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Macroeconomic Factors and Capital Markets. Selected Experiences in Central and Eastern Europe

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Abstract: The relationship between capital markets and macroeconomic variables is well documented in developed financial markets, but still developing in emerging financial markets. This paper looks at young financial markets from Central and Eastern Europe, focusing on two markets in the region: Romania and Hungary. Capital markets in these countries are analyzed from the perspective of two of their components: stock exchange markets and mutual funds markets and the effects of five macroeconomic variables (population, GDP/capita, inflation, unemployment, and savings) on the two components assessed. From a methodological point of view, the multiple regression analysis is employed for the period 2003-2019. The analysis is conducted in a comparative manner from two viewpoints: comparing stock exchanges with mutual funds markets and the role played by the macro-level determinants in the development of each and comparing the two national financial markets with one another. The study concludes that macroeconomic factors influence more the development of the stock exchanges than the development of mutual funds and that in the analyzed period, in Romania the impact of the macroeconomic factors on capital markets was stronger than in Hungary.

Keywords: capital markets; stock exchanges; mutual funds; macroeconomic factors; Romania; Hungary.

Introduction

The role of financial markets for the economic growth is well recognized in the literature (Tsaurai, 2018), and it applies to all types of economies, including those from Central and Eastern Europe, whose financial markets have been studied by different researchers from different perspectives (Androniceanu, Gherghina, & Ciobănaşu, 2019; Nicolescu & Tudorache, 2016; Stoltz, 2020; Swiecka, Yesildag, Özen, & Grima, 2020; Tudorache, Nicolescu, & Lupu, 2015; Tvaronaviciene, 2019). Capital markets are an essential component of financial markets and constitute one type of influencer for economic development in diverse economies. The analysis of the factors that influence capital markets is, therefore, a topic of interest for the researchers (Celebi & Honig, 2019; Cevik, Dibooglu, & Kutan, 2016; Sabău-Popa, Bolos, Scarlat, Delcea, & Bradea, 2014), but despite this, so far there is no agreed list in the empirical literature of the factors that influence capital markets (Tsaurai, 2018). Capital markets have different components, out of which the stock exchanges and the mutual funds' markets are looked at in the present paper. The main purpose of the paper is to identify how the development of capital markets is influenced by different macro-level factors. Each of the two components of the capital markets can be characterized by different indicators. For stock exchange markets, the most popular measure for its performance and development is represented by the stock exchange index (Celebi & Honig, 2019; Horobeţ & Belaşcu, 2015), which usually is computed by looking at the most performant companies traded (Vychytilova, 2018). Another measure, this time for the extent of the activity of stock exchanges is the stock market traded value (as a percentage of GDP). For mutual funds, common measures of the

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market development are the total net assets (TNA) attracted by mutual funds and the number of mutual funds, that both represent measures of the size of the market (Filip, 2018; Lemeshko & Rejnus, 2015).

Various macroeconomic factors are seen as influencers for capital markets (Albu, Lupu, & Călin, 2014; Tsaurai, 2018) and some of the most frequently analyzed factors are the Gross Domestic Product (GDP), consumer price index, money supply, interest rates, exchange rates, unemployment, exports. It is considered that there are linkages between macroeconomic variables and stock prices (Celebi & Honig, 2019; Horobeț & Dumitrescu, 2009). Other influencers of capital markets, such as the investment behavior, are identified by the literature (Ferreira, Keswani, Miguel, & Ramos, 2012; Filip, 2018; Sindelar & Budinski, 2019) emphasizing the importance of knowledge when deciding on complex aspects in the analyzed region (Vătămănescu, Pînzaru, Andrei, & Zbuchea, 2016: Vătămănescu, Gazzola, Dincă, & Pezzetti, 2017). The present study considers and analyzes as macroeconomic factors the following: population, GDP/capita, inflation, unemployment, and savings – as a percentage of GDP. The remaining of the present paper is organized as follows: the next section reviews the literature that addresses the relationships between macroeconomic factors and capital markets, the third section explains the methodology applied in the empirical research; the fourth section addresses the results of the empirical research (the level of influence of the considered macroeconomic factors on the two components of the capital markets) and the last section includes the conclusions, implications, and directions for future research.

