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EXAMINING THE EFFECT OF FINANCIAL LIBERALIZATION ON THE PERFORMANCE OF TEHRAN STOCK MARKET

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ABSTRACT: *In this article, the effect of financial liberalization on the performance of information in Tehran Stock Exchange for the period 1997 to 2014 is examined. In order to determine the effect of financial liberalization on the performance of information, the method of treatment effects by Maddala (1983) was established. An optimization algorithm called a Kalman filter is used in estimation model, because it is impossible using conventional estimation techniques. To estimate the model, generalized least squares method (OLS) was used. The experimental strategy used in this study considers the main feature of emerging markets i.e. fragility of the financial system and different strategies used in previous studies. Here, only the direct effect between financial liberalization and performance evaluation of the information is examined, but there is an indirect effect of the financial crisis to examine the effect of liberalization. Research findings show that firstly although the information efficiency is not constant over time, but the path is not increased. Second, financial liberalization impact on recent currency crisis will not affect the performance information. Third, the financial crisis impact on information efficiency are variable. As a result, the impact of liberalization on information efficiency is approved.*

KEYWORDS: Financial Liberalization, Information Efficiency, Financial Crises, Kalman Filter Model, GARCH Model

JEL classification: G01, G14, G15, G18, C21

INTRODUCTION

Developing countries have benefited of increased performance information on the benefits of financial liberalization, therefore, the country has good investment opportunities for domestic and foreign investors. However, it is advisable to verify the findings of studies done on the impact of financial liberalization on market fluctuations. Because financial decisions based on financial theory that the expected profit and risk associated with the assets will depend portfolio. (Nguyen, 2010, Rockberg, 1995)

Study the direct impact of financial liberalization on information efficiency in emerging markets may not effectively reflect the reality of its power, because the release of information affects performance. Other factors may also affect performance and are also affected by the liberalization process.

The financial crisis in many emerging economies during the past few decades has led to financial economists are a result of the financial crisis and the performance of the emerging equity markets. However, few studies is conducted on the impact of financial crisis on the performance of information on these markets. (Ben Rejeb and Boughrara, 2013)

Increased efficiency depends on several internal features including growth rate, degree of liquidity and investment quality. This characteristic in turn are a function of the evolution of the process of financial liberalization. Therefore it is recommended that developing countries take advantage of financial liberalization, because can not access information quickly to the expected levels of performance and eventually will face a sharp decline in investment. (Abiad, 2013)

Much research has been done on the effectiveness of the Tehran Stock Exchange that further investigation found evidence of the inefficiency of the Tehran Stock Exchange. It should be noted that although some studies has been approved poor performance in the Stock Exchange. (Such as the Salimifar and shirzoor, 2010) But reason having random appearance (poor performance) in stocks can be found in the series to follow a non-linear process.

So in these circumstances, these indicators are inefficient and so can not test this feature and a random line is made between a distinctions. (Moshiri and morovvat, 2005) More case studies with complex and nonlinear methods to investigate the Tehran Stock Exchange have shown market efficiency and also have acknowledged the inefficiency of the market Tehran Stock Exchange. Stock market efficiency hypothesis, affirms the predictability of stock returns series using non-linear models.

The experimental strategy used in this study considers the main feature of emerging markets, i.e. fragility of the financial system and the different strategies used in previous studies. In fact, the only direct effect between financial liberalization and performance evaluation of the information, but rather there is an indirect effect of the financial crisis also examines the impact of liberalization. This experimental strategy to address the performance standard includes two variable regression showed that one of the other that financial liberalization and financial crises.

In this study, the financial crisis depends on several variables including financial liberalization. According to this strategy, the impact of financial liberalization on the performance contains two effects: In the absence of a direct impact on the efficiency of the indirect effect of the crisis and the financial crisis in cases where the effect of the crisis on the performance is considered. (Ben Rejeb and Boughrara, 2013)

"Therapeutic effect" means random binary variable (0-1) on an outcome variable with scientific or political significance. The term "therapeutic effect" is the medical literature related to the work accident "treatments" binary (yes or no) stems from the influence of the effects of an experimental drug or a new surgical procedure. But this term now has a much more general scope.

