# THE INFLUENCE OF HOME COUNTRY MACROECONOMIC FACTORS ON INWARD CROSS-BORDER MERGERS AND ACQUISITIONS: THE CASE OF ROMANIA

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**Abstract:** *Expanding abroad and entering on foreign markets is a natural step in the process of growth and development of firms. Cross-border mergers and acquisitions represent, currently, an important tool in the competitive struggle, which is increasingly intense due to the globalization of economies, and also the driving force behind the growth of Foreign Direct Investments (FDI) flows globally. In Romania, the share of cross-border mergers and acquisitions inflows in the total FDI inflows increased progressively, reaching 46,6% in 2006, when the highest value of these transactions was registered (5.308 million dollars, according to UNCTAD). The aim of this empirical research is to study the correlation between the number of inward cross-border mergers acquisitions and a series of other variables, considered factors of influence, over the period 1992-2013. Using simple regression models, the study reveals that economic factors such as Gross domestic product (GDP), stock market capitalization (as a percentage of GDP), interest rate, exchange rate, M2 monetary aggregate and inflation have an important role in explaining cross-border mergers and acquisitions inflows. Between the number of inward cross-border mergers and acquisitions and GDP, M2 monetary aggregate, market capitalization, respectively the exchange rate, there is a direct and linear correlation and between the number of inward mergers and acquisitions and the interest rate, respectively the inflation, there is an inverse linear correlation. The research conducted reveals the important role played by macroeconomic factors with regard to the cross-border mergers and acquisitions inflows, as an entry mode of FDI in Romania.*

**Keywords:** cross-border mergers and acquisitions; macroeconomic determinants; Romania.

**JEL classification:** G34.

## 1. Introduction

Expanding abroad and entering on foreign markets is a natural step in the process of growth and development of firms. This can be made either by greenfield investments or by cross-border mergers and acquisitions (M&As), which represent, in fact, the two entry modes of Foreign Direct Investments (FDI) in an economy. Cross-border mergers and acquisitions represent, currently, an important tool in the competitive struggle, which is increasingly intense due to the globalization of economies, and also the driving force behind the growth of FDI flows globally.

In Romania, the share of cross-border M&A inflows in the total FDI inflows increased progressively, reaching 46,6% in 2006, when the highest value of these transactions was registered *(5.308 million dollars, according to UNCTAD)*. In our country, as well as in other countries, the privatization programs have contributed to an increase in the number of cross-border mergers and acquisitions throughout the 1990s.

We can say that a feature of merger and acquisition activity in Romania is represented by the presence of foreign investors. Figure 1 shows the evolution of the number and value of cross-border mergers and acquisitions inflows carried out during 1992-2013, as shown by

UNCTAD statistics.

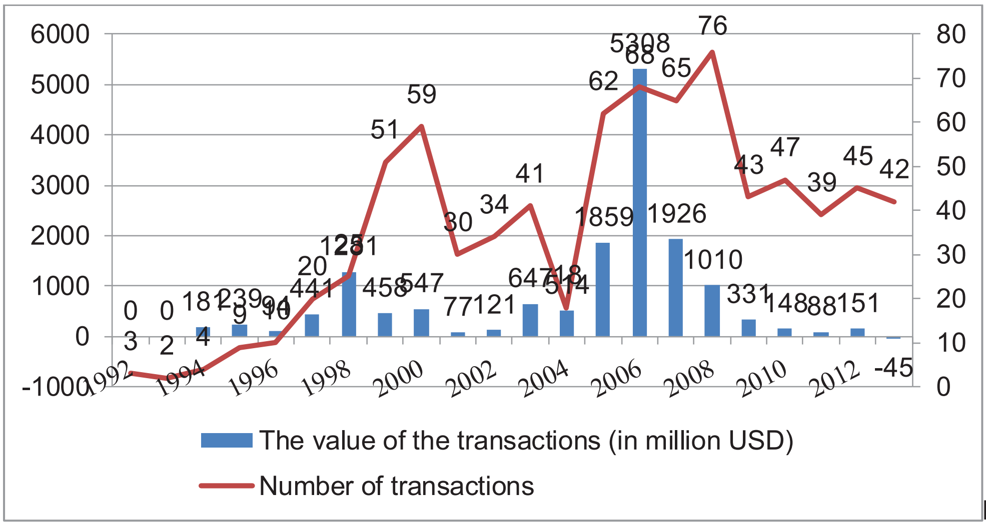


**Figure 1:** The evolution of the number and value of cross-border mergers and acquisitions inflows during 1992-2013
Source: realized by the author based on data from UNCTAD statistics

