in Companies Accepted in Tehran Stocks

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Abstract

The systematic risk (Beta) is one of effective factors in prospecting the stock expected revenue. Given the systematic risk of general stock in various companies, the financial investment is more creditable. The present paper investigates that is there any positive relation between efficiency indicators (work efficiency and capital indicators) as independent variables, in one hand, and systematic risk (Beta) as dependant variables, in another hand, or not? In order to study this issue, some sample including 102 members, from statistical society of the companies accepted in Tehran stock market, using screening method (systematic elimination) during six years was studied and some items were selected from financial bills up to the february from 2005 to 2010. The data needed from basic financial bills, the communities reports and the other documents existed in Tehran stock market were derived and analyzed using the Pierson correlation and the research hypothesis analyze. The results showed no significant relation between the considered variables. Finally, some suggestions on the issue are recommended.

Key words: work efficiency, capital efficiency, systematic risk (Beta)

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1. Introduction

We, each, make some decisions during our lives to investigate in different fields including: assets, gold, and stocks and In some scientific decision, it depends directly on the amount of risk and revenue of such opportunity in compare with the other investment opportunities. In other words, the main aim is to identify the investment opportunity with most revenue and the same risk or less risk in similar situations comparing with the other opportunities (Tavangar, 2011). So, the relation between risk and revenue is one of the significant issues on investment. Regarding the risk factor and it's relation with revenue, due to it's significance, has been always considered with financial authors. The financial reward or revenue includes the current income (for example: the annual profit) and the increase or decrease in assets value (the capital loose or profit). In order to investigate the investable units and projects, to provide the capital optimal structure and to perform the investment strategies, carefully, the economical units and investors are trying to find some efficient and usable devices which could help them to gain their aims. Since the most important aim of investors in shares and stock, is to gain the annual profit along with the capital profit and at last in order to maximize their own wealth, so the investors make investments in high-revenue and low-risk assets. In this regard, the effect of factors on companies' revenue and risk, is considerably important for both investors and companies and financial managers. And, since efficiency in organizations is one of the most important aims and the managers are responsible for improvement in company, and given the fact that the organizations survival, growth and improvement are depend on efficiency, so the present research tries to investigate the relation between efficiency and systematic risk. In condition of such consistency, the organization long-time profit would be guaranteed.

Problem and importance of the issue

Growth and improvement in every country depends on proper planning and investment. To direct the cash flow toward investment and productive activities, correctly would lead to economical growth, national gross product increase, occupation creation, capita income increase and finally general welfare. Among this, the stock market acts as a market in which, using the role of mediator or the personnel servicing the general payments and savings of people are directed toward long-term consumption in productive or commercial institutes. The stock exchange as a sample of capital market is considerably affected by changes in economical and commercial cycles. The stock investors consider various factors when making investing decisions. Merton believes that the investors have tendency to own the stocks which they have more knowledge about or could somewhat attract them, recently (Merton , 1987). According to many authors, the risk financial management and revenue are two crucial factors which could affect the decisions made by investors. However, it is necessary to know the factors leading to the revenue increase or risk decrease. In investment decisions, risk and revenue have a key role and it is substantially important to determine the investing risk and revenue and to predict the amount of these elements for investors. During 1950 and 1960, the investors society studied the issues on risk, but there were no certain and significant measure for this term. Ant then the stock portfolio main model was improved by Harry Markowitz. He, for the first time, deducted the rate of predicted revenue and risk for the assets stock portfolio. Markowitz expressed that all the portfolios with no difference in predicted revenue and risk, are placed on efficient border and are named efficient portfolio (Markowitz, 1959). He believed that two principals of decrease in risk while the revenue is steady and vise versa,

