

Capital Market Efficiency in Some European Countries

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Abstract: *This paper aims to describe the way market efficiency could be treated and how capital markets could be compared. The model presented in this paper is of theoretical nature but can also be applied into practice and aims to be subject for future research on the topic. The model uses the regression analysis of previous yields as compared to the current ones and the more previous yields are explained by the current ones the more information efficiency there could be on the market.*

Keywords: *Capital Markets; Market Efficiency; The model of calculation of the efficiency level.*

The goal of a Capital Market is to finance the Companies through attractions of large capital on long term. The appearance of the Capital Market, in its modern sense, was conditioned by the creation of shareholder societies. In the last decades the capital markets registered a considerable growth, having an essential impact on the development of the world economy.

Every national economy, doesn't matter the level of its development, is characterized through the existence and function of specialized markets, where offer of financial assets meets their demand. This is a necessary fact for the development of the economic activity. The role and the impact of specialized markets have a great importance for the financing of a national economy. A national economy cannot be perceived without the existence of an efficient and active capital market.

In the Dictionary of Economy, edited by N. Dobrota, is mentioned that the capital market represents "a specific market, which's subject is formed by the shares, bonds and state

titles. The participants at the operations at capital markets are owners of money liquidities, and who are willing and motivated to place into shares or bonds, and the ones that need this money and accept to indebted themselves to the first ones and to the intermediaries of these operations (commercial banks, the stock market and other intermediaries)"¹. In this chapter a group of economists Ciucur D., Gavrilă I., Popescu C. in their work "Economic", characterize the capital market more concise: "The capital market represents an important financial market, on long term, for financial assets. Is a market for financial titles with a period greater than a year, in which are included elements which express the rights and bonds for a period greater than a year as shares, bonds and mortgage titles".² At the appreciation of Bogdan Ghilic – Micu "The Capital Market is specialized on transactions with financial assets on long and medium term. Through their means ensuring the transfers of available capitals towards the users whose needs exceed their possibilities of internal coverage. The main motivation of a Capital Market is savings and the placement of securities of economic agents, as capital, towards the possible investors, the owners of exceeding of capital."³ Therefore we can say that a Capital Market represents a market of transaction of financial assets, on long term, with a term greater than a year. The financial assets, that make the object of the capital markets, are represented by securities – stocks and bonds – placed by the economic agents. The securities Market through its specific mechanisms, concentrates and routes the capitals to those that need money resources, and at the same time, offers the best conditions for investors.

¹ Dobrotă N. (coordonator). Dicționar de economie. – București.: ed. Economică, 1991, p. 347

² Ciucur D., Gavrilă I., Popescu C. Economic. – București: ed. Economică, 1999, p. 275;

³ Bogdan Ghilic – Micu. Bursa de Valori. – București.: ed. Economică, 1997, p. 5.

It is well known the fact, that there are two major concepts regarding the capital market: the Anglo-Saxon and the Continental-European. According to the Anglo-Saxon concept, the capital market together with the monetary market form that which is called, the financial market. In this context, the capital market is a synonym to the securities market and ensures the investment of capital on long and medium terms.

In market economy the circuit of financial assets takes place between a lot of investors and a lot of users of their investments, to achieve the sole purpose of satisfaction of economic needs, which itself has a finality of achieving profit. Thus, the budget, the securities market and the system of the banking credit not only are completing each other but also are in competition. Investors are the one that make investments, though the placement of funds in the goal of capitalizing these, and the users are the ones that mobilize the funds, to finance their own economic activity. In this way the funds get transferred, in an economy, from the ones yielding these to the economic agents who use them be it to develop an existing affair or to initiate a new one. The transactions between these two categories of participants, at the financial flow, are realized through the means of these financial markets.

Is to mention that the role of the securities market, which represents an integrant element of the market economy, depends on the existent financial system in the country and may vary from one country to another. Through the financial system is understood a system of different institutional agreements, which ensure the transformation of economies in investments and the distribution of financial resources among the concurrent consumers of this from the industrial sector.

