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# Anomalies on the capital markets from the former communist European countries

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**Abstract.** *The anomalies on the capital markets represent patterns in financial asset returns that are not predicted by a central theory or paradigm. This study made an inventory of the most important anomalies initially identified for the US capital market, in the context of the capital markets from the former communist European countries. Further, this study emphasizes the implications of the presence of these anomalies on the asset pricing models for the analyzed capital markets. Also, this paper presents some methodological issues concerning the identification of capital market anomalies.*

**Keywords:** anomaly; CAPM; capital markets from the former communist European countries.

**JEL Classification:** G12, G14.
**REL Classification:** 11B.

## 1. Introduction

The anomalies on the capital markets represent patterns in financial asset returns that are not predicted by a central theory or paradigm. Although these anomalies were initially discovered on the US capital market, their presence was confirmed also on other capital markets. The central theory to which the anomalies are related is the Capital Asset Pricing Model (CAPM), developed for the first time by Sharpe (1964). Other contribution in the CAPM development can be attributed to Lintner (1965), Mossin (1966) and Black (1972), but the list can be completed with other papers which led to the development of the CAPM.

Initially, the identification of some capital market anomalies was interpreted as evidence of market inefficiency, but the persistence of some anomalies led to a second interpretation. As such, the presence of anomalies on the capital market could indicate some shortcomings of CAPM. According to CAPM, the financial asset returns are influenced by a single factor, the return of market portfolio. Also, CAPM predicts that the expected return of a financial asset is higher compared to the expected return of another financial asset if its risk is greater. Under these conditions, the measure of risk from CAPM fully explains the differences between the expected returns of financial assets.

Nevertheless, empirical tests of the CAPM led to the identification of some anomalies that are not in accordance with the philosophy of the model. The most important anomalies discovered on the US capital market are the value effect, size effect and momentum effect. According to the value effect, the stocks of companies with high ratio between some accounting measures (earnings per stock, book value of equity per stock, cash flow per stock etc.) and the market price of stock earn higher return than those predicted by CAPM. Furthermore, the stocks of companies with high ratio earn higher return than those with low ratios although their risk is similar according to the measure of risk from CAPM. Also, the size effect represents evidence against the philosophy of CAPM. The stocks of companies with small market capitalization earn higher return than those predicted by CAPM. Moreover, the stocks of companies with small market capitalization earn higher return than those of companies with big capitalization although their risk is similar according to the measure of risk from CAPM. Further, the momentum effect reveals the relation between the past and future return of stocks. According to the momentum effect, the financial assets with prices on an upward trajectory, over a prior period of three to 12 months, have a higher probability of continuing on that upward trajectory over the subsequent three to 12 months. In the same time, the financial assets with prices on a downward trajectory over prior months have a higher probability of continuing on that downward trajectory over the subsequent months. In other words, the future

returns of financial assets with an upward trend of prices are higher than those of financial assets with a downward trend. Further, the stocks with an upward trajectory of prices appear to be less risky than those with a downward trend according to the measure of risk from CAPM.

Based on these anomalies, some studies have proposed the development of multifactor asset pricing models. These multifactor models are extensions of the CAPM, built to eliminate anomalies that are not consistent with the philosophy of CAPM. The most popular multifactor models are the three factor model developed by Fama and French (1993) and the four factor model proposed by Carhart (1997).

The aim of this article is to inventory the results of the paper that examined the presence of the most important anomalies initially identified for the US capital market, in the context of the capital markets from the former communist European countries. Based on this inventory, a comparison between the capital market from US and the capital markets from the former communist European countries can be made. This is very important because the presence of the size effect, the value effect or the momentum effect may suggest the applicability of multifactor asset pricing models for the less developed capital markets such as those in the former communist European countries. If the size effect, the value effect and the momentum effect are identified on the capital markets from the former communist European countries, then the CAPM seems to be an incomplete model which omitted to include some important factors with a systematic impact on the return of financial assets. Also, the presence of anomalies make the CAPM an inappropriate model used to estimate the cost of equity or to assess the performance of a portfolio manager that operates in the capital markets from the former communist European countries.