the revenue increase while the variance is steady, could lead to some effective decisions for investors. After introducing the Markowitz model, different theories and models were explained on evaluating the capital assets. Among the most effective and well-known ones, was the capital assets pricing model introduced by William Sharp. According to this model, the systematic risk (Beta coefficient) is the expected revenue indicator and there is some direct linear relation between risk and revenue. In investment two kinds of risk could be considered: 1- the risks which are eliminated by creating variety in investment (nonsystematic risk); 2- the risks which in spite of creating variety in investment are still remain fixed and this risk is namely called investment Beta (systematic risk) and is considered as an important factor in view of investors. The CAPM model indicates that the stock revenue covariance with the market portfolio extra revenue, is enough to detect the stock extra revenue (in some risk-less rate). According to CAPM systematic risk is the indicator of expected revenue. Many accounting and financial management researches know the financial variables and accounting information efficiency in detecting and predicting the capital assets and investigate the systematic risk constancy or compare the various pricing models for capital assets. Regarding the role and importance of risk and revenue in making investment decisions, and since the efficiency is considered as one of the most important aims in organizations, so improving the efficiency is one of the main responsibilities of managers in organizations and in other words the organization improvement and survival depends on efficiency. This research is aiming to find the answer for this question that is there any significant relation between efficiency (work and capital) and systematic risk?

Aims

Total aim: To discuss the relation between efficiency and systematic risk indicators based on the capital assets pricing model.

Specific aims: One special aim in this research is to help the investors, including legal and real investors, stock staff and all players in capital market in order to introduce the proper measure to detect the stock risk and revenue amount in companies accepted in Tehran stock market. Detecting the relation between systematic risk and revenue indicators, would be so important and problem solving in making decisions in investment. This research tries to discuss and detect the relation between efficiency indicators (work and capital) and systematic risk based on the capital assets pricing model. This research also investigates that whether the information on efficiency indicators could be known as some standard to investigate the amount of systematic risk in Tehran stock exchange companies? According to capital assets pricing model, the Beta coefficient is the only expected determinant, therefore, proving and identifying the relation between efficiency indicators scales (work force and capital) and systematic risk, could help the investors and stock actives to estimate the amount of stock risk and revenue in companies, using the efficiency indicators. And at last, investigating the issue that whether the information provided based on companies' historical final price could be some standard to discuss and detect the relation between efficiency indicator and systematic risk according to the capital assets pricing model.

History

Ben Mabrouk et al (2007) studied the function of CAPM in different time scales in French market. These researchers concluded that there is some strong relation between stock market profits and their Beta in time scales and this would work in short-time horizontal predictions. Pirjenta and Puttonen (2007) studied the Europe markets. These researchers concluded that for the stocks with higher ROIC ratios, it is more possible to move from value toward growth situation and therefore more revenue and economic value could be provided. In their research they considered the growth, sale, functional profit margin, profit margin, net value revenue (ROE) and ROIC, and among these the variable ROIC had more

detective potential and stronger significance. Brown and Rowe (2007) investigated the capital efficiency measuring based on ROIC indicator in America stocks between 1000 superior companies during 1970 to 2005. these researchers concluded that the capital efficiency factor with the indicator of ROIC, is some positive estimator for stocks revenue and the trend of the companies with more efficiency would lead to some increase in growth and value portfolios which is the source of gaining extra revenue, such that the width of Fama and French model becomes extended and significant. Cao et al (2007) studied the capital efficiency measurement based on ROIC indicator and value growth. These researchers found that the high growth level in the company leads some increase in value growth in that company. In other words, the capital efficiency increase (ROIC) is prior to the increase in company growth in making value for the company. In their words, from the sight of new replaced theory the companies with low growth rate but high ROIC have high stocks revenue. Black et al (1972) studied all the general stocks of companies accepted in New York stocks for 40 years. These researchers concluded that there is no concurrence between risk and stocks revenue. In other words, the companies with low stocks revenue have high risk level. The results showed that the research model is not enough to explain the stocks risk and revenue. Blume (1971) investigated the systematic risk stability in New York stocks during the January 1926 to 1968. this researcher found that there is no stability between general stocks coefficient (Beta) in New York, individually; but increasing the number of stocks in stability portfolio would increase the (Beta) coefficient. In other words, the portfolio (Beta) coefficient is more stable than the individual stocks (Beta) coefficient.

