IINFORMATIONAL EFFICIENCY TESTS ON THE ROMANIAN STOCK MARKET: A REVIEW OF THE LITERATURE

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ABSTRACT. The Efficient Market Hypothesis is still a 'hot' topic in financial economics. This paper provides a review of the empirical results obtained in the investigation of the Romanian stock market's informational efficiency. Tests on the predictability of returns suggest that the Romanian stock market has a low level of efficiency. Furthermore, the impact of new information is more intense before and after its release. Moreover, some papers put into question the coincidence between asset prices and their intrinsic values.

1. INTRODUCTION: WHY WE DISCUSS ABOUT TESTS ON MARKET EFFICIENCY?

Testing the Efficient Market Hypothesis (EMH, hereafter) has been and still is one of the most researched topics regarding the Romanian stock market. In spite of the large existing literature, a growing number of studies are published every year, deepening certain issues or simply providing updates of the numerical results obtained by different prior studies. The number of papers that are related directly or indirectly to the subject is very large. Most of the papers analyze the efficiency of the Romanian stock market, but in the last years a growing literature started to become concerned for other financial markets, too[1].

At this moment, many discussions regarding tests on EMH for the Romanian capital market are already included in common knowledge. For instance, Todea (2005) is a book entirely devoted to empirical tests on Romanian stock market efficiency. Different books published and used in Romania as manuals in fields like Investments or Portfolio Management already present tests for efficiency as basic issues (see, for instance, Stancu, 2007, p. 205; Dragotă et al., 2009a, p. 154). Also, Pele (2007) obtained his PhD degree with a thesis on Romanian stock market efficiency.

Mînjină (2010) provide a very good review of some of the empirical studies published before 2009, presenting also the history of the evolution of Bucharest Stock Exchange, from a financial perspective. Our survey complements it, updating the list of studies, and maybe being a bit more comprehensive.

We can imagine many reasons to explain the researchers' interest to test the efficiency of the Romanian stock market. However, some of them can be suspected as being the most important. Firstly, the topic is highly important, not only for Romania, but also for all the other capital markets. Testimony to this is the prize that the Sveriges Riksbank Prize in Economic Sciences

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This paper is in final form and no version of it will be submitted for publication elsewhere.

[1]See, for instance, Lazăr et al. (2012) for the relative efficiency of the exchange market.

in memory of Alfred Nobel decided to award in 2013 Professor Eugene F. Fama, considered by many specialists in finance the founder of the efficient markets theory (Fama et al., 1969; Fama, 1970; Fama, 1991; Fama, 1998). The ample debates on this topic can be another explanation. The theory of efficient markets is challenged by many researchers, among which the experts in behavioural finance have a central position. Perhaps not coincidentally, the same award won by Eugene F. Fama was shared with Robert J. Shiller, one of the most pertinent challengers of the efficient markets theory (Grossman and Shiller, 1980; Shiller, 1981; Shiler, 1984; Shiller, 1992)[2]. Maybe, the attractiveness of this topic for the Romanian researchers in the last years can also be explained by the challenging econometric instruments used to test EMH (see, for instance, Escanciano and Velasco, 2006).

For practitioners, the results of the tests regarding the level of market efficiency[3] can be useful for the choice between the active and the passive strategy in portfolio management (Dragotă et al, 2009a). If one market is characterized by a high degree of informational efficiency, no investor on the market could reach systematic abnormal earnings, so it is better to choose a passive portfolio management, replicating in a high degree the market portfolio[4]. On the contrary, any proofs for a low level of efficiency could be an encouragement for practicing an active portfolio management. Practically, each strategy used to question EMH can be defined also as a strategy to reach systematic abnormal earnings, so for 'beating' the market.

The theory of market efficiency, like any other theory in science, evolved in time from the seminal works of Fama et al. (1969) and Fama (1970) toward the more recent papers, like Lo (2004) or Lo (2005). However, it can be defined mainly by two conditions. Firstly, the prices of the assets should be equal to their intrinsic values, at least as trend. Secondly, no investor on the market should be able to reach systematic abnormal earnings. The second condition can be interpreted as a direct application of the first one: if all the assets are correctly appraised by the investors, then no one should be able to reach systematic abnormal earnings. However, the financial literature, including the literature regarding the Romanian stock market, favoured the tests for the possibility of reaching abnormal earnings. Many reasons can explain this preference. Maybe one of the most important issues is the difficulty (impossibility?) to estimate without a doubt the intrinsic value of an asset (see Dragotă et al., 2004)[5]. In other words, as long as the intrinsic value is not an observable indicator, each test can be questionable because it is impossible to state that a difference between price and intrinsic value indeed occurs (or not) or that the model used for the estimation of the intrinsic value is appropriate or not.