Literature review. Macroeconomic factors and capital markets

The present section looks at what the literature identifies as influencing factors for the development of each of the two components of the capital markets, respectively the stock exchanges and the mutual funds market.

Stock exchange development is seen as being influenced by both internal and external factors (Islam, Mostofa, & Tithi, 2017) and both macroeconomic and microeconomic factors (Rjoub, Civcir, & Resatoglu, 2017; Shah, 2018). Among possible microeconomic factors can be included: performance and corporate profits of particular companies, or rumors (positive or negative) in the news about particular companies (Shah, 2018), while internal factors comprise similar aspects: earnings per share, dividend, book value, net income (Islam et al., 2017, p.306). All types of factors are important, but macroeconomic factors are evaluated to be major drivers of capital markets all over the world (Zelga, 2017) and they represent the main focus of the present research.

Stock market development itself has been measured using various indicators by different researchers. Tsaurai (2018) measures stock market development through stock market capitalization (% of GDP). Celebi and Hoig (2019) measure the stock market development by looking at the stock price. Others measure the stock market development through stock returns and their volatilities (Errunza & Hogan, 1998; Flannery & Protopapadakis, 2002; Shah, 2018). Megaravalli and Sampagnaro (2018) measure stock market development in Asian countries through the main corresponding stock indexes, similar to Liu and Shrestha (2008) and Hsing (2014).

The macroeconomic determinants of the stock market development identified by the literature are very diverse. Yusoff and Guima (2015) look in the Middle East and North Africa (MENA) region at the following variables as influencers of stock market development: oil rent, income per capita, domestic savings, interest rates, exchange rates, and inflation. Tsaurai (2018) sees as macrolevel determinants for the stock markets:

Vol.8 (2020) no.2, pp.159-173; DOI 10.2478/mdke-2020-0011

foreign direct investment, economic growth, banking sector development, infrastructural development, gross savings, inflation, trade openness, exchange rate, stock market liquidity in a study conducted in 21 emerging financial markets. Celebi and Honig (2019) include among the classical macroeconomic variables influencing the stock index: real GDP, current account, capital account, unemployment rate, gross investments, exports, savings rate, consumer price index, exchange rate, production output, labor productivity, and monetary aggregates. Megaravalli and Sampagnaro (2018) consider only two macroeconomic factors: exchange rate and consumer price index. Shah (2018) investigates the effect of T-bills, exchange rate, consumer price index, and industrial production rate on stock returns. The macroeconomic factors stated by Zelga (2017) as determinants for stock returns include GDP, unemployment rate, inflation, industrial production, retail sales, and economic attitudes ratios.

The mutual funds market development can be measured by returns (Kavita & Pasricha, 2017) and performance (Qureshi, Qureshi, & Ghumro, 2017), by size, dynamics looked at via the number of funds and total net assets (Lemeshko & Rejnus, 2015; Filip, 2018). The literature states that the mutual funds market is also influenced by micro and macro-level factors. At micro-level aspects such as the fund flows and past performance of mutual funds are individual-level elements with the influence of mutual funds market development (Qureshi et al., 2017).

The mutual funds market is seen as being influenced at the macro-level by consumer price index, gross domestic savings, exchange rate, growth rate, interest rate, and the stock exchange index by Kavita and Pasricha (2017). Other macro-level determinants associated with mutual funds markets comprise inflation, interest rates, economic growth, unemployment (Bali, Brown, & Caglayan, 2014; Qureshi et al., 2017) and population (Gera, 2007). Agarwal and Khan (2019) assessed as macroeconomic determinants for mutual funds market in India the next indicators: exchange rate, crude oil price, gold price, silver price, money supply, foreign exchange reserves, interest rate, stock exchange indexes.

Studies conducted on the topic in the Central and Eastern Europe emphasize on the relationship between micro factors such as risk and performance of funds on the evolution of capital markets in Romania Hungary and Slovakia (Nicolescu, Tudorache, & Androniceanu, 2020) or on how mutual funds are influenced by risk factors in Poland (Filip, 2020).