Compared with the results on the capital market from US, the size effect is present in some capital markets from the former communist European countries, absent or reverse for others. The value effect is perhaps the most important anomaly identified in the capital markets from the former communist European countries. However, for some markets the value effect is identified and for others the value effect was absent or it is reverse. The momentum effect was discovered for all analyzed capital markets from the former communist European countries. These results highlight the specificity of capital markets from the former communist European countries, the anomalies were found in some markets, absent or reverse in others.

The paper is structured as follows. Section 2 presents some theoretical aspects of the CAPM, some methodological aspects regarding the empirical tests of the model and some results of empirical tests. Section 3 presents the main anomalies

identified for US capital market and summarizes the literature that examined the anomalies in the context of capital markets from the former communist European countries. Section 4 compares the results of studies that examine the anomalies in the context of capital markets from the former communist European countries with the results for the US capital market. Section 5 concludes.

## 2. Theoretical aspects and the empirical examination of the CAPM

### 2.1. Theoretical aspects

CAPM evaluates the return of a financial asset in relation to risk. CAPM predicts that the expected return of a financial asset is higher compared to the expected return of another financial asset if its risk is greater. In other words, an investor will expect to obtain higher returns if the risk is greater. According to CAPM, the financial asset returns are influenced by a single factor, the return of market portfolio. Since the market portfolio is unobservable, being more a theoretical concept, it is usually approximated by a comprehensive capital market index. The relationship between return and risk is evidenced by the CAPM as follows:

$$E(R_i) = R_f + \beta_i \times [E(R_M) - R_f]$$

where: $E(R_i)$ is the expected return of financial asset $i$, $R_f$ is the risk free rate or the expected return of a portfolio with a volatility/beta coefficient equal to 0, $\beta_i$ is the volatility/beta coefficient of financial asset $i$ computed as the covariance of its return with the market portfolio return divided by the variance of the market portfolio return, $E(R_M)$ is the expected return of market portfolio $M$ and $[E(R_M) - R_f]$ represents the market risk premium.

Regarding the volatility coefficient, it measures the sensitivity of the financial asset return to variation in the market portfolio return. In other words, the variation of the financial asset return due to the variation of market portfolio return is more significant for assets with big beta coefficients.

### 2.2. Empirical examination of the CAPM

Tests of the CAPM are based on three implication of the relation between expected return and risk measured by the volatility coefficient implied in the model. First, expected return of all assets is linear related to their volatility coefficients and the differences in expected return across assets are completely explained by differences in beta coefficient and other variables should add nothing to the explanation of expected return. Second, the market risk premium is positive which means that the expected return of market portfolio is always higher than the return of a portfolio with a volatility/beta coefficient equal to 0. Finally,

given the various developments of the CAPM, in the original version of the model, the expected return of a portfolio with a beta coefficient equal to zero is assumed to be equal to the risk free rate, at which investors can borrow or lend without limitation. In this case, the market risk premium is the difference between the expected return of market portfolio and the risk free rate.

The most common methods to verify the implication of the risk-return relationship suggested by the CAPM are the cross-section regression and the time series regression. Next, these two methods will be described (for details and other extensions of the test methods, see, Goyal, 2012)

### 2.2.1. Test based on cross-section regression

The main goal of the CAPM is to explain the differences between the expected returns of financial assets. As such, the cross-section regression is an appropriate method to see if the implications of the risk-return relationship are respected. First of all, the expected return of a financial asset is approximated by the average return of financial asset. Since the volatility coefficient of a financial asset is unobservable, to implement the test methodology is necessary to estimate it. The volatility coefficient can be estimated as the ratio of the covariance between the asset return and market portfolio return and the variance of market portfolio return or by estimating a time series regression of the form:

$$R_{it} = \alpha_i + \beta_i \times R_{Mt} + \varepsilon_{it} \quad (1)$$

where: $R_{it}$ is the realized return of financial asset $i$ over the interval $t$, $\alpha_i$ is the intercept of financial asset $i$, $\beta_i$ is the volatility/beta coefficient of financial asset $i$, $R_{Mt}$ is the realized return of market portfolio $M$ over the return interval $t$, $\varepsilon_{it}$ is the residual term over the return interval $t$, $t$ is the interval length for construction of financial asset and market portfolio return and $t$=1...T.