The main objective of this study is to analyze the influence of economic and financial factors on cross-border mergers and acquisitions inflows carried out during 1992-2013. Taking into consideration previous research in the literature, we selected the following factors of influence: market size, measured by gross domestic product (GDP) nominal value, market capitalization (as a percentage of GDP), monetary policy interest rate, exchange rate, money supply (M2 monetary aggregate specifically) and inflation. The next section of the paper includes a literature review on macroeconomic factors influencing M&A operations, section 3 provides information on the data and methodology used, section 4 presents the results of the study and the last section of the paper provides the conclusions of the study.

## 2. Literature review

The field literature revealed a vast range of studies that analyze the macroeconomic determinants of FDI, but also the fact that few of these studies examined the determinants of the two specific entry modes of FDI. Globerman and Shapiro (2005) analyzed simultaneously the factors affecting cross-border mergers and acquisitions, respectively FDI, and concluded that there are some differences regarding their determinants. Although most important variables affecting cross-border operations or FDI are the same, their research shows that, for example, the rate of GDP growth is a determinant of FDI but not of cross-border mergers and acquisitions. Neto et al. (2010) extended the analysis previously performed by Globerman and Shapiro (2005), by including greenfield investments as a distinct entry mode of FDI. Researchers have identified a group of variables that are common influence factors to each entry mode of FDI, such as the size of the economy, openness, governance and human development index, but also factors specific to each entry mode of FDI. They also showed that investor protection explains cross-border mergers and acquisitions and cultural variables are important in achieving greenfield investments.
The research carried out so far, which focused on the subject of the determinants of M&A transactions, revealed a number of influencing factors, including gross domestic product,

stock prices, interest rates, money supply, exchange rate or inflation.
GDP reflects the size of the economy, and in the literature there are several studies which have demonstrated that M&A activity increases during periods of GDP growth (Crook, 1995; Ali-Yrkko, 2002; Nakamura, 2004; Resende, 2008). Boateng et al. (2011) or Uddin and Boateng (2011) indicates the same thing, namely, the fact that a higher GDP in the host country will attract companies from other countries in pursuit of M&As, due to a possible increase in aggregate demand and profitability.
A large number of studies in the literature have focused on analyzing the correlation between M&A activity and stock prices (Nelson, 1959; Kish and Vasconcellos, 1993; Crook, 1995; Shleifer and Vishny, 2003; Boateng et al., 2011; Uddin and Boateng, 2011; Boateng et al., 2014). Thus, stock market capitalization is considered to be a factor that reflects financial market size and influences significantly cross-border M&A activity. Researchers such as di Giovanni (2005), Globerman and Shapiro (2005) have shown a positive correlation between market capitalization and capital inflows, related to cross-border mergers and acquisitions. On the other hand, Neto et al. (2010), which extended the previous analysis performed by Globerman and Shapiro (2005), couldn't prove empirically that this variable is specific to cross-border mergers and acquisitions transactions.
Regarding the influence of interest rates on M&A activity, several researchers (Melicher et al., 1983; Becketti, 1986; Yagil, 1996) have argued that lower interest rates stimulate corporate transactions by reducing the cost of financing. Regarding cross-border operations, the results of Kish and Vasconcellos (1993) indicate that an increase in interest rates in the host country determines the reduction of the capital inflows through cross-border M&As. On the other hand, the results obtained by Boateng et al. (2011) indicate an insignificant impact of interest rates on cross-border mergers and acquisitions inflows in the UK.
The importance of the exchange rate in the activity of cross-border mergers and acquisitions is revealed in most studies that have analyzed the determinants of these transactions. Harris and Ravenscraft (1991), Kang (1993), Vasconcellos and Kish (1996) or Goergen and Renneboog (2004) support the importance of the exchange rate in explaining cross-border operations and the fact that companies from countries that have a strong currency will be tempted to engage in operations targeting firms in countries with a depreciated currency, because in this case the companies' assets will be cheaper. Vasconcellos and Kish (1998) revealed that the share prices and exchange rates influence both the number and geographical spread of cross-border transactions. Kamaly (2007) also argues that currency depreciation affects, significantly and in a positive way, M&A activity carried out in developing countries which he analyzed in the research. According to Erel et al. (2012), firms from countries where there is an increase in the stock market, whose national currency has appreciated and have a relatively high value of market to book ratio, tend to be purchasers, while firms coming from countries whose economy underperforms tend to be targeted in cross-border transactions.
Another stimulating factor of merger and acquisition activity is money supply. Researchers such as Clarke and Ioannidis (1994) or Resende (2008) emphasized the role of liquidity in the economy, in terms of stimulating the M&A activity, by identifying a direct correlation between money supply and corporate takeover activity. As regards the inward cross-border operations, Uddin and Boateng (2011) also revealed that money supply (liquidity) is an important determinant. The increase in liquidity in the host country stimulates economic activities, which should reduce the cost of financing and thus should attract foreign investment through mergers and acquisitions.
Studies that analyze the macroeconomic determinants of cross-border transactions, included the variable inflation rate as an influencing factor of these operations (Boateng et al., 2011; Boateng et al., 2014). A low rate of inflation attracts foreign direct investment in the form of mergers and acquisitions, whereas a high rate of inflation will direct foreign