In the literature, the relationship between stock markets and macrolevel factors was far more researched than the relationship between mutual funds market and macrolevel factors. Qureshi et al. (2017) appreciate that there are limited studies that assess the macro-level determinants of the mutual funds market, as compared to stock exchange markets that are extensively researched as presented previously. The present paper comes to address this research gap. Despite the variety of macro-level factors considered by various researchers, it can be observed that there are some common macro-level variables encountered in the case of stock exchange markets determinants, but also there are similar macrolevel factors identified for both stock markets and mutual funds markets. Therefore, the present research selected a number of the most common macro-level factors, as presented in the literature, and assessed their influence on both stock markets and mutual funds markets.

Research methodology

The research methodology was based on quantitative techniques, respectively the multiple regression. Through multiple regression, the present research tries to test the influence of specific macroeconomic factors on the capital market development. Capital

markets are formed of stock exchanges and mutual funds and the capital market development is looked via specific indicators for each component. The development of the two components of the capital markets considered was measured using two indicators for each. For the first component, the stock exchange development was measured through stock exchange indexes (SEIndex: BET in Romania and BUX in Hungary) and the stock market value traded – as a % of GDP (VALTR). For the second component, the mutual funds market development was measured through the total net assets of mutual funds (TNA) and the number of mutual funds (NoMF). It is important to acknowledge that the way the capital market development is measured can influence the results of the studied relationships. Therefore, we consider the two components of the capital market, each with two ways of characterizing their development. The influencing macroeconomic factors taken into consideration are the same in the case of each relationship investigated. Consequently, using these four indicators as dependent variables (that each characterizes the development of the capital market) there were developed four regression equations to analyze the development of capital markets.

The independent and explanatory variables examined were the macroeconomic factors, as recognized by the literature, namely population (POP), GDP/capita (GDP), inflation (INFL), unemployment (UNEMPL), and savings– as a % of GDP (SAV). These macro-level factors have been selected as they have been proven by other studies (as presented in the previous section) as being highly influential, therefore being robust indicators and in the present research, they are applied simultaneously to two main components of the capital markets in two different countries. Table 1 includes a summary with all variables (dependent and independent) investigated, their description, and their relationship with literature.

Table 1. Description of study variables and literature

Variable	Indicator	Description	Sources
SEIndex	BET – stock market index for Bucharest Stock Exchange, RO BUX – stock market index for Budapest Stock Exchange HU	Stock exchange indexes monitor the performances of the companies that are listed at the stock exchanges and comprise the evolution of the most traded companies (in Romania) and the largest and most financially stable companies (in Hungary). They represent a measurement of the stock market development.	Celebi and Honig (2019); Hsing (2014); Liu and Shrestha (2008); Megaravalli and Sampagnaro (2018)
VALTR	Stock market value traded – as a percentage of GDP	Stock market value traded describes the ratio between the total value traded at the stock exchange within a year and the GDP of the country. It is an expression of the level of development of the stock exchange.	GlobalEconomy (2020)
TNA	Total net assets of mutual funds (mil. $)	Represent the value of the total assets that all mutual funds from the country hold annually. It is a measure of the size of the mutual fund market, therefore of the development of the capital market – mutual funds component.	Agarwal and Khan (2019); Filip (2018); Lemeshko and Rejnus (2015)
NoMF	Number of mutual funds	Represent the total number of mutual funds of all types present in a country in a given year. It is another measure of the size of the mutual fund market, therefore of the development of the capital market – mutual funds component.	Agarwal and Khan (2019); Filip (2018); Lemeshko and Rejnus (2015)
POP	Population (mil. inhabitants)	Represents the total number of inhabitants in a country. The size of the	Gera (2007)

