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INVESTIGATING THE RELATIONSHIP BETWEEN SPECIFICATIONS OF STOCK CORPORATES AND THEIR PERFORMANCE: THE FALL OF THE TEHRAN STOCK EXCHANGE

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ABSTRACT:

    This research studies the effect of market fall on stock performance, which has different characteristics and in this regard, specifically, measures two basic points. The first point is the analysis of the characteristics effect based on the stock and corporate in the event of a stock market fall in Iran. The second point is the recognition of specific features of the corporate, which is most affected by the fall of the stock market. In this study we used the Wang et al model with the definition of Patel and Sareckar (3) of the stock market fall. This research analyzes the falls that occurred in the Iranian stock market in 2004, 2005 and 2008, and used all stocks of corporates that have been listed at least five years before the date of the fall, with the exception of financial and governmental corporates. The data used in this study are: daily and monthly prices, trading volume and financial statements of the end of the year before the stock market fall. According to the results, corporates should consider factors such as reducing the level of penetration power, increasing cash, and increasing the profitability of the corporate. From the perspective of investors, these policies can reduce the risk of bankruptcy, as a result, if the stock market falls occurred, the corporate stock do not suffer harmful.

KEYWORDS: Stock market fall, Stock returns, Recovery of stock value

INTRODUCTION:

    Economic development and capital accumulation are interconnected, economic development requires capital accumulation, and most economic tendencies and schools emphasize that capital congestion is the prime condition for economic development. Among the financial markets that are responsible for regulating the resources flow in proportion to the level of economic activity, the capital market plays an important role in increasing the volume of investments with the task of providing long-term financial resources. In the majority of countries, the stock exchange is the core of the capital market, and annually sums large amounts of wandering capital into productive and active sectors of the community.

On the other hand, stock returns are one of the most important variables in which changes lead to a change in the wealth of investors. Due to the expansion of the capital market, identifying the factors affecting the stock returns is of great importance, and researchers have always been looking for variables that can be used to explain the stock return behavior. In this regard, extensive research has been carried out on the behavior of the ordinary stock returns, and the result of these is the presentation of variables such as market risk, corporate size, the ratio of book value to stock market value and various financial ratios in the one-variate and multivariate models have been used to describe stock returns.

Many researches have been conducted on the crisis factors, but few have investigated the effects of the crisis on stock performance. One of these studies, Miajima and Yafe (1), indicates that the stocks most affected by the banking crisis in Japan, they have low capital, high penetration power, low technology, low credit rating, and low book and market value. have been. Wang et al. (2) also found that market and stock characteristics could determine stock returns over the fall course of stock market in the United States. Most of those studies continue to focus on developed markets than emerging markets. Nonetheless, according to the Vahioudi and Sanni, emerging markets such as Indonesia are most affected by global crises, such as the crisis of low credit United States housing loans in 2008 and the economic crisis in Europe in 2011.

A look at the Tehran Stock Exchange indexes shows that the market has experienced several falls over the past few years, and yet the study that has focused specifically on the fall of the market has not been sufficiently addressed. On the other hand, market activists are active on the exchange, with the motive of profitability, and it is vital to identify the variables that are effective on stock returns, and what matters to the mind is this question: in such a market that runs fall process, based on what information should i make a decision? How does the fall of the market affect the stock returns of the corporates? Is the influence of companies different from the fall of the market?

LITERATURE REVIEW

The fall of the stock market is a sharp decline in stock returns, which is affected by the majority of stocks in the stock market, which reduces the wealth of investors. Technically, Meishkin and White (3) described the fall of the stock market as a 20% fall in a stock price index over a period (about a day to one year). With this method, Meishkin and White found that there were 15 stock market falles in the United States from 1992 to 2000.

Patel and Sareckar (3) have provided another definition of stock market fall. They describe the fall as a significant reduction in the stock price associated with the maximum historical price during the observed period, such as one or two years. They also categorize the stock market crisis process in four stages: the beginning of crisis, the beginning of fall, the day of fall, and recovery. For this purpose, the CMAX threshold value indicator is used. The beginning of fall occurs at a rate of 1.5 standard deviations below the CMAX average for advanced countries and Asia, and two standard deviations below the average for Latin American countries. This fall definition of the stock market is frequently used by CMAX marketers to be lower than the average in the Forbes Magazine, as well as in the BARRA studies and Wall Street MSCI Stock Reviews, as well as in various publications, such as: Villa 2000, Illing and Leo (4); Das et al. (5); Codor and Jix (6); ZuaOvey et al (7); and Mioclou et al. (8).