The world experience demonstrates that the securities market is more developed in countries in which the propriety is dispersed considerably, and the implication of bank institutions in effectuation of securities operations is limited. The research made by the experts of the International Monetary Fund, in 38 countries with emerging markets and with market economy, confirm that organized securities markets, affect the economic activity through creation of liquid assets. Liquid stocks reduce the risk of investment, becoming more attractive as a form of economy. Liquid capital markets improve the allocation of capital and increase the perspectives of a country's economic growth. As a result, more investments can be attracted.

The economist Mirkin Y. making a research on the role of capital markets in emerging economies, has revealed the connection between the "financial depth" of an economy and the capitalization of stock markets. The notion of "Financial Depth" has started to be used by the end of the 80-s by the specialists of BIRD. This reflecting the connection between the rate of saturation of economy with money, the level of development of the financial and monetary-crediting system and the rate of economic growth. As a key indicator of "Financial Depth", is to be taken the level of monetarization of economic activity – the level of saturation of the above with the cash flows.⁴

The level of monetarization of economy is an important indicator of "ensuring" the economy with cash means. However, for the appreciation of the role of a financial market, mainly the capital one, in the economy is necessary to take into account a kind of indicator such as "The Coefficient of Financial Independence", introduced by the American economist R. Goldsmith. This indicator can be calculated as a balance between global financial activities and

⁴ A Kuznetsov, O Kuznetsova, Y Mirkin – "The Russian Capital Market the first 20 years", Jan 2011

the material ones, excluding foreign net assets of the country. Foreign net assets reflect the balance between the international assets and liabilities of the country. In countries with the most developed economies, can be seen the interdependence between the growth of the stock market and the monetarization of the economy. In emerging economies in which the stock markets don't play an important role, the correlation between these indicators is not relevant.

At the appreciation of the economists of the World Bank, Levine and Zevros, there is a connection between the liquidity of a capital market and the rates of economic growth, accumulation of capital and productivity.⁵ They propose the application of two means to measure the liquidity: the rate of transactions or the value-traded ratio, which equals to the volume of securities, traded on the capital market of a country in balance to the GDP; the volume of transactions or the turnover ratio, which equals to the volume of securities traded in balance to the market capitalization.

In the 90-s started the trade with securities, in particular stocks. The turnover ratio, calculated in balance of the market capitalization, characterizes the liquidity of a securities market. Taking into account that the principles of calculation of the respective indicator differ on different stock exchange markets, usually these indicators are not comparable.

Studying the stock market of emerging economies is of great importance the analysis of capital flow through the capital market's perspective. The methodology of the respective analysis is used by the International Federation of Stock Exchange Markets, starting with the year 2002. According to this methodology are taken into account the investment flows of newly

⁵ Levine, R. Financial Development and Economic Growth – Views and Agenda // Working paper 1678. The World Bank, Washington, DC. – 1996.

attracted capital, through the emission of stocks.⁶ At the basis of this calculation are two indicators: GDP and the stock capitalization. Mainly this indicator demonstrates the level of implication of a capital market in economic processes, like the level of financing of investments by the companies.

Referring to the evolution of the capital markets of emerging economies, we can state that these have developed rapidly over the last decades. The investors analyze emerging markets with extreme caution, being focused on the stability, predictability and volatility of these.

It is worth mentioning that there is a diversity in emerging economies in what concerns their infrastructure, the size of the market and the level of liquidity. Some investors consider that emerging markets in Eastern Europe have a greater potential of growth, as compared to the emerging markets from Asia or Latin America, in the following decade. This is due to the fact that the infrastructure and the regulations from Eastern Europe are more strongly related to developed markets.

The models of testing of the capital market efficiency

The concept of the efficient financial market was first integrated by the American scientist Fama Eugene, who defined an efficient capital market as being a market in which the rates of financial assets reflect totally the information available at a certain moment.