Vol.8 (2020) no.2, pp.159-173; DOI 10.2478/mdke-2020-0011

		population can be an indicator of the size of the economy that further can influence the size of the capital market and its development. The influence on capital markets is expected to be positive.	
GDP	Gross Domestic Product/capita (GDP/capita; $/capita)	GDP/capita reflects the level of economic development of a country, is highly associated with the economic growth of a country. The levels of economic development and growth in a country influence the level of development of its capital market and influence is expected to be direct and positive.	Bali et al. (2014); Celebi and Honig (2019); El-Wassal (2013); Fama (1981); Ho and Iyke (2017); Paul and Malik (2003); Tsaurai (2018); Yusoff and Guima (2015); Zelga (2017)
INFL	Inflation consumer prices (annual percentage)	Inflation represents the measure of the average price changes for goods and services for one year when the change is an increase in the general price levels. A high inflation environment would influence negatively the development of the capital markets as investors prefer to hold on their money assets (instead of saving them) as they can lose rapidly their value. The relationship is expected to be inverse and negative.	Ayunku and Etale (2013); Bali et al. (2014); Celebi and Honig (2019); Fama (1981); Kavita and Pasricha (2017); Pal and Mittal (2011); Paul and Malik (2003); Rjoub et al. (2017); Shah (2018); Tsaurai (2018); Zelga (2017)
UNEMPL	Unemployment rate (annual percentage)	Unemployment refers to the persons who are not involved in a paid job, even though they are available for work, for one year. The relationship between unemployment and the development of capital markets is expected to be inverse and negative.	Bali et al. (2014); Boyd et al. (2005); Celebi and Honig (2019); Noshipo, Zandile, Molebogeng, Eberson, and Andrew (2016); Tsaurai (2018); Zelga (2017)
SAV	Savings as a percentage of GDP	Savings as a % of GDP shows the inclination of the population of a country towards savings. The savings of an economy influence the amount of capital that flows in both stock markets and mutual fund markets. The influence is expected to be direct and positive.	Celebi and Honig (2019); Kavita and Pasricha (2017); Pal and Mittal (2011); Tsaurai (2018)

Source: author's compilation

The countries studied are Romania and Hungary, as two young financial markets from Central and Eastern Europe. The data used is represented by annual time series for the period 2003-2019, according to the availability of data for all envisaged indicators in both countries. The sources for the data were the international statistics published by The Global Economy (2020) and by the Investment Company Institute (ICI, 2020).

There were tested four multiple linear regression equations according to the four different dependent variables considered to measure capital markets development and the same set of independent variables represented by the five macroeconomic variables.

The four regression equations that show the econometric relationships between the capital markets development (measured differently) and their determinants, that were tested for each country are the following:

$$SEIndex_{i,t} = \beta_0 + \beta_1 POP_{i,t} + \beta_2 GDP_{i,t} + \beta_3 INFL_{i,t} + \beta_4 UNEMPL_{i,t} + \beta_5 SAV_{i,t} + \varepsilon_{it} \quad (1)$$

$$VALTR_{i,t} = \beta_0 + \beta_1 POP_{i,t} + \beta_2 GDP_{i,t} + \beta_3 INFL_{i,t} + \beta_4 UNEMPL_{i,t} + \beta_5 SAV_{i,t} + \varepsilon_{it} \quad (2)$$

$$TNA_{i,t} = \beta_0 + \beta_1 POP_{i,t} + \beta_2 GDP_{i,t} + \beta_3 INFL_{i,t} + \beta_4 UNEMPL_{i,t} + \beta_5 SAV_{i,t} + \varepsilon_{it} \quad (3)$$

$$NoMF_{i,t} = \beta_0 + \beta_1 POP_{i,t} + \beta_2 GDP_{i,t} + \beta_3 INFL_{i,t} + \beta_4 UNEMPL_{i,t} + \beta_5 SAV_{i,t} + \varepsilon_{it} \quad (4)$$

Where, β_0 is the intercept and $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 are the regression coefficients for the explanatory variables: population, the GDP/capita, the inflation, the unemployment and the savings and t and i subcripts represent the country and the year. ε_{it} is the error term.

The following section presents the results of the empirical research and also comments on the validity of the four regression equations.