In this context, the most part of the studies for the Romanian stock market (and for the rest of the world) were conducted in order to identify different strategies in portfolio management that could prove the possibility to reach systematic abnormal earnings. These tests are mainly based on the predictability of assets returns (the tests for the weak form of efficiency in the terminology of Fama, 1970)[6] and, even if to a lesser extent, on event studies regarding the

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[2]The attractiveness of these debates drew from beginning the Romanian studies on capital market efficiency. For example, Dragotă and Mitrică (2004) cited on the one hand Fama (1970) and Fama (1998), but on the other hand, Grossman and Shiller (1980), Shiller (1981) and Shleifer and Summers (1990).

[3]The first studies related to market efficiency preferred an absolute definition of market efficiency. In this case, a market is called as efficient if different tests regarding EMH are not infirmed. Thus, a market can be efficient (in weak, semi-strong or strong forms), or inefficient. In the last years, financial literature preferred a relative definition of the concept: a market can be defined as being more or less efficient (Lim and Brooks, 2011). We prefer this terminology in our survey.

[4]From a theoretical viewpoint, passive portfolio management implies a perfect replication of structure of the market portfolio. However, deriving from practical reasons, it is impossible to perfectly replicate such a portfolio (see Dragotă et al., 2009a).

[5]The discussions regarding the estimation of intrinsic value have their roots in antiquity (see, for instance, opinions of Aristotle or Xenophon). See Bran (2005) for a detailed presentation of the theory of value ("economics of value" in his formulation).

[6]Fama (1970) states conditionality between the three forms of efficiency, respectively a market can be semi-strong efficient only if it is also efficient in the weak form. Fama (1991) changed himself the classification proposed in Fama (1970). Fama (1991) discuss about tests for return predictability, event studies (or tests for

integration of new information in prices (or tests for the semi-strong form of efficiency in the terminology of Fama, 1970). We present this category of studies in Sections 2 (tests regarding the predictability of returns) and 3 (tests regarding the integration of information in prices). Even less studied both for the Romanian stock market and for the rest of the world is the debate related to the equality between the price of an asset and its intrinsic value, which is put under attention in Section 4. Section 5 concludes and presents some new directions for study.

2. Are the asset returns predictable?

EMH states that the transactions on the markets are, at least as a trend, fair games. From this perspective, each investor on the market should not be able to reach systematic abnormal positive returns. If one such kind of investors would be present on the market, respectively the market would not be efficient, his or her abnormal earnings should be another investor's systematic loss.

Considering these assumptions, tests on efficiency based on the predictability of returns are trying to identify viable strategies in portfolio management which can be applied systematically in order to reach these systematic abnormal earnings. In this context, several evident problems in implementation can arise. First, at least one strategy should be identified. This strategy should be also stable in time, in order to be applied systematically. Second, this strategy should determine a systematic abnormal earning, so a normal return has to be defined. Otherwise, it can be possible that systematically positive earnings occur in growing markets, but they are lower than a minimal acceptable benchmark. Another problem is trickier: even if a strategy can be applied and it leads to some abnormal earnings, it does not mean that some investors indeed applied it effectively. We discuss briefly these issues below.

Beginning with the first studies concerned by testing the informational efficiency of the Romanian stock market, the researchers were concerned about identifying possible strategies that can be applied in order to reach systematic abnormal earnings. Table I presents some of these main studies.

All these tests explore the possibility that a potential investor on the market reaches systematic abnormal earnings. They can be considered as direct applications of the technical analysis: if one investor can identify a strategy allowing him or her to predict the future returns based on the past returns, then he or she can apply a sort of strategy regarding buying or selling different assets, and obtain systematic abnormal returns. This questions the level of market efficiency (Dragotă et al., 2009b; Anghel, 2013). The first studies, starting to the seminal paper of Preutu et al. (1998), as far as we know the first one regarding the Romanian stock market efficiency, used only a few tests. In the last years, different studies used more and more such tests. For instance, Anghel (forthcoming) employed 686,243 trading rules in order to check the level of efficiency. Of course, the use of a larger number of tests can offer a more complete image on the level of efficiency, but do the investors on the Romanian stock market really use such a large number of strategies? Dragotă and Ţilică (2014) performed a lower number of simple tests and still proved that systematic abnormal returns can be reached on the market.