Building the series of expected returns and volatility coefficients, as mentioned above, in the next step, the implications of the risk-return relationship can be tested. The approach is to regress a cross-section of average asset returns on estimates of asset volatility coefficients as follow:

$$\overline{R_i} = \lambda_0 + \lambda_1 \times \hat{\beta}_i + u_i \quad (2)$$

where: $\overline{R_i}$ is the average return of financial asset $i$, $\lambda_0$ is the intercept of regression, $\lambda_1$ is the slope of regression, $\hat{\beta}_i$ is the beta estimate of financial asset $i$ and $u_i$ is a residual term.

According with the CAPM, the estimate of intercept from equation (2) must be equal to the risk free rate (approximated in general with the average return of a

risk free asset) and the estimate of $\lambda_1$ coefficient must be equal to the market risk premium (the market risk premium is computed as the difference between average return of market portfolio and average return of a risk free asset).

This method is based only on the financial asset listed on the capital market for the entire time period considered by a study. The new listed financial assets are not included in the analysis. Given this limitation, Fama and MacBeth (1973) proposed an extension of this methodology by estimating the equation (2) for each moment in the analyzed period, not only one time. In this case, the average of intercept's estimates from equation (2) is compared with the average return of a risk free asset and the average of slope's estimates from equation (2) is compared with the market risk premium.

### 2.2.2. Test based on time series regression

Jensen (1968) observed that the relationship between expected return and volatility coefficient can be tested using a time series regression. CAPM suggests that the expected excess return of a financial asset (the difference between expected return of a financial asset and the risk free rate) is completely explained by the expected excess return of market portfolio (the difference between expected return of market portfolio and risk free rate). In this case, the test regression has the following form:

$$R_{it} - R_{ft} = \alpha_i + \beta_i \times (R_{Mt} - R_{ft}) + v_{it} \quad (3)$$

where: $R_{it}$ is the realized return of financial asset $i$ over the interval $t$, $\alpha_i$ is the intercept of financial asset $i$, $R_{ft}$ is the realized return of a risk free asset over the interval $t$, $\beta_i$ is the volatility/beta coefficient of financial asset $i$, $R_{Mt}$ is the realized return of market portfolio $M$ over the return interval $t$, $v_{it}$ is the residual term over the return interval $t$, $t$ is the interval length for construction of financial asset and market portfolio return and $t$=1...T.

The CAPM, will be empirically validated if the estimate of intercept from equation (3) is zero for each financial asset.

### 2.2.3. CAPM test results

Starting with the first tests of CAPM for the capital market in the US, studies have partial validated the model. Fama and French (2004) review the literature that tested the CAPM for the US capital market and noted the empirical rejection of the model. The estimate of intercept from equation (2) is higher than the average return of a risk free asset and the estimate of slope from equation (2) is lower than the market risk premium. The studies that used the time series regression to test the CAPM reported that the estimate of intercept from equation (3) is significantly

different from zero. Furthermore, the estimate of intercept is positive for assets with low volatility coefficients and negative for assets with high volatility coefficients. In conclusion, the assets with low betas have actual returns that are higher that the returns predicted by CAPM and assets with high betas have actual returns lower than the returns predicted by CAPM.