Macroeconomic influences on stock exchanges and mutual funds markets – a comparative analysis

The results of the regression analysis illustrate the level of influence of the considered macroeconomic factors on the indicators that characterize the capital markets from the perspective of both the stock exchanges and the mutual fund markets. Tables 2 and 4 present the existence and the level of influence of the five macroeconomic factors (population, GDP/capita, inflation, unemployment, and savings) on each of the four dependent variables considered to measure the development of the capital markets in the two countries (the stock exchange index, the stock market traded value - % of GDP, total net assets of mutual funds and number of mutual funds). The existence of the influence was measured through the analysis of the p-value for the F test and the coefficients of determination. Tables 3 and 5 present the regression coefficients values and the associated p-values, indicating if the relationship between the variables is statistically significant and for the statistically significant relations, indicating the direction and the extent of the influence.

The regression equations are valid for all the four considered dependent variables in Romania, as all p-values for the F test (see Table 2) are lower than 0.05. This means that capital markets development in the two countries is influenced by macroeconomic variables. At the same time, the coefficients of determination illustrate that each dependent variable is influenced to different extents by the macroeconomic explanatory variables considered. In the case of Romania, the variation of the total net assets of mutual funds is explained in the highest proportion (85.9%) by the proposed model. At the same time, the stock market value traded as a percentage of GDP is explained in the lowest proportion (49.6%) by the macro-variables considered.

Vol.8 (2020) no.2, pp.159-173; DOI 10.2478/mdke-2020-0011

Table 2. The validity of the regression model - Romania

	Bucharest Stock Exchange		Mutual funds	
	BET index	**Stock market value traded (% of GDP) (VALTR)**	**Total net assets (mil. $) (TNA)**	**Number of mutual funds (NoMF)**
R Square	0.842232	0.664390412	0.90658	0.833275
Adjusted R Square	0.763348	0.496585618	0.85987	0.749913
Significance F *(p-value)*	0.000928	0.030582	7.3917E-05	0.001208

Source: author's calculations

The analysis of the regression coefficients (see Table 3) for Romania illustrates that some regression coefficients are statistically significant, while others are not.

The evolution of the BET index is influenced by inflation and by the propensity towards savings with a 95% probability and by the GDP/capita and the unemployment with a 90% probability. Accordingly, when GDP/capita increases with 1%, the increase in the BET index is of 0.68 points, illustrating a direct and positive relationship between the stock exchange index and the GDP/capita. In other words, the stock exchange development in Romania is influenced by the economic growth of the country. This is similar to the findings of other authors that conducted research in other countries and found that the stock market development depends on the level of economic development and the economic evolution of the country (Paten, 2012; Yartey & Adjasi, 2007; Zelga, 2017). The relationship between the BET index and GDP/capita in Romania is positive, an increase in the GDP/capita determines and increase in the BET index, a situation that is in line with theoretical expectations according to which positive signals from GDP should have positive impacts on stock exchanges (Paul & Malik, 2003; Zelga, 2017).

In Romania, when the inflation increases with 1%, the BET index decreases with 519 points with a 95% confidence level. It is noticed therefore an inverse relationship between the two variables, similarly as most of the literature claims (Ahmad & Ramzan, 2016; Fama, 1981; Gay, 2016). For instance, in Egypt and Tunisia (Barakat, Elgazzar, & Hanafy, 2016) identifies a negative relationship between the CPI (Consumer Price Index) and the stock exchange indexes. Others (Megaravalli & Sampagnaro, 2018) found no significant relationship between the two variables.

However, there are authors (Barakat et al., 2016; Ullah, Hussain, & Rauf, 2014) who consider that inflation can affect the stock market, either positively or negatively, depending on which type of inflation is considered: a) the expected inflation has an effect of an increase in the stock value as an increase in the process leads to an increase in earnings of companies and further to an increase in dividends and further to an increase in demand for the stock and eventually to an increase in stock value and b) the unexpected inflation has a negative effect on stock value as the rise of the general level of prices leads to an increase in the cost of living and determines the reallocation of resources towards consumption.

Contrary to the expectations, the relationship between the BET index and unemployment is also positive, as an increase in unemployment determines an increase in the BET index. Unemployment is seen in the literature as having an impact on the stock market (Noshipo et al., 2016), but the rise in unemployment is usually associated with a negative influence on the stock index (Boyd, Jian, & Ravi, 2005; Zelga, 2017). However, there are authors (Boyd et al., 2005) that consider that the influence of the unemployment on the stock exchange evolution is dependent on the economic cycle: unemployment has a positive

effect on stocks during economic expansion and has a negative effect during economic contractions. Other studies for instance for Germany (Celebi & Honig, 2019) found similar results with ours, as unemployment was related positively with the stock returns, a possible explanation being related to the fact that the economy was in a period of contraction.