From a methodological viewpoint, tests can be made both on assets and on indexes. Tests on relevant assets are preferred in some studies (Dragotă and Mitrică, 2004; Stănculescu and Mitrică, 2012). Tests on indexes are preferred in others (Dumitru and Bucşa, 2004; Dima et al., 2005; Pele and Voineagu, 2008). Finally, some studies test the efficiency using both the relevant assets and indexes (Dragotă et al., 2002; Dragotă et al., 2009b; Lazăr et al., 2009).

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rapid price adjustments), and tests for private information. Megginson (1997) include in taxonomy the tests for rational fundamental valuation. In Megginson (1997) terminology, the conditionality presented in Fama (1970) is not present. In other words, a market can be "semi-strong efficient" (new information is integrated in prices), but not efficient in its weak form (investors can reach abnormal earnings, predicting future prices based on past prices). For this reason, we prefer the term "event studies". We use in this paper the terminology from Fama (1991) and Megginson (1997).

Both kinds of approaches have some advantages, but also their limits, so the results should be interpreted cautiously.

Table I: Studies on the predictability of stock returns on the Romanian capital market			
Study	Analyzed period	Tests used	Observations
Preutu et al. (1998)	October 1997 - November 1998	Autocorrelation tests, unit root tests	
Codîrlasu (2000)	1998 - 2000	Autocorrelation tests, unit root tests, market anomalies, trading rules	The investigated anomalies are: day-of-the-week effect, month-of-the-year effect
Dragotă and Mitrică (2004)	April 1998 - October 2000	Autocorrelation tests, filter rules, unit root tests	The lack of liquidity put in question the possibility of applying an active portfolio management. Doubts regarding the coincidence between intrinsic value and prices.
Pele and Voineagu (2008)	1997 - 2007	Return breakdown model (RBM)	According to the RBM, the stock returns are decomposed into a stochastic trend and a white noise component
Todea and Zoicas-Ienciu (2008)	July 1995 - May 2006	Hinich-Paterson methodology	
Lazăr et al. (2009)	January 2000 - March 2008 for stock indexes and f - February 2008 for stocks	Autocorrelation tests, nonlinear behaviour tests, long memory tests	
Dragotă et al. (2009b)	g - December 2006	Multiple Variance ratio test, runs test	
Diaconasu et al. (2012)	January 2000 - December 2011	Market anomalies	The investigated anomalies are: day-of-the-week effect, month-of-the-year effect
Necula and Radu (2012)	1997 - 2010	Nonlinear behaviour tests, long memory tests	
Smith (2012)	February 2000 - December 2009	Multiple Variance ratio test	
Stancu and Geambasu (2012)	January 2002 - December 2010	Market anomalies	The investigated anomaly is the January effect
Todea and Lazăr (2012)	January 1999 - December 2009	Generalized spectral test	
Dragotă and Tilică (2014)	January 2008 - December 2010	Autocorrelation tests, unit root tests, run test, filter rules, market anomalies	The investigated anomaly is the January effect
Notes: f is the first trading day of a stock during January 2000 - February 2008. g represents the first trading day of a stock.			

The tests on assets have to face the problem of the lack of liquidity (Chordia et al., 2008; Chung and Hrazdil, 2010), persistent on Romanian stock market. Geambașu and Stancu (2010) noticed that only 16 stocks cover most of the Romanian stock market transactions. More

interesting, one stock determines more than 20% of the market turnover, 4 stocks represent more than half of the market turnover and 8 stocks account for more than 75% of the market turnover. For this reason, even if some theoretical strategies on assets can determine a theoretical positive result for the investors, they cannot be operational because of the impossibility to effectively trade the respective stocks.

The results for tests on indexes should also be interpreted cautiously, due to the lack of liquidity on the capital market. As long as an index is not traded as such, the researcher should check if in every day of theoretical transaction with indexes, each of the assets included in the index was effectively traded.

In general, the returns used in tests were calculated daily. Some recent studies used intraday data, more concordant with the true behaviour of the investors[7] (Todea and Pleşoianu, 2010; Cepoi and Radu, forthcoming).