The effect of a stock market fall on the economic stability will depend on the country conditions. If the financial condition is strong before the fall of the stock market, it will not have much effect. In the past two decades, two major crises have been identified: the financial crisis in East Asia and the crisis of low-credit housing loans in the United States in 2008. According to vahioudi and Sanni, although the resources of the crisis are numerous, but the effects of the crisis are clearly seen in macroeconomic indicators.

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The fall period of the market: in month where the industry index dropped by more than 4%, or months in which the industry index dropped by more than 2% per month and at least three consecutive months.

Stock return (Rit): in this research, the stock return is the dependent variable. Stock returns during the fall of the market, which are calculated with regard to the price changes during the period and the effects of increased capital, profit of shareholders and cash flows are calculated with using the following equation.

(1)

$$R_{i,t} = \frac{(\text{The end price of the course} - \text{The beginning price of the course}) + \text{Cash} + \text{Priority} + \text{Bonusshare}}{(\text{The beginning price of the course} + 1000) \times \text{Percentage of capital increase from shareholders claims and cash flows} \times 100}$$

Market risk (β): Share BETA in the CAPM model calculated from the following equation and is the independent variable. (2)

$$\beta = \frac{\text{Covariance of market and stock returns}}{\text{Market returns variance}}$$

Size of the corporate (SIZE): The size of the corporate is independent and it is the natural logarithm of the market value of the corporate.

Book value at market stock value (BVMV): This independent variable is obtained by division of the book value of equity to the stock market value.

The debt to equity: (TDE): This independent variable is obtained by dividing the total amount of debt into equity.

Current debt relative to total debt (CDTD): The independent CDTD variable is obtained from division the total current debt to the total debt.

Current Ratio (CR): An independent variable is obtained by division the total current assets to the total current debts.

Profitability (BEP): It is an independent variable, which is the ratio of profit before interest and taxes to total assets.

Cash flows per share (CFPS): It is independent variable and are obtained by the net cash flow of operating to the number of corporates shares.

METHODOLOGY

The information used to analyze variables is the daily or monthly stock prices, daily trading volume, and financial statements of the end of the year before the stock market fall. Data or data flows are obtained from stock markets, codalls, and corporates.

According to Patel and Sareckar, we will identify the stock market fall through seven steps. In the first step, we calculate the CMAX ratio using the daily stock price data from 2001 to 2011. The observed time has taken place in one year (9). The CMAX ratio is calculated as follows: (3)

$$CMAX_t = \frac{P_t}{max(p_1, \ldots, p_{t-260})}$$

$Max(p_1, \ldots, p_{t-260})$ is the maximum value of the stock price index (Pt) in one year.

We then set the start of the fall, which is when the cmax ratio is two standard deviations below the historical average of CMAX. (4)

$$CMAX_{crash} = CMAX_t < -1\sigma\overline{CMAX}$$

After determining the start of the fall, we set the start of the crisis when the CMAX ratio reaches the maximum value before the start of the fall, and we determine the recovery day ⟦(CMAX⟧ _recovery) which is when the CMAX ratio after the beginning of the crisis reaches to maximum value. The fall of the stock market is when the CMAX ratio reaches the lowest value between the beginning of the falling period and the day of recovery.   (5)

$$CMAX_{trough} = min(MAX_{CRASH}, ..., CMAX_{recovery})$$

The esamples used in this research are all private corporates listed on the stock exchange, except for financial and facilities corporates. We have eliminated the corporates the facilities corporates due to financial corporate are influenced by their own financial decisions, and their financial ratios are not comparable to industrial ones.

Table(1). Specifications of fall and number counts per event

number of samples	Most relevant Financial Statements	Percentage drop in industry index	The fall period	
			year	Months
70	681.	4.6	81	7
85	682.	5.7	82	6
94	1282.	4.2	83	2
73	83.12	9.7	83	12-14
89	84.6	19.6	84	8-4
70	86.6	4.2	86	8
92	87.6	34.9	87	10-5

In this research, related variables include daily stock returns (one-day event window) at the time of the stock market fall that its formula is $RET_{it} = ([P_{i.t} - P_{i.t-1}]/P_{I.t-1})$. BETA is used to measure the systematic risk of a stock. This risk is measured based on stock return fluctuations relative to market returns. In order to avoid diversion in non-simultaneous transactions, there are several ways to correct the deviation proposed by Beloum (10), Scholes and Williams (11), Damson (12), Fowler and Roreck (13). The Scholes and Williams deviation correction method is used here based on the single-index model. BETA of the Scholes and Williams (1997) are as follows   :   (6)

$$BETA_{i.t} = \frac{b_{i.t}^- + b_{i1t} + b_{i1t}^+}{1 + 2p_{m,t}}$$

Delay BETA $= b_{i.t}^-$
BETA t $= b_{i1t}$
Better BETA $= b_{i1t}^+$
Market correction $= p_{m,t}$