Table 3. Regression coefficients - Romania

Dependent variables/ ⇨ / Explanatory variables ⇩	**Bucharest Stock Exchange**			
	BET index		**Stock market value traded (% of GDP)(VALTR)**	
	Regression Coefficient	**P-value**	**Regression Coefficient**	**P-value**
Intercept	11487.51	0.722796	-5.562125737	0.44072
Population (POP)	62.18647	0.967826	0.187710647	0.583032
GDP/capita (GDP)	0.680156	0.051964**	0.000259493	0.003354*
Inflation (INFL)	-519.063	0.001314*	-0.01679876	0.53118
Unemployment (UNEMPL)	1322.265	0.095823**	0.498202368	0.010368*
Savings (% of GDP) (SAV)	-889.348	0.003893*	-0.13059193	0.031946*
Dependent variables/ ⇨ / Explanatory variables ⇩	**Mutual funds**			
	Total net assets (mil. $) (TNA)		**Number of mutual funds (NoMF)**	
	Regression Coefficient	**P-value**	**Regression Coefficient**	**P-value**
Intercept	96015.81	0.00446*	717.663	0.095977**
Population (POP)	-4134.16	0.00814*	-37.0052	0.075393**
GDP/capita (GDP)	-0.6578	0.028719*	0.004261	0.291456
Inflation (INFL)	-127.94	0.222383	1.32964	0.383862
Unemployment (UNEMPL)	-476.114	0.446528	11.66178	0.220421
Savings (% of GDP) (SAV)	-5.92022	0.976859	-1.24265	0.683059

Note: * Confidence level 95%; ** Confidence level 90%

Source: author's calculations

The relationship between the BET index and the savings is also unexpected, as an increase in the savings, apparently determines a decrease in the BET index, while the literature usually associates a positive relationship between savings and stock returns (Celebi & Honig, 2019). Others also found such unexpected results with savings negatively impacting the stock market development (Ayunku & Etale, 2013).

The size of the population is not a statistically significant influencing factor for the BET index, suggesting no impact of the size of the population as a macro factor on the development of the stock exchange.

Similarly, it can be observed that in Romania the stock market traded value (as a % of GDP) is also influenced by three of the macroeconomic factors considered (GDP/capita,

Vol.8 (2020) no.2, pp.159-173; DOI 10.2478/mdke-2020-0011

unemployment and savings) reinforcing the results found by other researchers that the stock market development is influenced by different macroeconomic factors (Celebi & Honig, 2019; Ho & Lyke, 2017; Islam et al., 2017). In Romania, macroeconomic factors play a considerable role in the fluctuations of the stock market and they can be used to explain these fluctuations as also found by Barakat et al. (2016).

The analysis of the mutual funds market in Romania reveals that the total net assets of mutual funds are influenced by population and the GDP/capita, while the number of mutual funds is influenced by the size of the population. This confirms only partially the findings of Gera (2007) in India, where GDP, market movement, population, inflation, and financial savings were found to be macro-level influencers of the development of mutual funds and of Bali et al. (2014) that state that the mutual funds are influenced by inflation, interest's rates, unemployment, and economic growth. Another study also conducted in India by Agarwal and Khan (2019) illustrated that the macro variables influence differently the various categories of mutual funds (gold funds are influenced by gold price, money supply, and stock exchange index, while energy funds are influenced by oil price, interest rate, foreign exchange reserves, and others).

To conclude, in Romania, macroeconomic variables (such as GDP/capita, inflation, unemployment, and savings) are rather influencers for the indicators related to the stock exchange, depicting an influence of macro-level factors on the stock exchange development, as also found by other authors (Albu et al, 2014; Celebi & Honig, 2019; Horobeț & Dumitrescu, 2009; Megaravalli & Sampagnaro, 2018).