The results are many times contradictory. This phenomenon can be easily explainable when considering that both the methodologies and the periods covered by the databases are different from study to study, but also the dynamic character of the efficiency of one market. For example, Dragotă and Mitrică (2004) found signs of inefficiency. However, the low liquidity of the Romanian stock market and the transaction costs create doubts about reaching systematic abnormal earnings. Hasanov and Omay (2007) tested the efficient market hypothesis for some stock markets in transition, including Romania. The results provided signs of inefficiency in the case of the Romanian stock market for the period 1996-2005. Further, Todea and Zoicaş-Ienciu (2008) suggested that the Romanian stock market has a low level of efficiency. In contrast to the results of previous studies, Harrison and Paton (2004) showed that the level of Romanian stock market efficiency has improved in the period 2000-2002 compared with 1997-2000. Moreover, Harrison and Paton (2007), investigating the predictability of return for Romania and Czech Republic, concluded that the level of informational efficiency is satisfactory for the Romanian stock market since the past returns did not influence the current return. This result reinforces the evidence from Harrison and Paton (2004). Also, Pele and Voineagu (2008), Dragotă et al. (2009b), Negrea et al. (2009) and Calomfir et al. (2012) observed some signs of improvement in the level of efficiency. Further, Smith (2012) tested the efficient market hypothesis for a large group of emerging markets from Europe. The results for the Romanian capital market are consistent with those revealed by Pele and Voineagu (2008) and Dragotă et al. (2009b). Moreover, the efficient market hypothesis is challenged for a number of emerging stock markets, including Romania, during the period of the global financial crisis. Compared to the previous results, Dragotă and Ţilică (2014) proved that systematic abnormal earnings can be achieved on the market after the beginning of financial crisis. Todea and Lazăr (2012), investigating the informational efficiency of ten stock markets before and after the global financial crisis, noted that the level of efficiency was improving on the crisis period for the Romanian market. However, compared with the other markets, the Romanian stock market had a low degree of efficiency during the crisis period.

Guidi et al. (2011) investigated the level of informational efficiency for a number of stock markets located in the Central and Eastern European countries, including Romania, for the period 1999-2009. The sample was partitioned to check the level of informational efficiency before and after EU accession. The autocorrelation test suggested that all stock markets showed signs of inefficiency for all periods. Moreover, run test showed that some stock markets improved their level of efficiency after the EU accession. However, the results for Romania did not improve. Further, the variance ratio test showed some signs of improvement for the efficiency in the Romanian case after the EU accession.

The seasonality on returns (calendar anomalies) is also a much debated subject since the presence of some patterns on asset returns can be used to obtain systematic abnormal returns (Doyle and Chen, 2009). There are various forms of calendar anomalies which are investigated

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[7]Todea and Pleşoianu (2010) state that the majority of investors analyses intraday data to make decisions.

in the literature for Romania and also for the rest of the word. One of the most important anomalies is the day-of-the-week (DOW) effect which suggests that the average return is significantly different on some day of the week than others (Brooks and Persand, 2001). A particular version of the DOW effect is the Monday effect which suggests that the Monday's returns are, usually, negative and lower than those for Tuesday through Friday (Pettengill, 2003). Ajayi et al. (2004) is one of the first papers that investigated the presence of DOW effect for some stock markets located in Eastern European countries, including Romania. The results revealed the absence of DOW effect in the Romanian stock market for the period 1997-2002. Moreover, Tudor (2006) concluded that the DOW effect was not present in the Romanian stock market for the period 2000-2005. In accordance with Ajayi et al. (2004) and Tudor (2006), Guidi et al. (2011) observed that the DOW effect was not present on the Romanian stock market for the period 1999-2009 and for the periods before and after EU accession. On the other hand, Diaconasu et al. (2012), analyzing a larger period between 2000 and 2011, reported that during the pre-crisis period and also for the entire period the DOW effect was present on the Romanian stock market, sign of inefficiency. However, during the global financial crisis period the DOW effect was not identified. Hourvouliades and Kourkoumelis (2009) obtained slightly different results compared to those of Diaconasu et al. (2012). They showed that during the pre-crisis period and also in the crisis period the DOW effect was not present in the Romanian stock market. Moreover, Heininen and Puttonen (2008), investigating the DOW effect for some stock markets from the Central and Eastern Europe, noted that the Romanian stock market did not show any sign of inefficiency since the DOW effect was not observed for any of this periods: 1997-2008, 1997-2000, 2001-2004 and 2005-2008. Georgantopoulos et al. (2011) investigated the DOW effect for four Balkan stock markets for the period 2000-2008. In accordance with Hourvouliades and Kourkoumelis (2009) and Heininen and Puttonen (2008), they noted that the DOW effect is not specific for the Romanian stock market.

