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**Master thesis**

EVENT STUDY BASED ANALYSIS OF MERGERS AND ACQUISITIONS  
IN EASTERN EUROPEAN COUNTRIES

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Date of submission of the academic paper  
\_\_\_\_\_

Registration No. \_\_\_\_\_

Assessment of the academic paper  
\_\_\_\_\_

Vilnius, 2021

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## INTRODUCTION

Most companies strive profits maximization for its owners or stakeholders. In today's dynamic and competitive environment business growth is a key to profit and long-term success. A business can grow through either internal or external expansion. Internal expansion can be achieved by adopting new technology, marketing strategy change or business reengineering. The fastest available external growing option is mergers and acquisitions (M&A) (Elad and Bongbee, 2017). M&A transactions are activities involving takeovers, corporate restructuring and corporate control changes in ownership structure of the company (Roa and Kumar, 2013). Therefore, M&A deals allow to increase companies' capacity to growth in a comparatively short time.

Since 2000, the intense of market globalizations processes have been growing and resulting different regions integration. Most significant outcome of globalization was barriers elimination among countries that allowed developed markets to start their expansion to South Africa, Asia and Eastern Europe when consumption spending and income decline was observed in United States and Western Europe. It was the end of the fifth M&A wave and the beginning of the sixth when a number of deals started to increase not only in developed countries but also in the emerging markets including Eastern Europe (Kazmierska-Jozwiak, 2014). Therefore, globalization processes made a great contribution to M&A development.

At the beginning M&A transactions were based on domestic scale and were executed within domestic markets. Companies sought to merge in order to increase operational effectiveness and market share. Later, progress in technology, transportation and communication created an opportunity for a global business expansion and cross – border M&A (Grave et al. 2012). Consequently, a number of empirical and academic studies are available were M&A have been intensively analysed in different perspectives such as marketing, human resource and finance. Shah and Arora (2014) claims that the effect of M&A is so strong that it directly changes the prices of common stocks of both bidder and the target. In order to analyse this effect this study specifically focuses on firms' stock value around and after a takeover.

The biggest part of M&A literature analysing takeovers is focused on developed countries, mostly United States of America then West and Central Europe. There are few researches analysing M&A deals particularly in Eastern European countries. The need for more tests and researches of this

region is enhanced by the fact that Eastern Europe differ from West and Central Europe in many aspects. The transition from planned economy to capitalism, more recently developed economic systems, different institutional and legal environment are just some of the examples.

In addition, this study is necessary as M&A is one of the investment type with usually unexpected outcomes. Since there are a lack of researches focusing on Eastern European countries, this study could help investors to make M&A investment decisions. Also, it will contribute to the existing M&A literature allowing to compare results with previous researches.

### **Purpose**

To fill the gap in existing M&A literature by providing empirical evidence for M&A taken place in Eastern European countries.

### **Objective**

To examine the short time M&A impact on stock prices of both targets and bidders of Eastern European countries companies.

### **Tasks**

- Review and analyse theoretical background of M&A and Event Study
- Create methodology and describe data used in the analysis
- Evaluate the returns generated through M&A transactions in Eastern European countries and find out intra region differences
- Compare the results for target shareholders and acquirer shareholders

### **Methodology**

To be able to measure M&A effect on stock prices event study methodology will be employed. The reaction on the stock market price will be measured and compared with an estimated normal returns. M&A announcements days will be specified and the price of the stock around that time will be analysed.

### **References**

This study is mostly based on research articles, also some books and publications are used in literature review. To identify transactions in Eastern European countries Bloomberg database will be used.

# **MERGERS & ACQUISITIONS AND EVENT STUDY THEORETICAL BACKGROUND**

This chapter consist of two main parts: M&A theoretical background and event study theoretical context. The latter analysis M&A literature theory and the former briefly represents event study methodology and previous researches.

## **1.1 Mergers & Acquisitions Theoretical Concept**

This subsection begins by providing the definition of mergers and acquisitions. Secondly, M&A history are presented in the context on M&A waves and lastly, history and statistics of M&A in Eastern European countries are analysed.

### **1.1.1 Definition of Mergers & Acquisitions**

Before starting to analyse M&A's it is necessary to define what mergers and acquisitions actually are and what it covers. The meaning of separate words 'merger' and 'acquisition' will be explained because in practice they are usually used indistinctly but their meanings are not the same.

Across the wide M&A literature there are many different mergers and acquisition definitions, however the main idea are the same. Georgios (2011) a merger defines as transaction were two or more companies approach together becoming a single firm and an acquisitions explains as large and financially sound company purchase. While Barney and Hesterly (2015) a merger describe as the combining of the assets of two equal-sized firms, and an acquisition as one firm purchasing another one. Both definitions are very similar and has the same meaning which suggests that the main difference between merger and acquisition is that merger do require at least two companies' management cooperation in order to become a single company while acquisition do not.