Table 4. The validity of the regression model - Hungary

	Budapest Stock Exchange		**Mutual funds**	
	BUX index	**Stock market value traded (% of GDP) (VALTR)**	**Total net assets (Mil. $) (TNA)**	**Number of mutual funds (NoMF)**
R Square	0.815613	0.868465	0.777053	0.70489
Adjusted R Square	0.72342	0.802698	0.66558	0.557335
Significance F *(p-value)*	0.001947	0.000388	0.004749691	0.017213

Source: author's calculations

In Romania, the mutual funds market development (measured through the two analyzed indicators TNA and the number of funds) is only influenced by the population and the GDP/capita. In other words, the size and the development of the mutual funds' industry depend on the size of the population that determines the number of potential investors and the GDP/capita and reflects the investment power of investors. In Romania, most of the investors in mutual funds are local investors (Boghean, 2014) and the results of the present research come to reinforce this assertion.

In Hungary, the regression equations are valid for all the four considered dependent variables, as all p-values for the F test (see Table 4) are lower than 0.05.

Table 5. Regression coefficients - Hungary

Dependent variables/ ⇒ / Explanatory variables ⇓	**Budapest Stock Exchange**			
	BUX index		**Stock market value traded (% of GDP)(VALTR)**	
	Regression Coefficient	**P-value**	**Regression Coefficient**	**P-value**
Intercept	-8294.54	0.932111	-83.6025	0.242945
Population (POP)	2724.975	0.724923	8.710756	0.13402
GDP/capita (GDP)	0.217702	0.836083	0.001815	0.031662*
Inflation (INFL)	-633.794	0.543832	0.706686	0.346697
Unemployment (UNEMPL)	-2415.08	0.001467*	0.485232	0.24727
Savings (% of GDP) (SAV)	1105.264	0.392682	-0.96675	0.296606
Dependent variables/ ⇒ / Explanatory variables ⇓	**Mutual funds**			
	Total net assets (mil. $) (TNA)		**Number of mutual funds (NoMF)**	
	Regression Coefficient	**P-value**	**Regression Coefficient**	**P-value**
Intercept	-63526.04	0.2354	-67.2298	0.957572
Population (POP)	3865.156	0.3555	-27.5774	0.783548
GDP/capita (GDP)	0.346115	0.5384	0.01426	0.309049
Inflation (INFL)	198.9969	0.7174	1.009874	0.940036
Unemployment (UNEMPL)	197.8525	0.5175	10.16075	0.189864
Savings (% of GDP) (SAV)	1372.934	0.0627**	15.17549	0.366974

Note: * Confidence level 95%; ** Confidence level 90%

Source: author's calculations

Analyzing the coefficients of determination for Hungary, it can be observed that mutual funds are less influenced by the regression equation (66.5% and 55.7% according to coefficients of determination) in comparison with the stock exchange, for which the macroeconomic explanatory variables influence the two dependent variables considered in the proportion of 72.3% for the BUX index and of 80.2% for the stock market value traded, as a % of GDP.

The analysis of the regression coefficients (see Table 5) illustrates that the macroeconomic factors influence to a low extent the stock market development and at an even lower extent the mutual funds market development, in Hungary. According to the present research and the regression coefficients that are statistically significant, the BUX index is only influenced by the unemployment with a 95% confidence level, while the stock market traded value, as a % of GDP is influenced only by GDP/capita with a 95% confidence level. The relationship between the BUX index and the unemployment is negative, illustrating that an increase in unemployment rate determines the BUX index to decrease as also stated by some in the literature (Boyd et al., 2005). Therefore, it can be stated that according to the present research the development of the stock market in Hungary is only influenced by two of the macroeconomic factors considered, respectively the GDP/capita and the unemployment.

Vol.8 (2020) no.2, pp.159-173; DOI 10.2478/mdke-2020-0011

The mutual funds market in Hungary is only influenced by the savings in case of the total net assets, while the number of funds is not influenced by any of the considered macroeconomic factors. An increase in savings in Hungary determines and increase in the total net assets of mutual funds. It can be concluded that in Hungary, in the analyzed period macro-level factors had a limited influence on the development of capital markets. This is consistent with the findings of other researchers (Kavita & Parisha, 2017; Rao & Daita, 2013) that state that mutual funds are not considerably influenced by macro-level variables.