According to this theory, on an efficient market the current price of a stock is a good estimator of its fundamental value. With other words, in an efficient market, because of the competition, the current prices of individual stocks reflect already the effects of information

⁶ www.fibv.org

passed as well as forecasted. The agents try to predict the future rates of individual stocks based on the current information which is available almost for free. The scientist affirms that on an efficient market the rates of the titles are equalized with the value of stability, and the value of stability corresponds to the fundamental value. Therefore, the rate of stocks corresponds to the fundamental value. At the same time the fundamental condition of this theory is that every real or potential investor evaluates the forecasts of financial titles, as a result of a correct judgment. From this point of view the stock exchange rate is equal with the intrinsic value, not an investor on the market can obtain profits through the speculation of certain imbalances between the exchange rate and the intrinsic value.

E. Fama states that the value of stability of a title corresponds with the stability price determined by the division of the market in 2 categories: informed and uninformed. Because it is difficult to determine the quantity of available information, and the stability of price is made by a mode, the scientist proposes a new notion "a market in which the price reflects perfectly and always the information available is an efficient market".

At the same time there were proposed three forms of informational efficiency of financial markets, as follows:

- The *weak* form: the price of an asset reflects totally all information that is contained in its price history. Due to the fundamental hypothesis of the technical analysis, the past tends to repeat itself, and some graphical forms are to give information about their future rate fluctuations. Because of this it is impossible to obtain a surplus of profits from transactions based on the study of the history of the assets' rates based on the technical or graphical analysis.

- The *semi-strong* form: the price of an asset reflects besides the history of its quotations all the public information available about the issuing party. These include the balance sheets, increases in capital, exploitation accounts, announcements regarding fusions or acquisitions etc. Once with the appearance of public information, the asset's current price engulfs them fully and instantly. That is why it is impossible to obtain a surplus of profits from the transactions based on this information.
- The *strong* form: the asset's price includes not only public information but also the private one. Only three categories of agents can benefit of private information: intermediaries from the financial markets, the managers of these societies and the managers of the investment funds. In this case, all the possibilities of unexplored profit would be eliminated.⁷

Nevertheless, the majorities of economists criticize and doubt the fact that in the previously presented forms there are efficient financial markets.

For instance, Robert Schiller mentions the fact that the theory of efficient financial markets doesn't explain the behavior of the stock exchange rate on the secondary capital market. It is said that investors can take action in certain moments on the information that doesn't concern the financial performance of a company, but on certain elements that are part of the stock exchange public side, as a whole, such as social psychology elements.

⁷ Fama Eugene – "Efficient Capital Markets: II" Journal of Finance nr. 46, an. 1991

In other words, the debates highlight the fact that the observed value is different from the financial value. This denotes the inefficiency of current financial theories that analyze the evolution of stock exchange quotations.

In Jensen's opinion on an efficient market profits cannot be obtained, thus there aren't possibilities of market speculation. In this case the prices reflect the information up to a point where the cost of the new information doesn't overcome the expected benefit.

The random walk model and the martingale model are the most frequently associated with the situation in which the market is efficient from the informational point of view. Samuelson concludes that the random walk model is compatible with the model of fundamental value evaluation and with the situation in which exist investors that make systematic profits, without having access to better information than others. Thus Samuelson substitutes the random walk model with the martingale model and at its turn is sustained by other authors as well.

The relevance of fundamental analysis decreases as the market efficiency rises. This can be explained due to the fact that the fundamental analysis has, as a role, the identification of imperfections in stock exchange rates. At the basis of this analysis, the stock value is determined in line with the estimated value of the future financial flows. On the other hand the technical analysis is used to identify the imperfections of the quotations with the help of estimation of future rates as a result of historical values and the models of rate movements in the past.

In conformity with the efficient market hypothesis, presented earlier, not a single investor can influence the prices of stocks.

In an efficient market the stock exchange rates of the quoted securities tend to reaction rapidly to the information about the securities issuing party.

A less efficient market needs a technical and fundamental analysis to determine the market's imperfections and to give a real market value to a listed society.

The models used in the calculation of an emerging financial market's efficiency are the models: AR, MA and ARMA. From these three models Merton, Muthuswamy and Whaley recommend the use of the autoregressive model AR because of the difficulty of identification of the number of days of non trade.

But because the efficiency of a capital market also means the fact that the previous price explains the current one, we can state that also the previous yield should explain the current one.