Corporate size is calculated by logarithm of market capital (SIZE). Market value to book value (MVBV) is the ratio of investment in the corporate market to book value. One of the stock cash proxies (14) is non-cash of stocks. According to the Amihoud, ILLIQ is obtained from the following formula: (8)

$$ILLIQ_{i,t} = \frac{\sum_{t=1}^{T} \frac{|RET_{i,t}|}{volume_{i,t}} * 10/000/000}{T}$$

Volume: Trading volume in the national currency (Rials),. T is the time along one year before the stock market fall.

SDLR is calculated from the standard deviation of delay returns more than a year before the stock market fall.

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The penetration power of corporate is calculated with TDTA, which is the ratio of total debt to total assets. The cash level of the corporate is the ratio of cash assets (LAR), which is the ratio of cash and short-term investment to total assets. CFPS (cash flow per share) is calculated by subtracting the cash flow from the preferred stock profit, and then divided by the preferred stock.

The profitability of the corporate is calculated using the power of primary income (BEP), which is calculated as the EBIT (Profit before interest and tax) ratio of total assets.

Descriptive statistics and bivariate correlation of all variables are listed in Table 2. According to Table 2, the most important (absolute) relation between explanatory variables is shown between MVBV and SIZE (2007) with a correlation coefficient of 0.632.

According to Gaujrat, if the absolute correlation between variables is 2.2 or greater (15), two or more independent variables will have multiple problems. Therefore, this study concludes that there is no multiple problem among variables.

MODEL SPECIFICATIONS

In order to observe the factors affecting the stock return during the stock market fall, we use the following model: (9)

$$RET_{i,t} = \beta_0 + \beta_1 BETA_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 MVBV_{i,t} + \beta_4 ILLIQ_{i,t} + \beta_5 TDTA_{i,t} + \beta_6 LAR_{i,t} + \beta_7 CFPS_{i,t} + \beta_8 BEP_{i,t} + \beta_9 SDLR_{i,t} + \beta_{10} LR1_{i,t} + \beta_{11} LR2_{i,t} + \beta_{12} LR3_{i,t} + \beta_{13} D_1 + \varepsilon_{i,t}$$

In the above model, dummy variables have been used for economic sectors based on separate regression results that have already been evaluated. Using the results of the evaluation of the parameters, we conclude that the dummy variable D6 for the mining, agriculture, transport and infrastructure sectors represents significant results at a significant > 1.00% level in all events of the stock market fall.

We used the second model to conduct industry sector analysis thoroughly. This model is suitable for comparing performance among economic sectors. The D6 economic sector is characterized by this interception model. Also, this model is used to identify variables among economic sectors, thus, it can identify any variable that describes all the characteristics of the related economic sectors.   (10)

$$RET_{i,t} = \beta_0 + \beta_1 BETA_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 MVBV_{i,t} + \beta_4 ILLIQ_{i,t} + \beta_5 TDTA_{i,t} + \beta_6 LAR_{i,t} + \beta_7 CFPS_{i,t} + \beta_8 BEP_{i,t} + \beta_9 SDLR_{i,t} + \beta_{10} LR1_{i,t} + \beta_{11} LR2_{i,t} + \beta_{12} LR3_{i,t} + \beta_{13} D_{1i} + \beta_{14} D_{2i} + \beta_{15} D_{3i} + \beta_{16} D_{4i} + \beta_{17} D_{5i} + \varepsilon_{i,t}$$

D1: Service and commerce corporates;
D2: Various industrial corporates;
D3: Chemical industry corporates;
D4: Consumer goods corporates;
D5: Real estate corporates;
D6: Mining corporates.

ANALYSIS

Depending on the duration of the fall enent, the fall of the stock market is classified into two categories: slow and rapid falls. The slow fall occurred in 2004, when the market index required more than one year to reach the lowest value, which was 420 days. But the falls in 2005 and 2008, with consideration the reducing prices to the lowest value, they rapid falls, which were less than one year (114 and 207 days, respectively).