Another calendar anomaly which received much attention on the literature is the month-of-the-year effect (MOY). Similar with the DOW effect, the MOY effect indicates that there are months in which the average return is significantly different compared with other months of the year. One such example is the January effect according to which the average return in January is significantly higher than those for the other months of the year (Thaler, 1987). Tudor (2006) noticed that the January effect was not present on the Romanian capital market for the period 2000-2005. At the same time, the other months of the year did not register average returns that are significantly different from zero. Heininen and Puttonen (2008) analyzed the MOY effect for a number of Central and Eastern European stock markets for four periods: 1997-2008, 1997-2000, 2001-2004 and 2005-2008. Although some patterns in the monthly returns were identified for Romania, they were not stable from period to period. Negrea et al. (2009), analyzing the January effect for the period 1998-2008, confirm the existence of this effect on the Romanian stock market. Expanding the analyzed period, Diaconasu et al. (2012) observed a January effect during pre-crisis period, which disappeared in the crisis period. However, Diaconasu et al. (2012) remarked that the MOY effect was not present during the crisis period. In another study, Stancu and Geambaşu (2012) confirmed the presence of the January effect for the period 2002-2010. Also, they observed that April and May registered high average returns. Dragotă and Ţilică (2014) analyzed the January effect for the period 2008-2010 and noted the presence of this phenomenon at the market level and at the stock level.

The January effect was studied at a portfolio level by Balint and Gică (2012). Thirty stocks traded on the Romanian stock market were grouped in three portfolios according to their market capitalization. The January effect was observed during the pre-crisis period for all three portfolios, the anomaly being stronger for the portfolio with the smallest market capitalization. However, in the crisis period the January effect was identified only for the portfolio with the smallest market capitalization. Georgantopoulos et al. (2011) showed that the MOY effect was not present in the Romanian stock market for the period 2000-2008. Analyzing a more

recent period, 2007-2013, Panait (2013) showed that the Romanian stock market did not exhibit monthly calendar anomalies.

Other calendar anomalies that are much debated in the literature are the turn-of-the month effect (TOM) and the Halloween effect. The TOM effect states that the returns on the turn of the month days are significantly higher than the other trading days. As such, the average return from TOM period is compared with the average return on the rest of the month. If the TOM effect is identified, the average return during TOM period is significantly higher than the average return during the rest of the month (Kunkel et al., 2003). Heininen and Puttonen (2008) and Stefanescu and Dumitriu (2011) observed the presence of TOM effect on the Romanian stock market. On the other hand, Georgantopoulos et al. (2011) reported that the TOM effect is inexistent in the Romanian case. According to the Halloween effect, the returns should be higher in the November-April period than those in May-October (Bouman and Jacobsen, 2002). Heininen and Puttonen (2008) did not find any sign of this effect on the Romanian stock market for the period 1997-2008.

One issue that was systematically neglected is the impact of dividends. The analysis regarding the predictability of returns simply ignored the dividends. This can be explained by the low level for dividend payments for the Romanian listed companies (Dragotă, 2003). However, the distribution of certain amounts as dividends can have different impacts on stock returns. For instance, in the calculations of the returns for some of the buy and hold strategies (on periods large enough to include a dividend distribution), dividends should be taken into account. As a result, the return in these cases should be greater.

Some question marks still remain. The lack of liquidity on the Romanian capital market, emphasized by Dragotă and Mitrică (2004), is still persistent (Mînjină, 2010). This lack of liquidity is an important constraint for an active portfolio management. Moreover, one crucial question is if in fact at least one investor on the Romanian stock market reached systematically abnormal earnings based on the strategies revealed in the literature. Many winning strategies can be exposed if the tests are performed ex-post. However, it is doubtful that these strategies were indeed applied by investors in real conditions on the market, in other words ex-ante. For this reason, one tricky question is if, in fact, many of these tests performed can be considered only intellectual exercises and not effective methods for obtaining abnormal earnings.

3. EVENT STUDIES: HAS THE DISCLOSURE OF INFORMATION ANY IMPACT ON PRICES?

Event study methodology is also used to test EMH[8]. Taking into consideration this approach, some studies analyze the speed of integration of new information (i.e. announcements regarding financial decisions, like investment decisions or change in corporate control) in prices. On an efficient market, the reaction of prices should be completely correct and instantaneous. In this context, possible leakages of private (secrete) information are investigated, in which case the prices react before the date of announcement (evidence of inefficiency). Furthermore, it is analyzed the under and/or over-reaction of the market by investigating the evolution of prices after the release of new information, respectively an inappropriate amplitude of prices, which should be interpreted as a sign of inefficiency (see Figure 1).

Event studies have a relatively long tradition in the context of testing EMH for the Romanian stock market. Table II presents some of these main studies. For instance, Dragotă et al. (2004) noticed the relative rapid adjustment of prices for some cases of dividend payments and capital increases. Todea and Meteş (2005) found a reaction of prices, even slower, to announcements regarding capital increases.

Mînjină and Resceanu (2008) analyzed the effect of announcements regarding acquisitions and takeover for the companies listed on the Romanian stock market that act in the pharmaceutical and the aluminium sectors for the period 2003-2008. They observed that the prices reacted before the announcement days. Thus, the results suggested a low level of efficiency.