Respectively we are to propose the calculation of the market efficiency though the correlation, with the help of ANOVA (regression analysis), of the previous yield as compared to the current one. With the help of the result we can make a comparison between the analyzed capital markets from different countries. With the help of ANOVA we would be able to determine the way in which the previous yield explains the current.

For our analysis to be more representative we are to take, for our study, 3 titles rated at each stock exchange market (the quotations for these titles will be taken from the official websites of the respective stock exchange markets. To calculate the previous yield we are to use the following formula:

$$Yield_{previous} = \frac{P_t}{P_{t-1}} - 1$$

P_t – Close price from the current span of time

P_{t-1} - Close price from the previous span of time

With the help of this formula we could calculate the previous yields as well as the current ones. After this we are to run the regression analysis on them.

With these yields we are to run the ANOVA test, to check in which measure the previous yield explains the current one. We are to take the probability of 95%, respectively we admit an error of 5%. The regression analysis will be as follows:

Insert Table 1 here

From the ANOVA presented earlier we can see that the Variable X (Previous Yield) explains by 0.661587 the Y variable (Current Yield). As a consequence we can say, with the probability of 95%, that the Previous Yield explains the Current in the measure of 66.15%, meaning we can speak of an informational efficiency of a Semi-Strong form.

Using the method presented earlier we calculate other 2 financial titles from the same stock exchange market. As a result of the ANOVA analysis we have the following results for the 2nd title the previous yield explains the current in means of 63.79% and for the 3rd title in means of 42.15%. To make a standardization we are to make a simple average of the results we got from ANOVA. This standardization can be seen in the following table.

Insert Table 2 Here

After we calculated the average of the results of our ANOVA analysis, we can say that the financial market from Frankfurt (previous yields explain the current ones) in the means of 57.36%, from where results that the German Stock Exchange (from Frankfurt) has an efficiency in the Semi-strong form.

With the help of the same model we can calculate the efficiency of the Stock Exchange from Athens, taking 3 random financial titles. The result of this analysis is as follows:

- Title 1 – the previous yield of this title explains the current one in means of 18.27%, with the probability of 95%;
- Title 2 – the previous yield explains the current one in means of 83.24%;
- Title 3 – the previous yield explains the current one in means of 65.44%

Judging by the facts presented up front we get an average (for the Stock Exchange from Athens) of 55.65%, which means that we have an efficiency in the form of Semi-strong.

The 3rd analyzed stock exchange is from Italy. The efficiency of this market is to be analyzed by the same model. For the 1st title the Italian stock exchange, after the regression analysis, gets a number of 26.13%, and as follows 1.32% and 80.77%, for the following 2 titles. The average for these 3 titles can be observed in the following table.

Insert Table 3 Here

From table 3 can be seen that the average of the regression analysis indicators for the representativity of the previous yield as compared to the current one is 36.07%, which determines us to characterize this market, from the perspective of Market Efficiency, as a market with weak efficiency.

The last country which is to be analyzed by this model is Romania, more precisely the Stock Exchange Market from Bucharest. Again 3 random titles were selected to test the efficiency of the capital market form Bucharest.

The ANOVA result, in the case of Bucharest Stock Exchange, has shown that for the 1st title the previous yield explains the current one in means of 3.37%. The following two titles have had the results of 82.23% and 37.01%. The average of these results is of 42%, which determines the Bucharest Stock Exchange to be of semi-strong market efficiency.

Next we are to analyze the data collected through the calculations. These are to serve for the final conclusions in what is the comparative analysis of the capital markets, mainly their efficiency, in Eastern and Central Europe.

For easier comparison of the data, we are going to in frame them in a table, which is supposed to make easier the analysis of the forms of efficiency analyzed. These data are to be seen in the following table.

Insert Table 4 Here

From the table above we can see that the Eastern Europe, represented by Romania isn't considerably weaker, from the Market Efficiency point of view, than the countries from Central

Europe. From the sample of 3 financial titles which was effectuated, the weakest country was, in what concerns Market Efficiency, Italy.

In conclusion we could say that even though Romania has a relatively young market, this country still has a Demi-forte form of market efficiency. Meaning, that the previous yield partially explains the current one.

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