For the European capital markets, one article that tested the implication of CAPM was conducted by Modigliani et al. (1972). The relationship between return and risk was positive in the case of France, UK and Italy. These results were similar with those obtained early on the US capital market. However, for the German capital market the relationship was negative. Bark (1991) using the methodology developed by Fama and MacBeth (1973) tested the applicability of CAPM for the capital market of South Korea. The relationship between return and risk was negative, which means that the CAPM is definitely rejected. Claessens et al. (1995) examined the relationship between return and risk for nineteen emerging capital markets: Brazil, Chile, Colombia, South Korea, Philippines, Greece, India, Indonesia, Jordan, Malaysia, Mexico, Nigeria, Pakistan, Portugal, Taiwan, Thailand, Turkey, Venezuela and Zimbabwe. For only nine from the nineteen capital markets the estimate of slope from equation (2) was different from zero. On eight countries the estimates were positive (South Korea, Philippines, Greece, Malaysia, Mexico, Nigeria, Taiwan and Turkey) and in Pakistan the estimate is negative. Nevertheless, the empirical validation of the model for six of those eight capital markets is questioned because the estimate of intercept from equation (2) is different from the risk free rate (Philippines, Greece, Malaysia, Mexico, Nigeria, Pakistan and Taiwan). The results of Claessens et al. (1995) contradict the evidence obtained by Bark (1991) for the capital market in South Korea. However, it should be noted that the methodologies used to test the CAPM were different and this may lead to conflicting results. Novak and Petr (2010) examined the relationship between return and risk for the capital market in Sweden. The results showed no relationship between return and risk.

## 3. Anomalies on the capital markets

The main conclusion from the previous section is that the CAPM has some drawbacks. The estimate of intercept from equation (2) is higher than the average return of a risk free asset and the estimate of slope from equation (2) is lower than the market risk premium. However, according to the CAPM, the differences in expected return across assets are completely explained by differences in beta coefficient and other variables should add nothing to the explanation of expected return. In this regard, Fama and MacBeth (1973) obtained consistent results in accordance with the specification of CAPM. Fama and MacBeth (1973) added

other variables on the right side of equation (2) and observed that these variables do not contribute to the explanation of the differences in expected returns. The volatility coefficient is the only variable which explains the differences in expected returns.

However, the existence of beta as the only factor which explains the differences in expected returns of financial assets is questionable. For the US capital market, Basu (1977), Banz (1981) identified other sources with explanatory power. These sources are generally characteristics of companies listed on the stock market such as earnings-to-price-ratio, book-to-market ratio, market capitalization etc.

The discovery of these additional variables which explain the differences between the average return of stock represents anomalies that seem to be inconsistent with the philosophy of CAPM. In what follows, this section presents the main anomalies observed over time that led to the development of multifactor asset pricing models.

### 3.1. Evidence of the anomalies' presence on the international capital markets

*The value effect.* The value effect refers to the positive relationship between stock returns and the ratio between some accounting measures as earnings, cash flow and market price of stocks. Basu (1977) observed that the stocks of companies with high earnings-to-price ratios earn higher returns than those predicted by CAPM. Furthermore, the stocks of companies with high earnings-to-price ratios earn higher returns than those with low ratios in the case of US capital market. Ball (1978) confirmed the results obtained by Basu (1977) for the US capital market. Rosenberg et al. (1985) showed that the stocks of companies with high book-to-market ratios earn higher returns than those predicted by CAPM. Also, the stocks of companies with high book-to-market ratios earn higher returns than those with low ratios. The results of Rosenberg et al. (1985) are confirmed by Fama and French (1992) and Lakonishok et al. (1994) for the US capital market. Chan et al. (1991) observed a positive relationship between the average return of stocks and measures as earnings-to-price-ratio and book-to-market-ratio in the case of Japan. Moreover, Chan et al. (1991) found a positive relationship between return and the cash flow-to-price ratio. Capaul et al. (1993) observed a value effect in the case of four capital markets from Europe and for the Japanese capital market.

*The size effect*. The size effect refers to the negative relationship between returns of listed companies and their market capitalization. More specifically, Banz (1981) observed that the stocks of companies with small market capitalization earn higher returns than those predicted by CAPM on the US capital market. Moreover, Banz (1981) noted that the relationship between return and market capitalization is negative. In other words, the stocks of companies with small

market capitalization earn higher return than those of big market capitalization. Reinganum (1981), Fama and French (1992) confirmed the results of Banz (1981). Chan et al. (1991) found a negative relationship between stock returns and market capitalization for the Japanese market. Schwert (2003), reanalyzing the presence of size effect for the US capital market, concluded that this anomaly seems to disappear. The discovery of this anomaly on the US capital market was confirmed also for other capital markets all around the world (for more details, see, van Dijk, 2011).