Hackman's first model was introduced to the realm of modern literature. Madala first calculate the maximum likelihood estimate, single and two-stage version implemented this model in their study, and then examined some of the practical applications of this method. He then switching model as a model described predetermined limit. (Heckman, 1976, Maddala, 1983)

The purpose of this article was to investigate the effect of financial liberalization on the information efficiency of the stock market in Tehran. In this study, the weak performance is discussed. Unlike studies which use traditional methods, we focused rather on the evolution of performance over time. The main idea behind this approach is based on the idea that intuitive rapid maturation of emerging markets are looking to release equity markets,

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including major changes in market structure and increasing the complexity of applicants markets and the availability of more information. These changes are likely to change over time in the level of market efficiency.

This feature can only be considered with a dynamic performance modeling. To this end, we have proposed variable method by Zaloska - Mitora and Hall and developed by Fontaine and Nguyen, where stock returns autocorrelation coefficient is allowed to change depending on market conditions. As a result of the weak and variable remnants can run the model and examine some of the dynamic equations. (Zalewska-Mitura and Hall, 1999 Fontaine and Nguyen, 2003)

The financial liberalization

Financial liberalization in other words is better access and lower cost to foreign direct investment and foreign aid. (Shirmard, 2013) liberalization of emerging markets stocks in the mid-1980s, these markets are more integrated in the global markets and the main markets are generally more integrated.

In order to diversify portfolio risk, increase liquidity, improve the transparency of information, and thus increase the efficiency and utilization of their experiences are trying to attract international investors. However, despite increasing integration, previous attempts to study the relationship between stock market liberalization and performance information remain inconclusive. (Ben Rejeb and Boughrara, 2013)

Financial market liberalization is an issue that most countries have attempted it, but what is different is the intensity and duration of release. Classical theory suggests that financial liberalization leads to the efficient allocation of savings, diversify investment risk, faster economic growth and reduced business cycles. There is a certain stage of liberalization in the process of liberalization in different countries and the development of economic fundamentals, structural, institutional, legal, and management depends on the countries and specific guidelines.

There are many theories about the liberalization of financial markets, suggests that this long-term policy to increase capital efficiency and reduce the volatility of stock market returns, but in the short term lead to increased volatility in the market. (Shahabi, et al., 2012)

Financial liberalization has considerable advantages for developing countries seeking to reduce the likelihood of financial crises. The advantages include positive impact on many aspects of markets in enhancing the economic growth of the developing countries. (Ben Rejeb and Boughrara, 2013)

Financial market liberalization can be associated with the development of the financial system. Economists believe that international financial markets more efficient and more developed than the domestic markets, and financial liberalization led to the development of financial markets and economic growth.

On the other hand, some economists argue that due to information asymmetry (between domestic and foreign financial market) liberalization of financial markets can be costly. So some economists recommend the deregulation of financial markets.

Proponents of liberalization noted several reasons for their opinions, the most important are:

1. Control of capital and labor costs remain the capital

2. Experience has shown that many financial systems operated by the government and without relying on the open market have led to the failure.

3. Foreign capital to finance local governments, reconstruction and helped manage financial crises.

4. Financial liberalization would benefit through greater efficiency and strengthen domestic financial systems and deepening the market for economic growth and stability. (King and Levine, Levine and Luisa and Beck, Bekart and Harvey and blood Lund)

5. On the other hand foreign presence in emerging markets to improve corporate governance and transparency of the financial market and liberalization may reduce the cost of financing and the difference between domestic and foreign companies and investment is increased. On the other hand, opponents of releasing some examples of financial crises (financial crisis of 1982 in Argentina, South-East Asian crisis in 1997 or the 1990 financial crisis in Mexico) with oppose it would or at least recommend that countries carefully and gradually to liberalize their financial markets.

The information efficiency

Information is central at the performance. Information, interpretation and critical velocity have major role in the efficiency of the market. Existence of enough information in the market and quick reflection on price of securities, is closely associated with market efficiency. In an efficient market, the data that are broadcast on the market immediately affect the price. In such a market price to the intrinsic value of securities is nearby. Efficient market should contains new and sensitive information. If new information became public, the price will change according to new information.