By combining the above statements, acquisition can be defined as transaction where a company acquires the whole or a part ownership of another company and a merger is two or more companies' consolidation into one legal entity (Ross et al., 2016). To clarify, the main difference between these two concepts is that in acquisition transaction ownership of the company is transferred to another entity while in merger transaction the ownerships are combined. As these two described transactions

are strongly related and in literature usually presented together as M&A transactions, in this paper M&A definition will be also used.

## **1.1.2 Mergers & Acquisitions History**

Further M&A history is introduced by describing seven M&A waves usually met in the literature, then M&A waves are presented from the Europe perspective, and lastly history and statistics of M&A in Eastern European countries are analysed.

### **1.1.2.1 Mergers & Acquisitions Waves**

In this part of paper the M&A waves are presented with the focus on their causes, features and cyclicity. Firstly, the most common M&A waves are describe that are widely analysed in M&A historical literature and are mainly focused on USA market where M&A origins are noticed. Secondly, European region is briefly described in the content of M&A waves.

It is difficult to determine the first M&A transaction in history but the origins of M&A transactions is somewhere in the early 1900s (Grave et al., 2012). Over the years M&A activity has occurred in cyclical patterns that in the literature are usually defined as waves. To date, seven waves have already occurred, however is not easy to find specific cause or event for every wave beginning. Historically waves are usually considered as subordinate to cyclic fluctuations in stock or global equity markets. The research analysing M&A waves during the twentieth century revealed that a wave is tend to begin before or soon after a surge in stock prices and end after surge is over (Park and Gould, 2017). It is complicated to identify the specific events that fosters M&A waves but the ends are usually related with important historical events such as war or the beginning of recession.

The first M&A wave happened in US and lasted from 1897 to 1904. The wave mostly contained horizontal mergers in heavy manufacturing industries and the main goal of the transaction was to become a single seller in the market. Unfortunately, most M&A deals occurred in this phase failed because they do not succeed to achieve the desired performance. The second wave of M&A also occurred in US in 1916 to 1929. The main difference from the first phase was that the man focus was to merge business sectors for oligopoly while in the previous wave for monopoly. The second wave collapsed because of the stock market crash and Great Depression (Kouser and Saba, 2011).

Third Wave (1965-1969) is known as the Conglomerate Era because during this period M&A transactions were characterized by the emergence of financial engineering and conglomeration. Companies learned how to increase earnings per share through acquisition and saw it more favourable



activity than reinvestment (DePamphilis, 2003). Underprivileged progress of conglomerates lead to conglomerate separation in 1968 and the third M&A wave end (Kouser and Saba, 2011). Comparing with first three waves the fourth wave (1981-1989) was much more larger and unique in terms of hostile takeovers that became a common type of business expansion by the 1980s (Malik et al., 2014). Hostile and friendly mergers during the fourth wave were performed mainly in oil and gas, pharmaceutical, banking and airlines industries (Golubov et al., 2013). The fourth wave collapsed in the end of great economic boom of the 80s and the start of a brief recession in 1990. The end of the fourth wave was also fostered by speculative bonds market collapse that financed a great part of transactions (Cordeiro, 2014).

The fifth M&A wave (1992-200) was triggered by globalization, the stock market boom and market deregulation. Transactions were performed mainly in banking and telecom sectors (Kouser and Saba, 2011). In literature this wave is usually defined as the first international wave which included a big number of transactions not only in America but also in Europe and Asia. The end of the fifth M&A wave is strongly related with the bursting of the stock market bubble in 2000 (Cordeiro, 2014). The sixth wave (2003-2007) was driven by availability of abundant liquidity when after the economic grow resurface there was a flood of dollars into the market and the number of cash financed deals took a large part of transactions as never before. Height level of speculation and poor risk management lead to the sixth wave end in the beginning of global recession in 2007 (Alexandridis et al., 2012). The seven wave is believed to have started in 2013 or 2014 and is has been heavily influenced by key technology trends like Artificial Intelligence (Narayanan, 2019).

Looking from the Europe perspective it is important to emphasise that the above mentioned waves are mostly focused on USA market. M&A transactions in Europe before 1960 were very rare activity. The first European M&A wave (1987-1991) was a consequence of a signature of Single European Act that fostered European region cooperation. The second wave started in 1997 and ended in 2000, then the third wave occurred in 2003 and collapsed in the beginning of financial crisis in 2007. The main factors that fostered European M&A waves are globalization processes, deregulation, liberalization, Eurozone creation, low interest rates, financial market booms and other (Andriuškevičius, 2018).