*The momentum effect.* The momentum effect refers to the positive relationship between prior returns and future stock returns. According to the momentum effect, the stocks with prices on an upward trajectory over a prior period of three to 12 months have a higher probability of continuing on that upward trajectory over the subsequent three to12 months. In the same time, the stocks with prices on a downward trajectory over prior months have a higher probability of continuing on that downward trajectory over the subsequent months. This phenomenon was observed by Jegadeesh and Titman (1993) in the context of capital market from US. Jegadeesh and Titman (1993) showed that a strategy that buys past winners (stocks with prices on a upward trajectory) and sells past losers (stocks with prices on a downward trend) generates a significant abnormal return over a holding period of three to 12 months. Further, the stocks with an upward trajectory of prices appear to be less risky than those with a downward trend according to the measure of risk from CAPM. Rouwenhorst (1998) identified the momentum effect also in the case of some capital markets from Europe. Griffin et al. (2003), expanding the work of Rouwenhorst (1998), identified the momentum effect in forty capital markets. However, the momentum effect was weaker in the Asian capital markets compared with the momentum effect from other capital markets and especially with the effect from European capital markets. The results of Griffin et al. (2003) were confirmed by Chui et al. (2010), which observed the presence of momentum effect for forty one capital markets.

### 3.2. Evidence of the anomalies' presence on the capital markets from the former communist European countries

International evidence on the presence of anomalies in the capital markets have led over time to a new research direction in the case of capital markets from the former communist European countries. However, the results of investigations carried out to identify anomalies, such as those presented in the previous section, have been published in recent years, representing fresh evidence on the presence or absence of these anomalies in the capital markets, which have opened or reopened their doors after the removal of the communist regime that considered inappropriate the presence of capital market in the national financial system.

*The value effect.* Barry et al. (2002) examined the presence of some anomalies in the context of thirty five emerging capital markets which included four markets from the former communist European countries (Poland, Czech Republic, Slovakia, Hungary). Using a sample of 2,000 companies this study observed the presence of value effect. More specifically, the stocks of companies with high book-to-market ratios earn higher returns than those of companies with low book-to-market ratios. For Bulgaria, Matteev (2004) analyzed the presence of value effect for a sample of 160 stocks in the period 1998-2002. Contrary to the results for the US capital market and not only, Matteev (2004), using the methodology of Fama and MacBeth (1973), did not find a relationship between return and book-to-market-ratio. In the case of Bucharest Stock Exchange, Tudor (2009) performed a study for the period 2002-2008. The goal was to test the relationship between return and different variables as volatility coefficient, market capitalization, book-to-market ratio and earnings-to-price ratio. In accordance with the results obtained by Barry et al. (2002), the study concluded that the book-to-market ratio and earnings-to-price ratio are two important indicators which explain the differences in average stock returns. In a recent study, Borys and Zemčik (2011) examined the presence of value effect on the capital markets of Poland, Czech Republic, Slovakia and Hungary. The results confirm the presence of value effect for all four markets and the presence of a regional value effect. The results obtained by Borys and Zemčik (2011) are confirmed by Lischewski and Voronkova (2012) for the Polish capital market. The stocks of companies with high book-to-market ratios earn higher returns than those of companies with low book-to-market ratios. Lieksnis (2010), analyzing the presence of value effect on the capital markets situated in the Baltic countries (Estonia, Latvia and Lithuania), reached similar results to those of Barry et al. (2002). Stocks of companies with high book-to-market ratios prove more profitable than those of companies with low book-to-market ratios at a regional level. Minovici and Živković (2012) noted that stock of companies with high book-to-market ratios earn lower return than those of companies with low book-to-market ratios. This result is contrary to the evidence from developed capital markets and not only.