investors to other countries where lower inflation makes targets less expensive.
Regarding our country, as far as we know, only Jurcău et al. (2011) have analyzed the macroeconomic determinants of Romanian cross-border mergers and acquisitions. Unlike them, we introduced other variables in the analysis and used the number of inward transactions as a dependent variable instead of their value. Other differences concern the methodological aspects.
On the basis of existing research literature on macroeconomic determinants of cross-border mergers and acquisitions, we intend further to study their impact on Romanian inward transactions.

## 3. Data and research methodology

The aim of this research is to study the correlation between the number of inward cross-border mergers acquisitions, using simple regression models, and a series of other variables, selected in accordance with the most recent and relevant studies from the field literature.
In the first stage of the research, annual data have been collected with respect to Romania, over the period 1992 – 2013, regarding the following variables, considered factors of influence for the number of inward cross-border mergers and acquisitions:

- Market size, measured by nominal GDP value expressed in millions of lei, current prices;
- Stock market capitalization, expressed as a percentage of GDP;
- National Bank interest rate (monetary policy interest rate, from 1 September 2011);
- Average exchange rate, RON/ USD;
- Money supply, M2 monetary aggregate specifically, expressed in millions of lei;
- Inflation.

As researchers Boateng et al. (2011) or Uddin and Boateng (2011), we used in our study, the endogenous variable represented by the number of cross-border M&A transactions concluded annually.
Data regarding the number of inward cross-border mergers and acquisitions was collected from UNCTAD statistics, the GDP annual value was collected from Eurostat. Data regarding BNR monetary policy interest rate, exchange rate and M2 monetary aggregate were collected from the website of the National Bank of Romania, the Interactive Database, respectively from the monthly and annual reports. Data regarding the market capitalization (as a % of GDP) was collected from the website of World Bank, the World Development Indicators (it covered the period 1994-2012). For the years 1992 and 1993 data were collected from Bucharest Stock Exchange and the National Bank of Romania reports. For the year 2013, data were collected from the annual report of the Financial Supervisory Authority. Data regarding the inflation rate were collected from the Romanian National Institute of Statistics, TEMPO Online Database.
Based on these data we will investigate and validate or invalidate the following hypotheses:
H1: Gross domestic product positively influences the number of cross-border mergers and acquisitions inflows.
H2: Market capitalization positively influences the number of cross-border mergers and acquisitions inflows.
H3: The decrease in interest rates positively influences the number of cross-border mergers and acquisitions inflows.
H4: The number of mergers and acquisitions of Romanian companies by foreign investors increases when the domestic currency depreciates.
H5: The number of cross-border mergers and acquisitions inflows increases when money supply increases.
H6: The decrease in the inflation rate positively affects the number of mergers and

acquisitions of Romanian companies by foreign investors.
The validation of these hypotheses will be based on the results of simple regression models between the endogenous factor, the number of inward cross-border M&As, and the exogenous factors, mentioned in the previous paragraphs. Based on these models, we will identify the strength of the correlation between the two variables and its statistical significance. We will also validate or invalidate the research hypotheses stated. The data will be processed using the Eviews software.