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Table (2). Descriptive statistics

History of the crisis	period of time	The percentage drop in the price index	Annual recovery before the crisis		Yearly recovery after the crisis	
	Number of days of crisis		one year	Three years	one year	Three years
1383	420	%9.7	%18.26	%69.14	%34.16	%13.42
1384	240	%19.6	%34.61	%44.23	%25.06	%9.44
1387	300	%34.9	%55.03	%19.09	%41.98	%27.31

BETA AND SYSTEMATIC RISK

Table 3 indicates that statistics F and squared R at 1.00% level are statistically significant in all crises, thus the model is appropriate and all independent variables can significantly describe the stock returns diversity (RET).

Subsequently, the adjusted squared R for the 2005 crisis were 90% (model 1), 94% (model 2), and 99% (model 3), while in the 2004 crisis were 78.1% (model 1), 84.9% (model 2), and 71.9% (model 3), then in the 2008 crisis, 91.5% (model 1), 83.6% (model 2), and 84.9% (model 3).

Table 3 shows that most independent variables are affected by stock returns during the fall of the stock market, except 2008: MVBV, 2005 and 2008: ILLIQ, 2008: CFPS, 2005: 1LR, 2008: BEP, 2004 and 2005: LR2.

BETA at 1.00% level is statistically significant in all crises with a negative sign. That means that higher BETA stocks will be more harmful in the stock marcket fall. Higher BETA means more systematic risk for investors. Therefore, with regard to risk-taking behavior, investors refuse to fall flow stocks. These findings are in line with the classical theory of asset pricing model (16) (CAPM) which indicates a positive relationship between BETA as a risk proxy and returns. Also, these findings support the theory of "conditional relationship" between BETA and returns. (Patingil et al., 17).

The theory states that if market premium and risk are positive, the relationship between BETA and returns will be positive. Conversely, if market premium and risk are negative, the relationship between BETA and returns will be negative.

THE UNIQUE STOCK FACTORS

The special stock variables are SIZE, MVBV, SDLR and ILLIQ.Empirically, Xu and Malkiel(18). specific risk is positively related to stock returns and, therefore used as decisive returns at times of fall, coupled with market risk factors.

SIZE at the %1 level has been meaningful with a negative sign in all falls. This means that large corporations tend to be more harmful in the fall of the stock market. According to Luo and McKinley (19), large corporations are always gaining more efficiency, as they can react to information more quickly. Thus, in the course of the large corporatesfall, they react to the negative information more quickly, thus losing more value than small corporates. Information reaction theory of Wang et al., also argues that larger corporates recover faster than those with small corporates with higher returns three days after the fall.

In the fall of 2004 and 2005, MVBV was only significant at 10% level with a positive sign, and it was not significant in the fall of 2008. These findings suggest that MVBV is not an important factor in the other two variables of the CAPM, namely BETA and SIZE. Wang et al. also found that MVBV could not determine stock returns in most of the fall events in the United States. The positive coefficient of MVBV in the fall of 2004 and 2005 shows that stocks with low MVBV will be more harmful. These findings are based on thethree-factors CAPM theory (Fama and French), which indicates that stocks with low MVBV havemore risk. Miajima and Yafe also identified that corporates with a lower MVBV suffered more harmful in the Japanese banking crisis.

ILLIQ was meaningful at the 1.00% level of in the fall of 2004, but was not significant in the fall of 2005 and 2008. In all falls, ILLIQ has a positive sign, meaning that the lower ILLIQ (more cash) loses more

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value. These findings contradict the theory of flight to quality and cash. This theory suggests that during the uncertain period, investors tend to shift their assets from risk to safety, while the theory flight to quality and cashis a time that investors prefer to invest in cash assets instead of non-cash. This phenomenon often coexists which have more secure cash assets. This theory is supported by Amihoud, who found a negative relationship between cash and stock returns in the fall of 1987 in the United States. Findings differences in this study are relatively due to the difference in observation time. Amihoud et al. used a few day observations in this study, followed by Wang et al.who used the one-day observation, thus stock prices declined that it were more cash.

SDLR was significant at 1.00% level with a negative sign in the fall of 2005 and 2008. According to these stocks, which have higher fluctuation, they have seen more harmful in the fall of the stock market. Because high fluctuations in stock returns are more risky. Our findings are adoptable with Wang et al.

THE REVERSAL AND IMPACTEFFECTS

The regression table indicate that LR1 has a positive coefficient of 1.00% level in the falls of 2004 and 2008. Therfore, the short-lived (one week) impact effect have been existed before the fall in the the stock market, and the winning shares (losers) a week before the fallhad better performance in the fall of stock market.