Conclusions

The paper illustrates that the level of development of stock markets and mutual funds is different in the two countries, with Hungary being more developed for both components. In this context, the influence of the macroeconomic factors on the capital markets development in the two countries presented different patterns. The main conclusions of the research are:

Firstly, macroeconomic factors do influence capital markets in Central and Eastern Europe. From the 40 tested relationships in total in both countries, 13 were statistically significant. The findings confirm other studies' results (Albu et al., 2014; Celebi & Honig, 2019; Horobeț & Dumitrescu, 2009; Tsaurai, 2018) as GDP (Zelga, 2017), inflation (Barakat et al., 2016), unemployment (Celebi & Honig, 2019) and savings (Ayunku & Etale, 2013) were also found to be capital markets' influencers in different countries and regions.

Secondly, macroeconomic factors influence to a higher extent stock exchange markets than mutual funds markets, in both countries. In both countries, there were more factors influencing stock exchange development than mutual funds development. Nine factors in total influenced stock markets, as compared to only four factors in total that influenced mutual funds. This comes to support the argument from the literature (Barakat et al., 2016) that macroeconomic variables have a powerful relationship with the stock market.

In Romania, there were more macro factors (GDP/capita, inflation, unemployment, and savings) as compared to Hungary (GDP/capita and unemployment) found to have statistically significant influences on stock exchange development. As far as the mutual funds are concerned, there were fewer macro-factors that showed statistically significant relationships on overall, more in Romania than in Hungary, but with no economically explained direction of the relationship. The present study illustrated similar to others (Kavita & Parisha, 2017; Rao & Daita, 2013) that mutual funds development has a little dependence on macro-economic variables.

Thirdly, the overall impact of macro-factors is higher in Romania (a larger number of factors as influencers – 10 in total), as compared to Hungary (three factors in total).

Based on the results of the study, we can assume that the more developed the capital market is, the lower is the influence of macroeconomic factors on its different components. Similarly, stock exchanges development seems to be more affected by macro-level influencers, while mutual funds development is less affected by macro-level influences and probably more affected by industry level and micro-level influences.

In terms of practical implications investors, brokers, and mutual fund managers have to understand the macro influences and based on their consideration to choose more profitable investment schemes. At the same time governments' policies need to consider

the association between capital markets and macroeconomic factors, so that to ensure more stable capital markets in their countries.

The present research contributes to the literature on capital markets development influencers from more perspectives: firstly, capital markets are looked at for the same period of time in a more extensive manner by considering both stock markets and mutual funds components, differently from the majority of the previous studies that looked at only one component of the capital market at a time, in most of the times this was the stock exchange; secondly the paper uses more measures for both components of the capital markets development (two measures for stock exchanges and two measures for mutual funds), as opposed to the majority of previous studies that used only one measure for capital market development (usually the stock exchange index) and thirdly, the paper considers two different capital markets illustrating that the situation is different from one country to another and the conclusions of such studies are country-related and cannot be automatically extended to capital markets in general. All of the above contributions illustrate the added value the paper has in the finance literature and the international, comparative literature by the enlargement of the components of the capital markets studied at the same time, by the use of more measures of the capital market components at the same time and by the comparative study in two financial markets (allowing to identify country-specific influencers and similarities and differences between the two countries). These findings are consistent with other studies' findings that consider that the nature of the relationship between the stock market and macroeconomic variables may differ between developed and developing countries and also between countries that have other similarities (Barakat et al., 2016). The differences in the types of macro-economic factors and the level of influence that they have on capital markets suggest that there are also other types of factors that can influence capital markets at the national level. The paper also brings added value to professionals such as brokers and fund managers, who can take into consideration the macrolevel influencing factors when deciding when and where to invest the capital they administer.

The limitations of the study refer to the small number of countries considered (only two) and the limited number of macroeconomic considered (only five). Future directions of the research can be to extend the number of macro-economic variables considered but also to include industry level and micro-level factors in the analysis.

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