2. Hypothesis

Regarding the fact that the efficiency indicators (work efficiency according the number of personnel and the costs and capital efficiency according to the fixed assets and the total assets) are defined as the independent variable and the systematic risk (Beta) as the dependant variable in this research, so one main and four secondary hypotheses are suggested as follows. Also, the effect of research variables with the wholesale price indicator and services and the moderated inflation rate, the year 2004 is called the base year and the indicator number is supposed in 1000. Some other situation is also supposed that has no moderation on research variables.

Main hypothesis

"There is some significant relation between efficiency indicators and systematic risk based on the capital assets pricing model."

Secondary hypotheses

Hypothesis 1: There is some significant relation between work efficiency according to the number of personnel and systematic risk based on the capital assets pricing model."

Hypothesis 2: There is some significant relation between work efficiency indicators according to the personnel costs and systematic risk based on the capital assets pricing model.

Hypothesis 3: There is some significant relation between capital efficiency according to fixed assets, and systematic risk based on the capital assets pricing model.

Hypothesis 4: There is some significant relation between capital efficiency according to total assets, and systematic risk based on the capital assets pricing model.

3. Methodology

The present research is descriptive- surveying and is classified as applied research. For the literature part of the issue, the library method and for testing the hypotheses the financial bills and exchanging soft wars (the novel and speculative grant) and for analyzing data the Pierson correlation coefficient and the regression analyze were used, regarding the software Excel and SPSS. The research statistical society includes all companies accepted in Tehran stocks. The sample volume was detected considering four following standards and by using the sampling method (systematic elimination based on screening style), and 102 companies were selected as our samples.

1. There should be the data of 6 years investigated financial bills (2004 to 2009).
2. Every financial year should be ended up at february.
3. The transaction intervals should not exceeded from 6 months for the investigated companies.
4. The investigated companies should not be a part of financial mediators or investors.

The terms functional and conceptual definitions:

The work efficiency: The amount of organization possessed asset per each Rial paid to the work force or to each person in the work force.

The capital efficiency: The amount of organization possessed per each Rial of asset implemented.

$$L.P.P. = \frac{V.A}{N.P} \quad L.E.P = \frac{V.A}{E.P} \quad C.F.A.P = \frac{V.A}{T.F.A} \quad C.T.A.P = \frac{V.A}{T.A}$$

L.P.P = the work efficiency according to the number of personnel

L.E.P = the work efficiency according to the personnel costs

C.F.A.P = the capital efficiency according to the fixed assets

C.T.A.P = the capital efficiency according to the total sum of the assets

N.P = the number of personnel

P.E = the personnel costs

T.F.A = the fixed assets sum

A.T = total sum of the assets

V.P = value-added

The systematic risk indicator (β): The systematic risk (nondeductible) is some scale for assets variation and/ or some investment basket comparing with the market; the systematic risk (nondeductible) is that part of the assets risk which would not be deducted by forming the portfolio and for this risk the investors are tended to risk-taking: $\beta = \frac{Cov(R_i, R_m)}{VAR(R_m)}$

R_i shows the company revenue and R_m indicates the market revenue.

4. Results

Table 1-1. Data and Calculations

Confirmed Hypothesis	Sig	value-P	R ²	R	N	Std. Error	Relation type	Hypothesis	adjustment ion Type
H ₀	0.095	0.166	0.019	0.138	102	0.05	linear	1	Commodity and Services Index
H ₀	0.095	0.296	0.011	0.105	102	0.05	linear	2	
H ₀	0.095	0.839	0.0004	-0/020	102	0.05	linear	3	
H ₀	0.095	0.955	0.00003	-0.006	102	0.05	linear	4	
H ₀	0.095	0.154	0.020	0.142	102	0.05	linear	1	Without Adjustment
H ₀	0.095	0.324	0.009	0.099	102	0.05	linear	2	
H ₀	0.095	0.180	0.0017	-0.134	102	0.05	linear	3	
H ₀	0.095	0.052	0.037	-0.193	102	0.05	linear	4	
H ₀	0.095	0.092	0.0176	0.133	102	0.05	linear	1	Adjustment With Inflation
H ₀	0.095	0.149	0.0108	0.104	102	0.05	linear	2	
H ₀	0.095	0.327	0.002	-0.045	102	0.05	linear	3	
H ₀	0.095	0.188	0.007	-0.089	102	0.05	linear	4	