*The size effect.* Barry et al. (2002) although observed the value effect in the context of emerging capital markets, the size effect it was found not to be so robust as the value effect. The average return of companies with small market capitalization is greater than the average return of companies with big market capitalization, but removing the outliers from the time series of returns led to the disappearance of size effect while the value effect is still present. Matteev (2004), contrary to the results obtained for developed capital markets, did not identify any relationship between return and market capitalization. Tudor (2009) obtained results consistent with those of Matteev (2004), the size effect is not present on

the Romanian capital market. Borys and Zemčik (2011) examined the presence of size effect in the context of four capital markets from the former communist European countries (Poland, Czech Republic, Slovakia and Hungary) and confirmed the results obtained for the US capital market. The size effect is confirmed for each capital markets and in addition the size effect is present at a regional level. Lischewski and Voronkova (2012) confirmed the results obtained by Borys and Zemčik (2011) for the Polish capital market. The stocks of companies with small market capitalization earn higher returns than those with big market capitalization. In the context of capital markets situated on the Baltic countries (Estonia, Latvia and Lithuania), Lieksnis (2010) obtained similar results to those of Barry et al. (2002). The value effect is more robust than the size effect. However, the average returns of companies with small market capitalization exceeded the average returns of companies with big market capitalization on a regional level in the period 2002-2010. Contrary to the results for the US capital market, Minovici and Živković (2012) noted that the average return of companies with big market capitalization tends to be higher than the average return of small market capitalization companies in the case of Serbian capital market.

*The momentum effect*. Avižinis and Pajuste (2007) examined the presence of momentum effect for seven capital markets from the former communist European countries (Croatia, Estonia, Latvia, Lithuania, Poland, Slovenia and Hungary) in the period 2002-2006. For each market, the stocks that registered an upward trend of prices in the prior three to12 months tend to continue this upward trend and the stocks with a downward trajectory of prices tend to follow this trend in the coming months. Chui et al. (2010) examined the momentum effect for forty one capital markets. The Polish capital market was the only market from the former communist European countries. The results confirmed the presence of momentum effect on these markets. Moreover, a strategy that buys past winners (stock with prices in an upward trajectory) and sells past losers (stocks with prices in a downward trend) generates the higher abnormal return in the Polish capital market. Lieksnis (2010) performed a study to identify the momentum effect for a sample of companies from the three Baltic States: Estonia, Latvia and Lithuania. For the period 2002-2010, at the regional level, the presence of momentum effect is confirmed.

## 4. International anomalies versus anomalies on the capital markets from the former communist European countries

The identification of some anomalies like value effect, size effect and momentum effect represents important evidence against the validity of the CAPM. The value effect, the size effect and the momentum effect were discovered at the beginning in the case of US capital market. Further, the presence of these anomalies was confirmed for other capital markets from all around the world. The discovery of anomalies on the US capital market led to the development of the most important competitor of the CAPM, the three factor model of Fama and French (1993) which eliminate the anomalies caused by market capitalization and book-to-market ratio. Nevertheless, the discovery of momentum effect by Jegadeesh and Titman (1993) was a new challenge for the world of asset pricing models as long as the model with three factors, proposed by Fama and French (1993), fails to fully explain the average returns of stock portfolios sorted according to their past performance. The solution came with the study of Carhart (1997), which proposed to extend the three factor model of Fama and French (1993) with an additional factor to eliminate the momentum effect present in the data.

The main conclusion is that all these anomalies identified led to the construction of new asset pricing models that show their applicability often in the US capital market. However, the applicability of these models for the capital markets from the former communist European countries is questionable. Compared with the results on the capital market from US, the size effect is present in some capital markets from the former communist European countries, absent or reverse for others. These results reveal the specificity of some capital markets from the former communist European countries. The value effect is perhaps the most important anomaly identified in the capital markets from the former communist European countries. However, for some markets the value effect is identified and for others the value effect was absent or it is reverse. Again, the results reveal the specificity of some markets situated in former communist countries. The momentum effect was discovered for all analyzed capital markets from the former communist European countries. Interesting is that Chui et al. (2010) observed that a strategy that buys past winners (stock with prices in a upward trajectory) and sells past losers (stocks with prices in a downward trend) generates the higher abnormal return in the Polish capital market.