In other words, the information efficiency is achieved that stock prices fully reflect available information, if we get information on the market performance, investors can benefit by having an unusual and unusually specific available information. Information efficiency is divided into three weak, semi-strong and strong forms. (Baumol, 1972)

Weak form of indicator random, and nobody can track using historical price, yield achieved unusual and thus will not be useful technical analysis on the market. In the semi-strong form is assumed that the prices at any moment of time is reflected in all the published accessible information, so fundamental to the profit was not unusual. In strong form, prices at any time, all public and private information and its application reflect that the exchange would be unusual not make a profit on the basis of secret information. (Talangi, 2014)

Specify the model

Weak-form efficiency means that any profit opportunities based on past changes in asset prices should not be there. Therefore, an efficient market is an unpredictable market. It is calculated by regression simplified as follows:

$$r_t = \beta_0 + \sum_{i=1}^{p} \beta_i r_{t-i} + \varepsilon_t \qquad (1)$$

Whichr_t is return on Assets and t is time and if there are performance

$\beta_i = \cdot \ , i > \cdot$

This assumption is often estimated by OLS and through the GMM has been tested and is done using appropriate statistical methods. These are not the appropriate method in emerging markets stocks, because they measure the market performance during the entire period established full performance and the total market volume is also hardly possible. Thus, the model used in this study to test the effectiveness of an evolving market, it must meet two criteria.

First, it should assess the efficiency of the market at the current time and current profitability opportunities to determine and second, this model should be able to move quickly towards market performance measure.

Kalman filter to estimate the dynamic state space model to predict the stock market

GARCH model with variable coefficients can be Kalman filter approach and in a space-state model with equations that show estimated. (Harvey, 1989, Abasinejad and Kavand, 2007, Abasinejad et al., 2009, Shahmoradi et al., 2010)

$$r_t = \beta_{0t} + \sum_{i=1}^{p} \beta_{it} r_{t-i} + \varepsilon_t \quad , \quad \varepsilon_t \sim N\left(\cdot, h_t\right) \tag{2}$$

$$h_t = \alpha_0 + \alpha_1 h_{t-1} + \alpha_2 \varepsilon_{t-1}^2 \tag{3}$$

$$\beta_{it} = \beta_{it-1} + V_{it} \quad , \quad i = \cdot, \dots p \quad , \quad V_{it} \sim N\left(\cdot, \delta_i^2\right) \tag{4}$$

Equations (2), (3), (4) are size, status conditional variance. r_t is index returns represent the logarithm of the market price at time t is calculated as $Inp_t - lnp_{t-1}$and $p_t$is the index value at time t. β_{0t}including a fix that long-term trends in the stock market measures, β_{it} Which autocorrelation coefficient (indication prediction feature) is called.

Serial correlation in the return series measures the stock market and both variable parameters over time and through a process of controlled Markov random. Under the null hypothesis of weak form market efficiency in dynamic analysis of all the estimated values β_{it}should be zero or statistically meaningless. h_tRefers to the conditional variance of the residuals of a process (1, 1) GARCH follows. ε_t And v_{it}also introduce random variables in the equations noise process and the situation is supposed to be independent of each other and have a normal distribution.

The transformation efficiency in the Tehran Stock Exchange

In order to examine the evolution of efficiency in the Tehran Stock Exchange total price index data has been used for the period from April 1997 to June 2014. The data used on a daily basis and the data base Tehran Stock Exchange has been prepared. Accordingly, the daily return of the index is calculated as $R_t = log\left(\frac{P_t}{P_{t-1}}\right)$, where P_t is the stock market index. In Table 1 statistical properties of output total price index is specified.

Table 1. Descriptive statistics of daily returns total price index

Effect test ARCH	Observation number	Elongation	Skewness	Standard deviance	Average	Mode
135.76	4083	12.95	0.407	0.005	0.000	0.000
)0.00(						

Source: research findings. The numbers in parentheses indicate the probability values.