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[8]For a good presentation of the event study methodology see Todea (2006) p.187 and further.
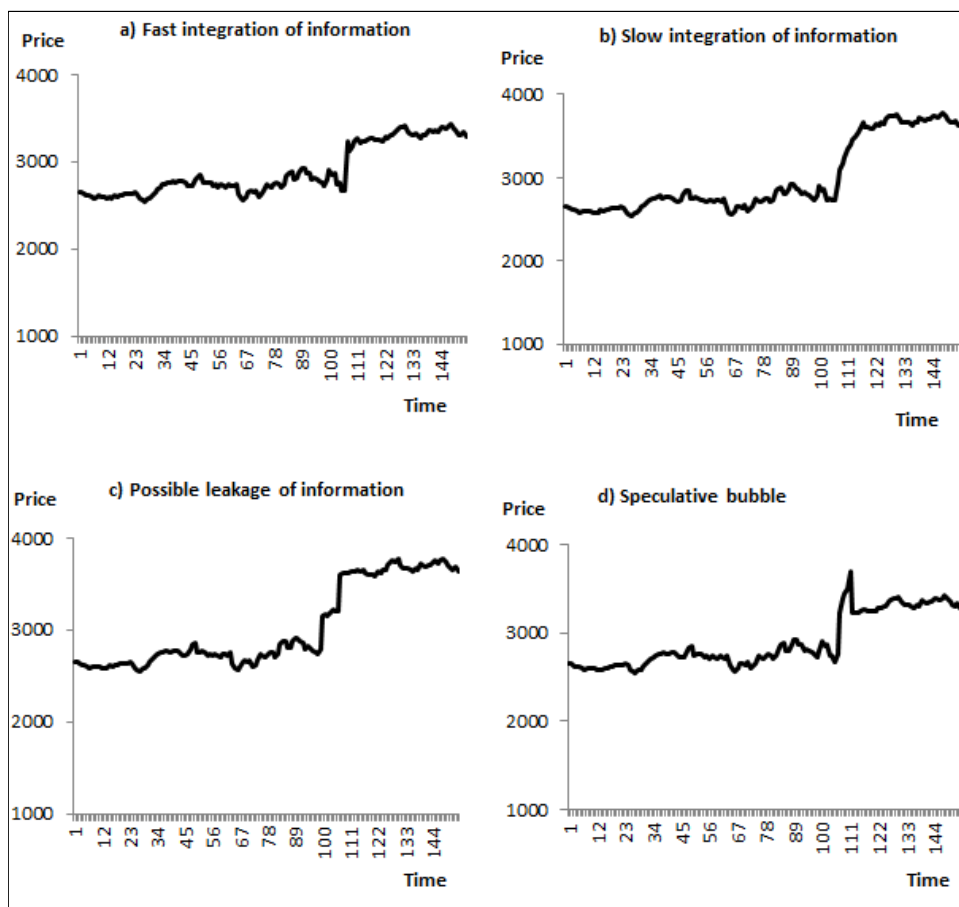
Figure 1: Possible evolutions of prices around the date of announcement

Notes: In this figure, the date of announcement is day 107. In the case a), the price reacts instantly as effect of public information releases (day 107). This is the ideal (theoretical) case of normal reaction in the case of an efficient market. The other three cases reflect lower levels of efficiency. In the case b), the price integrates information, but slow, not instantly (from day 107 to day 117). Even the market understands the information, the slow reaction of prices allow some investors to reach systematic abnormal earnings from day 107 to day 117. In the case c), a possible leakage of information occurs (in day 100, so before the date of announcement). In the case d), market over-reacts ("speculative bubble") (from day 108 to day 111). Graphics inspired from Dragotă (2006, p. 49-51).

Table II: Studies on the reaction of stock prices to new information		
Study	Analyzed period	Observations
Todea and Metes (2005)	1999-2003	
Mînjină and Resceanu (2008)	2003-2008	
Tilică et al. (2012)	2002 - 2011	The lack of liquidity puts under question the estimation of normal return
Zoicas-Ienciu (2008)	2004-2007	

Tilică et al. (2012) investigated the impact of tender offer announcements on the prices of 35 companies listed on the Romanian stock market for the period 2002-2011. They found that the prices reacted before the event day, in the announcement day and, also, after the disclosure of new information. In other words, the market showed some signs of efficiency since the prices react in the announcement day. Also, there was a reaction before the acquisition announcement, and immediately before the announcement date. These results may indicate a leak of

information and market over-reaction since there is a fall in the prices after announcement. For this reason, Ţilică et al. (2012) concluded that there were serious doubts regarding the Romanian stock market efficiency.