## 4. Results

The purpose of simple regression models consists in identifying the existence of the correlation between variables, determining the intensity of the correlation between them, analysing its shape, determining the model parameters and testing the hypotheses in order to establish their validity.
Given the exponential evolution of the variables considered, the numerical values were transformed by logarithm and the influence of seasonal factors was eliminated using Tramo-Seats method. The new variables were further symbolized according to the table below:

**Table 1:** Variables used in the modelling and their symbol

| **Name of the initial variable** | **Symbol for the initial data series** | **Symbol for the transformed variable** |
|---|---|---|
| The number of inward cross-border mergers acquisitions | TRANZ | LOG_TRANZ |
| GDP | GDP | LOG_GDP |
| Market capitalization | MC | LOG_MC |
| Exchange rate RON/USD | ER | LOG_ER |
| M2 monetary aggregate | M2 | LOG_M2 |
| BNR monetary policy interest rate | IR | LOG_IR |
| Inflation | I | LOG_I |

Source: realized by the author

By using the scatterplot between LOG_TRANZ and the exogenous variables, we will be able to describe the correlation the latter have on the number of inward cross-border mergers and aquisitions.

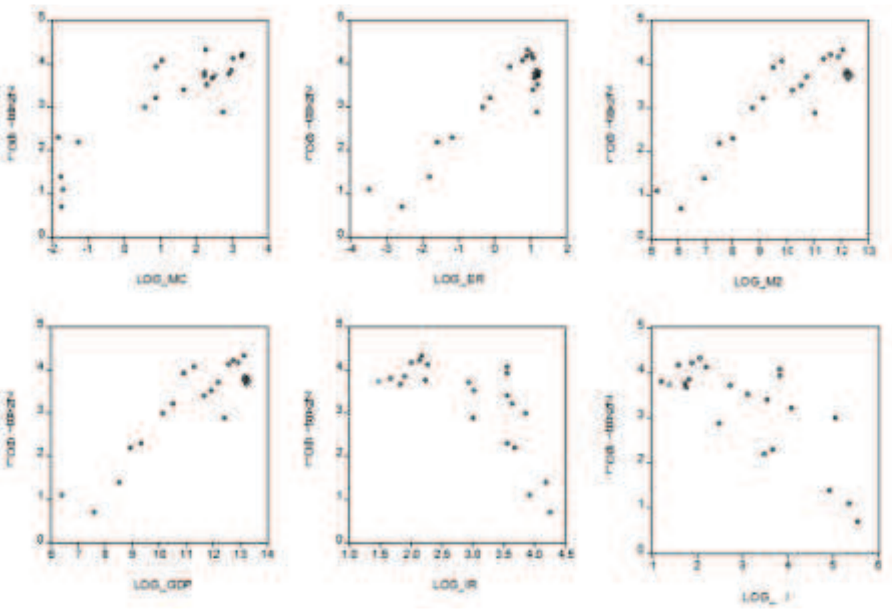

**Figure 2:** Scatterplot between the number of cross-border mergers and acquisitions and exogenous variables
Source: author calculus using Eviews

From the analysis of the graphical representations using the scatterplot, we can conclude that between the number of inward cross-border mergers and acquisitions and GDP, M2 monetary aggregate, market capitalization, respectively the exchange rate, there is a direct and linear correlation and between the number of inward cross-border mergers and acquisitions and the interest rate, respectively the inflation, there is an inverse linear correlation.
The hypothesis mentioned above will be confirmed using econometric modelling. Therefore, we will develop simple linear regression models between the variable number of inward cross-border M&As, which is considered in the logarithmic form, and the influence factors. We continue to estimate the regression equations parameters. The estimation results using Eviews are presented in the table below:

**Table 2:** Estimation results of linear simple regression model between the number of cross-border mergers and acquisitions inflows and exogenous variables

| **Exogenous variable** | **R-squared** $\hat{\bar{R}}^2$ | **Fisher statistic** $F_{calc}$ | **P** | **Coefficient of exogenous variable** | **t Statistic** | **P** |
|---|---|---|---|---|---|---|
| LOG_GDP | 0,81 | 85,85 | 0,00 | 0,46 | 9,26 | 0,00 |
| LOG_MC | 0,76 | 64,51 | 0,00 | 0,5 | 8,03 | 0,00 |
| LOG_ER | 0,84 | 105,33 | 0,00 | 0,68 | 10,26 | 0,00 |
| LOG_M2 | 0,79 | 76,40 | 0,00 | 0,43 | 8,74 | 0,00 |
| LOG_IR | 0,52 | 21,88 | 0,00 | -0,85 | -4,76 | 0,00 |
| LOG_I | 0,59 | 28,87 | 0,00 | -0,59 | -5,37 | 0,00 |

Source: author calculus using Eviews

The correlation coefficient (R-squared) expresses the intensity of the influence that each exogenous variable has on the variable LOG_TRANZ. The closer the value is to 1, the stronger the correlation between variables. The correlation reports are statistically significant, because the P value associated with Fisher statistics is 0,00 in each case.

As shown in Table 2, the intensity of the correlation regarding the sample of 22 observations is strong and statistically significant between LOG_TRANZ and all the selected variables. It is a direct correlation from the LOG_GDP, LOG_MC, LOG_ER, LOG_M2 and reverse from LOG_IR and LOG_I.
By analyzing the significance of the coefficients, we can observe that all of them are significantly different from 0, the probability that they are null featuring in the last column of the table 2 (it can be seen that it is zero in each case).
The tests relating to residual variable $\varepsilon_t$ confirm the validity of the models: White test confirmed the homoscedasticity of the errors, Durbin Watson - the independence and Jarque Berra - the normality of errors.
Whereas all the hypotheses are verified, the models are valid, so we can take the following decisions regarding the research hypotheses:

**Table 3:** Research propositions and related decisions using linear models

| **Research propositions** | **Decision** |
|---|---|
| H1: Gross domestic product positively influences the number of cross-border mergers and acquisitions inflows. | Validated |
| H2: Market capitalization positively influences the number of cross-border mergers and acquisitions inflows. | Validated |
| H3: The decrease in interest rates positively influences the number of cross-border mergers and acquisitions inflows. | Validated |
| H4: The number of mergers and acquisitions of Romanian companies by foreign investors increases when the domestic currency depreciates. | Validated |
| H5: The number of cross-border mergers and acquisitions inflows increases when money supply increases. | Validated. |
| H6: The decrease in the inflation rate positively affects the number of mergers and acquisitions of Romanian companies by foreign investors. | Validated |

Source: author results using Eviews

## 5. Conclusions

The research conducted reveals the important role played by macroeconomic factors with regard to the cross-border mergers and acquisitions inflows, as an entry mode of FDI in Romania. The study reveals that economic factors such as GDP, stock market capitalization (as a percentage of GDP), interest rate, exchange rate, M2 monetary aggregate and inflation have an important role in explaining cross-border mergers and acquisitions inflows. Between the number of inward cross-border mergers and acquisitions and GDP, M2 monetary aggregate, market capitalization, respectively the exchange rate, there is a direct and linear correlation and between the number of inward mergers and acquisitions and the interest rate, respectively the inflation, there is an inverse linear correlation.
These results reinforce the idea that macroeconomic factors in Romania, as a host country, creates competitive advantages on the basis of which foreign companies shall take decisions subordinated to the investment policy. These factors are key elements related to the advantages of choosing a specific location for mergers and acquisitions as an entry mode of FDI in Romania. Thus, we emphasized the significance and impact of these factors on economic concentration by mergers and acquisitions operations, which allowed us to provide an overview of the dynamics and specificities of the cross-border merger and acquisition activity in Romania.

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