Elongation criteria suggest that the probability distribution with respect to the normal distribution of data are elongated and ARCH shows the wider sequence of the normal distribution. Based on the test results parasitic effects, thus confirming the existence of instability over time. Based on the above information, the stock return in Tehran, positive skewness, high elongation and deviation from normal distribution has been determined that these results are consistent with findings in other emerging markets.

According to unit root test showed generalized Dickey - Fuller and Phillips-Perron price index of all stocks with single root, but daily return index is price stable the results of which are shown in the table below.

Table 2 stationary test variable total stock price index

Critical value			
Confidence level 99%	Confidence level 99%	t-test – adjusted diki fuller	Variable
-3.41	-3.96	-0.32	Price index
-3.41	-3.96	-13.68	Profit
Critical variable			
Confidence level 99%	Confidence level 99%	T test – Philips Proune	Variable
-3.41	-3.96	0.017	Price index
-3.41	-3.96	-52.81	Profit

Source: research findings.

Also, the results show degree of volatility clustering and non-linear dependence on the returns. Despite the properties of the time series returns in the stock market, high elongation and volatility clustering, GARCH model is a good approximation.

Financial liberalization on variable currency crisis, was not statistically significant, but other macroeconomic variables, including exchange rate and capital market were statistically significant, as a result of the financial crisis to avoid using a dummy variable and variable directly derived from the estimates we used before. Equation (4-2) is estimated using the ordinary least squares method. In Table (3) shown the relationship between financial liberalization and other macroeconomic variables with the performance.

Table (3) the relationship between financial liberalization and other performance variables.

Probability	Statistic t	Standard deviance	Coefficient	Variables
0.077	-1.775	0.559	-0.994	Intercept
0.704	0.380	0.494	-0.187	Critical variable
0.008	-2.666	0.003	-0.008	Financial liberalization
0.053	1.940	0.000	0.000	Investment
0.984	-0.019	0.203	-0.003	Exchange rate
0.065	-1.848	0.045	-0.083	Inflation rate
0.000	3.661	0.016	0.060	Interest rate

Source: research findings.

The results show that the crisis and the exchange rate effect on performance variables and coefficients are statistically not significant. While financial liberalization variables by a factor of 0.008 and the rate of inflation by a factor of 0.083 has significant negative effect on their performance, as well as investment by a factor of 0.000 and benchmark interest rate by a factor of 0.060 has direct and significant impact on their investment. It should be noted that in the least squares estimates above, the F statistic is equal to 4.93 with probability 0.000, as a result, the model estimates is statistically significant. Durbin-Watson statistic is equivalent to 1.93 shows that the model has not serially correlated.

CONCLUSION

An efficient market is a market in which prices fully reflect all information available. This claim is not widely used in analysis of the stock market and portfolio management. In fact, in an efficient market, there is no abnormal profits. Where the market is efficient, investors can easily determine risk and return on investment because there are no junk assets.

In addition, in an efficient market, prices correctly reflect the performance of the corporation, as efficient as the most profitable investment capital to develop profitable markets and helping to promote economic growth. Developing countries have benefited in terms of increased performance information on the benefits of financial liberalization, therefore, the country has good investment opportunities for domestic and foreign investors.

However, it is advisable to verify the findings of studies done regarding the impact of financial liberalization on market fluctuations, because financial decisions based on financial theory that the expected profit and risk associated with the assets will depend portfolio. Study the direct impact of financial liberalization on information efficiency in emerging markets may not have the power to effectively represent reality, because the release of information only factor that affects performance.

Other factors may also affect productivity and are also affected by the liberalization process. Despite the frequency of financial crises in emerging economies during the past few decades leading financial economists a result of the financial crisis and the performance of the emerging equity markets.

However, few studies is taken on the impact of financial crisis on the performance of information on these markets. According to regulatory agencies in emerging countries, particularly if liberalization is to reduce the risks associated with the performance of financial markets, so even though this liberalization in the long term may reduce the volatility of emerging markets, but is also important to evaluate the performance of information on these markets. Increased efficiency depends on several internal features that include growth rate, degree of liquidity and investment quality.