In another study, Zoicaş-Ienciu (2008) tested the reaction of stock prices of the main companies listed on the Romanian stock market in connection with the publication of financial statements for the period 2004-2007. Zoicaş-Ienciu (2008) concluded that the publication of financial results has an impact on the stock prices and that the impact is more intense before and after the publication date. As such, the efficient market hypothesis is put into question.

As we mentioned earlier, the lack of liquidity is an important problem which can have a direct impact on the event studies realized for the Romanian stock market, the conclusions being questionable. At the same time, the event studies were performed on daily data which can be a problem since the impact of other information was not isolated. In this context, an apparent ante reaction of prices can be a leak of information, a random incident, a combined reaction to different events, or maybe a right reaction, as an anticipation of releasing new information. As such, again, the results should be interpreted cautiously. One improvement can be determined by the use of the intraday data. Using this kind of data, the probability that other information occurs (and determine a bias of the effect of the tested event) would be lower.

4. PRICE AND INTRINSIC VALUE: ARE THEY EQUAL ON THE ROMANIAN STOCK MARKET?

Basically, in an efficient stock market, it is not enough for prices to have just a random walk; they should reflect the fundamental economic and financial factors that influence the intrinsic value of the stocks. However, in practice, the prices can be considered a combination between the expectations regarding the future cash flows and discount rates (the intrinsic value) and some other factors, which are reflecting some (perhaps subjective sometimes) perceptions of the investors[9]. The lack of liquidity can also determine prices to diverge from the fundamental values (Chordia et al., 2008). In other words, random walk per se is not a sufficient condition for a market to be efficient.

From a financial point of view, on an efficient market, the intrinsic value of one share (that should coincide with its price), expected (E) at present moment (0) will equal the sum of the discounted expected cash flows determined by that share, respectively its dividends (D_t) and its selling price (P_n):

$$E_0\left(V_0\right) = \sum_{t=1}^{n} \frac{E_0\left(\tilde{D}_t\right)}{\prod_{\tau=1}^{t}\left(1+k_\tau\right)} + \frac{E_0\left(\tilde{P}_n\right)}{\prod_{\tau=1}^{n}\left(1+k_\tau\right)} \equiv P_0 \tag{4.1}$$

where k_τ is the discount rate for the year τ.

Some studies in finance challenged the tests on return predictability arguing that prices can follow a random walk having nothing to do with their intrinsic values (Shiller, 1984), and, for this reason EMH should be rejected in many cases. Figure 2 depicts one such a situation. The unpredictability of returns can be just an effect of the inability of the market to evaluate in a correct manner the available information (see LeRoy, 2004, for a discussion on this topic).

Oprea and Brad (2014) investigated the influence of individual investor sentiment on the Romanian stock market. They observed that the asset prices were affected by the overly optimistic/pessimistic expectations of investors. Therefore, the empirical results suggest that some differences between prices and intrinsic values are present in the case of Romania.

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[9]Also, the expectations regarding the future cash flows and discount rates can be overly optimistic or pessimistic, being usually influenced by emotion.
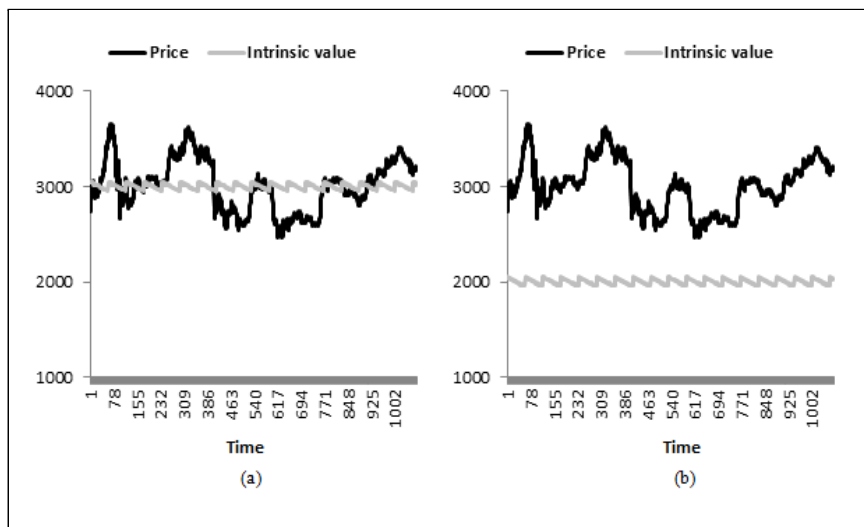
Figure 2: Possible relations between price and intrinsic value

Notes: A possible evolution of prices and intrinsic values for one asset. (a) Prices follow a random walk around the intrinsic value. The investors can reach abnormal earnings through arbitrage. (b) Prices follow a random walk, but this random walk has nothing to do with the intrinsic value. Even some investors should have the ability to identify the intrinsic value of the asset they cannot use this information for reaching any kind of returns. Graphic inspired from Dragotă (2006, p. 35-36).