The hypothesis results

1. Hypothesis 1: There is some significant relation between the work efficiency indicators according the number of personnel and systematic risk based on the capital assets pricing model.

2. Hypothesis 2: There is some significant relation between work efficiency indicators according to the personnel costs and systematic risk based on the capital assets pricing model.

The results of hypothesis 2 investigated by three standards mentioned in research: the services and items wholesaling total price indicator; without any mediation and the inflation rate illustrate there is no significant relation with 95% confident, regarding the significance level of 0/296 and 0/324 and 0/149 and the (%5) acceptable error level. In other words, the assumption H₀ is accepted based on the lack of some significant relation.

3. Hypothesis 3: There is some significant relation between capital efficiency according to the fixed assets and systematic risk based on capital assets pricing model.

The results of investigating hypothesis 3 by three standards mentioned in research: services and items wholesaling price indicator; without any mediation and inflation rate illustrates there is no significant relation with 95% confident, regarding the significant level of 0/839 and 0/180 and 0/327 and the (%5) accepted error level. In other words, the assumption H_0 is accepted based on the lack of some significant relation.

4. Hypothesis 4: there is some significant relation between capital efficiency indicators according to the total assets and systematic risk based on the capital assets pricing model.

The results of investigating hypothesis 4 by three standards mentioned in research: services and items wholesaling price indicator; without any mediation and inflation rate illustrates there is no significant relation with 95% confident, regarding the significant level of 0/955 and 0/052 and 0/188 and the (%5) accepted error level. In other words, the assumption H_0 is accepted based on the lack of some significant relation.

5. Conclusion and discussion

In order to maximize the considered desirability, the investors use all information related to detecting and pricing the stocks. One of the most important factors affecting on activities improvement in companies is providing the necessary payment for improvement and the financial support provided by the company investors (present and potential) is one of the most significant sources of financial support which would come true with suggesting all data on companies (stocks) including Beta factor (systematic risk). The risk measuring is the base for many financial decision makings. The researchers and investigators of capital market are always trying to find some better and newer ways to calculate the risks related to stocks investments in stock market. The model CAPM is one method that has been considered by many researchers of capital market. This model indicates that the stocks revenue is some function of the systematic risk amount (Beta coefficient). The aim of this research, is to discuss the relation between efficiency indicators and systematic risk based on capital assets pricing model and regarding the aim of that research, the investigators have been seeking to find some answer for this question that: is there any significant relation between efficiency indicators and systematic risk? The results show no relation between efficiency indicators and systematic risk. So, based on what mentioned above, some considerable functional suggestions related to the topic could be presented, including:

1. According to the importance of systematic risk estimation, we could investigate the relation of other financial and accounting indicators and variables (like: functional and financial levers, function indicators ...) and the kind of systematic risk.
2. The importance and efficiency of companies' accounting data in determining the amount of stocks revenue and risk makes it necessary for the companies accepted in stock market to provide better

information and make the financial data of various periods accessible on internet sites. These data could help in predicting the stocks revenue and risk.

3. Studying the role of capital assets pricing model in capital budgeting in the future researches could be considered.

4. To repeat the present research as a case study and/ or for the active companies in some certain industry and to compare the results with the results of this research.

5. The present research could be performed as comparative between stock market of two or more countries and the results could be compared with the results of this research.

6. At the future research, it would be better to perform it in longer periods for example 10 years, to provide more confident for the results.

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