This characteristic in turn are a function of the evolution of the process of financial liberalization. Therefore, it is recommended that developing countries take advantage of financial liberalization, because otherwise can not access information quickly to the expected levels of performance and eventually will face a sharp decline in investment. Much research has been done on the effectiveness of the Tehran Stock Exchange most of these studies have achieved the evidence of inefficiency Tehran Stock Exchange.

It should be noted that although in some studies poor performance on the stock exchange is approved. (Such as the Salimifar and shirzoor, 2010) But reason having random appearance (poor performance) in equities, can be in the series to follow a non-linear process; so in these circumstances, these indicators are inefficient and so can not test this feature and a random is made line between a distinctions. (Moshiri and morovvat, 2005)

If that studies are complex and non-linear methods to investigate the Tehran Stock Exchange have market efficiency and have acknowledged the inefficiency of the market Tehran Stock Exchange. Stock market efficiency hypothesis, affirms prediction feature of stock returns series, to be non-linear models. The experimental strategy used in this study, the main feature of emerging markets, i.e. fragility of the financial system takes into account the different strategies used in previous studies.

In fact, not only to assess the direct effect between financial liberalization and efficiency, but rather existence of an indirect effect resulting from the impact of liberalization on financial crises. This experimental strategy to address the performance standard includes two variable regression showed that one of the other shows that financial liberalization and financial crises.

We in this study discussed that the financial crisis depends on several variables, including financial liberalization. According to this strategy, the impact of financial liberalization on the performance contains two effects: In the absence of a direct impact on the efficiency of the indirect effect of the crisis and the financial crisis is considered in cases where the effect of the crisis on the performance. In this study, the weak performance is discussed. Unlike studies which use traditional methods, we remained focused rather on the evolution of performance over time.

The main idea behind this approach is based on the idea that intuitive rapid maturation of emerging markets are looking to release equity markets, including major changes in market structure and increasing the complexity of applicants markets and the availability of more information. These changes are likely to change over time in the level of market efficiency. Such a feature, if any, can only be considered with a dynamic performance modeling.

For this purpose, we use time-varying methods by Zalewska-Mitura and Hall proposed and developed by Fontaine and Nguyen will suffice where stock returns autocorrelation coefficient is allowed to change depending on market conditions. As a result of the weak and variable remnants can run the model and examine some of the dynamic equations.

- The stock market's poor performance has not increased over time.

- Between liberalization and financial crises, there is no significant relationship, after financial liberalization only directly affects the performance.

- Financial liberalization does not have any impact on the performance information.

1) In order to study evolution of efficiency in the Tehran Stock Exchange total price index data for the period from April 1376 to June 1393 is used. Using state-space models and Kalman filter technique to estimate the GARCH model with variable coefficients discussed, in addition to taking into account the changing structure of the variance of the dependent variable lag time series daily return index values.

The result shows that although the information efficiency is not constant over time but their path is not to increase. As a result, the first hypothesis is confirmed.

2) The impact of financial liberalization on the performance contains two effects: In the absence of a direct impact on the efficiency of the indirect effect of the crisis and the financial crisis in cases where the effect of the crisis on the performance into consideration. First indirect effect, i.e. impact of financial liberalization on the financial crisis using a model Pruitt estimate. The results show that financial liberalization impact on Iran's recent currency crisis, inflation also will not work.

While the exchange rate by a factor of 0.86 direct effect on the currency crisis was the expected outcome, Variable investment market also has a significant effect on the currency crisis, but its coefficient is very small and close to zero. As a result of financial liberalization and indirectly through the financial crisis will not affect on performance. So second hypothesis is confirmed.

3) In the second stage, the effect of financial liberalization on the performance of information as the sum of direct and indirect effects of the financial crisis can be obtained. The results show that the crisis and the exchange rate effect on performance variables and coefficients are statistically not significant. While financial liberalization variables by a factor of 0.008 and the rate of inflation by a factor of 0.083 significant negative effect on their performance, also investment by a factor of 0.000 and interest rates by a factor of 0.060 direct and significant impact on their investment.

As a result, the third hypothesis is also evidence that the impact of liberalization on efficiency is approved.

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