On a market where prices are not evaluated in a proper manner, dividends can serve as instruments by which companies can influence prices in order to match the intrinsic values and to remunerate the investors. Let us assume the case of one market where the majority of investors valuate the assets in an improper manner, so the prices do not reflect the intrinsic values (for instance, see Figure 2, b). In this case, an investor who makes correct judgments and valuates stocks in a right manner would not have the ability to make arbitrage operations based on transactions because the potential selling price would not converge to the intrinsic value. However, if the companies would pay dividends, even if the prices would remain below the intrinsic values, the investors could earn from dividends, so their ability to appraise the assets in a proper manner would determine a normal return for their investments. Thus, the buyer of such a stock would have the chance to earn from dividends (profitable companies afford to distribute dividends) even if the prices of stocks would be under-valuated. However, most of the Romanian companies do not practice a stable dividend policy and, also, many companies do not pay dividends (Dragotă, 2003).

In this context, some studies analyzed the manner in which the Romanian investors are making their decisions, respectively if they are taking into account the fundamentals. Some earlier studies analyzed some features of Romanian investors (see Vasilescu and Vătui, 2004a, 2004b, 2004c). Dragotă and Şerbănescu (2010) presented some of the features that characterize the behaviour of Romanian investors and put into question the ability of an important part of the market to valuate in a proper manner the financial assets. Moreover, two distinct classes of investors seem to coexist on the market – the experienced and the inexperienced ones, which can suggest to us the conditions for the model of Shleifer and Summers (1990) with two classes of investors – the arbitrageurs and the uniformed investors. Dragotă and Mitrică (2004) and Dragotă et al. (2004) propose some models which put into question the relevance of prices on the Romanian stock market. Creţu (2012) analyzed also the behaviour of the investors on the Romanian capital market using modern instruments, like the chaos theory and the theory of fractals.

In another study, Tudor (2012) analyzed if the foreign investors are better informed than the domestic ones. The main conclusion is that the Romanian stock market is driven by the foreign investors, since the net trading position[10] of foreign investors has a strong and positive impact on the returns of stocks. Tudor (2012) remarked that this evidence suggested that the foreign investors are net buyers when the stock returns have an upward trend and net sellers when the stock returns have a downward trend. As a consequence, the phenomenon of asymmetrical information is present on the Romanian capital market.

5. Conclusions and new perspectives

This paper provides a review of the empirical results obtained in the investigation of the Romanian stock market efficiency, most of them based on tests on predictability of stock returns and event studies. These studies suggest that the Romanian stock market has a low level of efficiency. Also, this level is variable in time. The results regarding EMH for Romanian stock market are mixed. This can be the effect of different methodologies or different periods of analysis. However, an improvement in the level of efficiency, even as tendency, can be noticed.

If the market is characterized by a low level of efficiency, it could be an opportunity for some investors to reach systematic abnormal earnings. However, the persistent lack of liquidity could be an important constraint for an active portfolio management designed to obtain systematic abnormal earnings. Also, many winning strategies can be exposed if the tests are performed ex-post. However, it is doubtful that these strategies were indeed applied ex-ante by investors. As such, the efficiency tests performed during the years can be considered, in many cases, only intellectual exercises and not effective instruments for reaching systematic abnormal earnings.

In its pure form, the efficient markets theory claims that the prices of assets should be equal with their intrinsic values, at least as trend. As such, the characteristics of investors and their ability to assess the financial assets could in fact provide some evidence against the theory of efficient markets. Indeed, Dragotă and Şerbănescu (2010), Tudor (2012) and Oprea and Brad (2014) suggest that on the Romanian capital market, two distinct classes of investors (the experienced and the inexperienced ones) are present.

In the last years, some new directions for the studies developed. One of these is the interest for identifying the determinants of the level of market efficiency. For instance, Todea and Pleşoianu (2013) analyzed the impact of some factors on the level of market efficiency for eleven Central and Eastern European stock markets during the period 1999-2010, and found that foreign portfolio investment had a positive and significant influence on the informational efficiency. Of course, this can be an interesting new direction of studies regarding the efficiency of Romanian stock market. As we already mentioned, a growing number of studies regarding this issue are published every year.

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[10]Trading position is defined as the difference between purchases and sales.

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