After analysing M&A wave's literature we can summarize that M&A booms in history occurred in a cyclic patterns and each had the specific features and covered specific sectors. Most M&A waves were closely related with business cycles and tend to occur when economy was booming and collapse in the beginning of crisis, recession or other specific economic event. Analysing historical events and

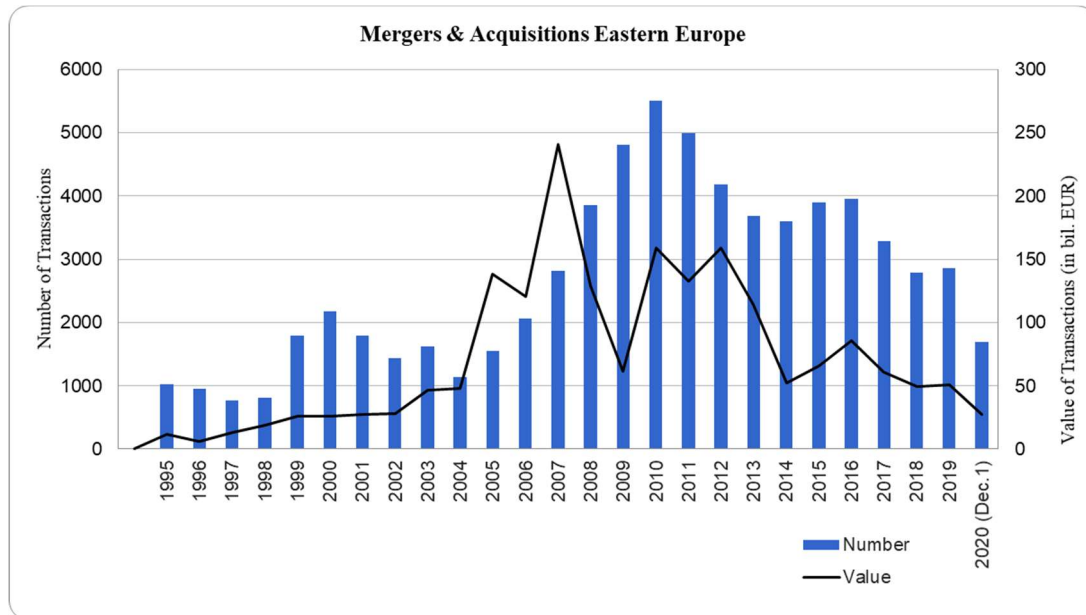
understanding the processes, causes and outcomes is essential in order to understand the whole M&A process and get a feeling of prospective future trends.

### **1.1.2.2 History & Statistics of Mergers & Acquisitions in Eastern Europe**

Further the number and the value of M&A transactions in Eastern European region is presented in historical context analysing 1995 – 2020 December period. Given numbers are based on the Institute for Mergers, Acquisitions & Alliances provided statistics (Thomson Financial, Institute for Mergers, Acquisitions and Alliances (IMAA) analysis, 2020).

Number and value of M&A transactions in Eastern European region began to rise gradually in the mid - 1990s in the aftermath of the collapse of the Soviet Union. However, the most significant increase was observed after 2004 when May 1<sup>st</sup> 2004 eight countries of Central and Eastern Europe have joined the European Union (Latvia, Lithuania, Czech Republic, Estonia, Hungary, Poland, Slovakia, and Slovenia) (Pollack, 2009). Graph 1. Shows that from 2004 to 2005 the total value of transactions increased by 90.3 billion euros and reached 138.6 billion euros. After the enlargement internal border controls have been eliminated and led to free movement of labour and capital as well as barriers elimination to trade and invest (Archick, 2019). In addition, European Commission put huge efforts to enhance standardization and foster transparency in the development of a single market for M&A (Moschieri and Campa, 2009). Barriers elimination was one of the most significant factors which lead the number of M&A transaction to grow six years in a row (2004 – 2010) and increase 4.8 times (from 1,137 to 5,514).

However, from 2007 to 2009 a huge drop in total transactions value had occurred (74.44 %). The drop in total M&A value is strongly related with economic and financial crisis when the capacity of companies to invest through M&A purchases was significantly reduced and dramatic fall in stock prices affected the value of M&A deals (Bitzenis et al., 2012). After the recession the total value of transactions has increased and is fluctuating during the past several years. The graph 1 shows that the total number of transactions do not decreased during the recession that means that a big number of small value M&A deals took place during this period. Increased number of small value transactions can be explained as many companies do not afforded to survive during the recession and chose M&A as a solution.