The reverse and impact effects are related to the market response in the direction of new information management. Impact effects were negative due to market reaction, while reverse effects were caused by extreme market reactions. Specifically, stock market falls are divided into two categories: the slow fall (2004) and the rapid fall of 2005 and 2008. The difference in characteristics the fall is in fact the difference between the sign of the coefficient between LR2 and LR3 in all falls.

In the fall of 2008, the LR2 has a negative sign, thus suggesting a medium-term (three months) reversal effect in that fall. Reverses the effects of the extreme reaction of investors against the fall of 2008, which occurred quickly. Surprisingly, the LR3 have a positive sign in the fall of 2005 and 2008. As a result, in these falls, which occurred very quickly, there are long-term (three years) impact effect.

In the fall of 2004, the LR2 was a positive sign, meaning that the medium-term (three months) impact effect occurred in that fall. Impact effects explain that there was no extreme reaction in the market since the fall has slowly gone. Surprisingly, 3 LR had a negative sign. So, in the slow falls, there will be long-term reversal effect. As a result, a rapid fall will have medium-term reversal effect and long-term impact effect. On the contrary, a slow fall lead to medium-term impact effect and long-term reversal effect.

THE FACTORS RELATED TO CORPORATE

In this research, the impact of the factors on the stock return in the stock market fall are studied, which are LAR, TDTA, BEP and CFPS. Table 4 indicates that TDTA at 1.00% level was meaningful in all market falls. Therefore, the stock of a corporate with a higher penetration power would be more harmful. The high penetration power implies the corporate inability in profitability and loan repayment, which makes it bankrupt. In the fall of the stock market, the risk of bankruptcy becomes more noticeable and ignored by investors. As a result,corporates with more penetration power experience a decline in stock prices. These findings are similar to Miajima and Yafe, and Wang et al.

LAR at 1.00% level was meaningful in all market falls. Directly, the LAR has a positive sign, since assets with high cash have a lower risk of bankruptcy. The study also states that in the fall of 2005 and 2008, LAR had a positive sign. This means that the stock of corporates with less cash will be more harmful. Because these corporates have a higher risk of bankruptcy. However, in the fall of 2004, the LAR has a negative sign, which means corporateswith high will be more harmful.

Wang et al. have come to this conclusion in the fall of the United States stock market. This connection can be described with the hypothesis of the surplus fund. According to Janson,Gadarowskiet al. the high cash is bad for investors because show the inability of the corporate management to optimize its

assets for long-term profitability. In addition, Hiljeset et al., Acharia, Davidenko and Striboula say that corporates with high cash face long-term bankruptcy risk.

CFPS at the 1.00% level was significant in the fall of 2004 and 2005. Our findings are adoptable with Carpenter,Guarillia, and Wang et al. However, the findings of this study suggest that CFPS has a different coefficient for each fall. In the fall of 2005, CFPS has a positive sign, and in the fall of 2004 was negative.

BEP at 1.00% level was significant and positive in the fall of 2004 and 2008. This means that corporateswith less profitability, experience high harmful in fall.Profitability is proxy of the risk of bankruptcy. More profitable corporates reduce the risk of bankruptcy.

CONCLUSION AND RECOMMENDATIONS

The characteristics of the corporate and the stock have a significant effect on stock return in the fall of the stock market in the years 2004, 2005 and 2008. Market Value (MVBV) and Stock Cash (ILLIQ) are considered to be inappropriate for determining stock returns in stock market falls. The negligible coefficients of these two variables are described in most stock market falls. Also, variables of the medium-term of delay return(LR2) and cash flow of the corporate for each share (CFPS) can not always describe the fall in stock prices in the fall of the stock market.

The stocks with more risk(BETA), more investment in the market (SIZE), fluctuation of more returns a year before the fall (SDRR) lose more value in a stock market fall. The stocks of corporates with high penetration power (TDTA), lower cash (LAR), and lower profitability (BEP) also lose more value in a stock market fall. The effects of stock returns on the stock market fall are short-term (one week, LR1) long-term (three years, LR3) and impact. If the risk of the stock market fall in emerging markets such as Iran increase, investors will prevent the purchase of some stocks which include stocks with: high systemic risk, large investments in the market, high returns fluctuations, and stocks of high penetration powercorporates, cash, and low profitability. In order to avoid a lack of capital, investors should consider the composition of the stockthat has a positive cumulative return of short-term (one week) and long-term (three years) because it is expected that shares will have aimpact effect in the stock market fall. Corporates need to consider the strategy of financial policies, such as reducing the level of penetration, increasing cash and corporate profitability. From the perspective of investors, these policies can reduce the risk of bankruptcy. As a result, if the fall of the stock market occurred, the corporate stock do not suffer high harmful.

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