However, the examination of anomalies in the case of capital markets from the former communist European countries is limited. The number of studies that investigated the presence of value effect, size effect and momentum effect for the capital markets from the former communist European countries is low. This phenomenon is in many times correlated with the lack of required financial data to

conduct detailed analysis on this topic. The capital markets from the former communist European countries have opened or reopened their doors for a short period of time. As such, the historical data are available for short periods with a direct impact on the implementation of methodologies designed to identify the size effect, value effect or momentum effect. Compared with the developed capital markets, the capital markets from the former communist European countries are affected by a lack of liquidity, questioning the relevance of the empirical results.

The test of CAPM and the examination of various indicators as sources of differences in expected returns are based on the realized returns of financial assets. This is perhaps the most important issue in the empirical testing of CAPM because studies implicitly assume a perfect coincidence between realized and expected return. This observation is very important and is suggested by various studies as Pettengill et al. (1995) and Elton (1999).

Although the models with three factors and four factors are important competitors for the CAPM, the lack of theoretical foundation question their use in various financial applications such as determining the cost of equity, assess the performance of a portfolio manager or their use in event studies. According to Fama and French (1992) the market capitalization and the book-to-market ratio measure the sensitivity of financial asset return to variation in other two important factors that are not included in the CAPM and have a systematic impact on the return of financial assets. The stocks of companies with small market capitalization and high book-to-market ratio are riskier than those of companies with big market capitalization and low book-to-market ratio, their average return being higher. The low book-to-market ratio is characteristic of companies which generated high earnings and cash flows in the past and paid low dividends, because they identified sustainable investment opportunities. The high book-to-market ratio is characteristic to companies with poor performance in the past. However, Lakonishok et al. (1994) showed that the stocks with high book-to-market ratios are not riskier than those with low book-to-market ratios. Moreover, if investors will consider that the past performance of companies will continue in future, the higher return of stocks with high book-to-market ratios compared with those of low book-to-market ratios may be a result of misjudgments (because investors consider the past performance repeatable in the future). If these judgment errors are eventually corrected, what we observe based on the historical data is the presence of value effect.

## 5. Conclusions

The aim of this article was to inventory the results of the paper that examined the presence of some anomalies like value effect, size effect and momentum effect in the context of the capital markets from the former communist European countries. Initially, these anomalies were discovered in the case of capital market from US, but confirmed for other capital markets all around the world. The presence of these anomalies on the capital market has implication for the validity of the CAPM and also led to the development of multifactor asset pricing models.

Compared with the results on the capital market from US, the size effect is present in some capital markets from the former communist European countries, absent or reverse for others. The value effect is perhaps the most important anomaly identified in the capital markets from the former communist European countries. However, for some markets the value effect is identified and for others the value effect was absent or it is reverse. The momentum effect was discovered for all analyzed capital markets from the former communist European countries. These results highlight the specificity of capital markets from the former communist European countries, the anomalies were found in some markets, absent or reverse in others.

The presence of value effect, size effect and momentum effect for some capital markets from the former communist European countries is fresh evidence that the CAPM failed to include other important factors with a systematic impact on the return of financial assets. In this condition, the presence of size effect, value effect or momentum effect on the capital markets from the former communist European countries make the CAPM an inappropriate model used to estimate the cost of equity or to assess the performance of a portfolio manager that operates in the capital markets from the former communist European countries.

Nevertheless, the examination of anomalies in the case of capital markets from the former communist European countries is limited. The number of studies that investigated the presence of value effect, size effect and momentum effect for the capital markets from the former communist European countries is low. This phenomenon is in many times correlated with the lack of required financial data to conduct detailed analysis on this topic. The capital markets from the former communist European countries have opened or reopened their doors for a short period of time. As such, the historical data are available for short periods with a direct impact on the implementation of methodologies designed to identify the size effect, value effect or momentum effect. Compared with the developed capital markets, the capital markets from the former communist European countries are affected by a lack of liquidity, questioning the relevance of the empirical results.

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