**Graph 1. Mergers & Acquisitions in Eastern Europe**  
 (Source: IMAA analysis; imaa-institute.org, 2020)

Looking into the graph's 1 post recession period it can be seen that the total number of transactions were quite stable, however from 2016 it has started to decrease and in 2018 it was 1,166 lower than in 2016, in 2019 the number of transactions has slightly increased (by 70). However, a huge drop of transactions can be predicted for 2020, even though the graph represents the statistics as of December 1<sup>st</sup> the number from the last year is 67.9% lower than the previous year, the drop can be explained by coronavirus crisis that slowed down M&A market (Harroch, 2020). To conclude, from the graph 1 displayed statistics it can be said that 2004 European Union enlargement had the most significant impact in M&A activities development in Eastern Europe and the biggest drop in total value M&A value was caused by the recession and coronavirus pandemic.

### 1.1.3 Motives for Mergers & Acquisitions

In this part of paper the main M&A motives are described. Firstly, neoclassical theory is presented in the context of synergy and its types. Secondly, three behaviour theories are introduced: monopolistic collusion, agency and hubris theories, and then more specific examples what motivates companies are given. Lastly, it ends with a brief summary.

### 1.1.3.1 Neoclassical theory

Early theories focused on understanding economic growth and tried to find out general determinants of growth that could be applied to any case. One of those theories is neoclassical economic growth theory which is strongly related with the works of Solow (1957, 1956) analysing economic growth and production function. In general, neoclassical economic growth describe as resource re-allocation problem. According to the theory economic growth can result from increase in labour, capital or increased productivity caused by investments. As capital deepening results diminishing returns the theory suggests that the key to economic growth is increased investment as it increases the capital-labour ratio and stimulate economic growth (Hunt, 2011). Therefore, neoclassical theory emphasises the necessity of investments in order to achieve growth.

One of the investment form that can lead to growth is M&A activities. The neoclassical theory of M&A assumes that managers who act on behalf of shareholders make transactions that increase company value (Chidambaran et al., 2010). Therefore, the primary goal for any M&A transaction under neoclassical theory is to create additional value for shareholders higher than the cost of transaction (Ogada et al., 2016). The only condition under neoclassical that might cause a recombination of assets is when the value of new combination is expected to be higher than the sum of the values of the independent entities. Neoclassical theory states that the new combination after M&A may be worth more than the old one as a result of synergy gain (Morresi and Pezzi, 2014). Hence, synergy is the most common reason for companies initiate M&A. Synergy reflects described condition that the value of the company after the transaction is greater than the sum of separate companies' values before acquisition or merger (Gaughan, 2015). Companies expect to create higher value through M&A as a result of exploiting available and implementable economic resources leading to synergy and value growth (Ogada et al., 2016).

In the literature synergy is usually grouped into two categories: operating and financial synergy. Operating synergy is an operational efficiency and improvement of production which are created by economies of scale and economy of scope after transaction (Marks and Mirvis, 2010). Reznakova and Peta (2018) cost savings and investment reduction defines as a primary source of operating synergy. Therefore, operating synergy refers to the company's gain achieved by the ability to operate with lower cost than before the M&A activity. Financial synergy encompass financial benefits achieved by transaction, for instance net cash flow on benefits which are caused by accounting standards, tax laws and other provisions of the securities exchange (Marks and Mirvis, 2010). The other scholar Gaughan (2015) financial synergy defines as possibility to reduce the cost of capital after the merger or

acquisition. Cost of capital might be reduced by risk reduction caused by decreased volatility of the cash flows or lower risk of bankruptcy if the supplier of capital consider the firm less risky (Gaughan, 2015). Basically, financial synergy is financial metric improvements caused by two or more companies' combination. Based on analysed literature, both operating and financial synergies might create additional value for companies and increase their efficiency.

On the other hand, it might be difficult to recognize synergies just right after the M&A transaction. Hankir et al. (2011) have argued that even if theoretically synergy can create a value, there are empirical evidences that suggest that it might not always be true, especially considering the fact that capital markets not enough believe in the materialization of synergies and investors might claim that synergies do not exist. Similarly, Maksimovic et al. (2011) in their analysis show that synergies need time to materialize, as it takes time for companies to implement changes and draw new boundaries. Therefore, the effect of synergies to occur in most cases need time because it takes a while for firms to adopt to post-merger or post-acquisition changes.

### **1.1.3.2 Behavioural theory**

Behavioural theories assumes that growth-maximizing managers use M&A for their own motives of empire building and choose to take wealth-destroying M&A, in such cases acquiring firm shareholders experience negative returns due to agency problems (Rani et al., 2016). In this subchapter three behaviour theories are introduced: monopolistic collusion, agency and hubris theories. The focus of all three theories are on motives for M&A transactions.

Agency and hubris theories analysing M&A motives are based on managers' behaviour. Agency theory motive defines that managers seek to maximize their own wealth, interests and utility and as a one of the ways they choose M&A activities. Bigger company gives a manager more status and usually means higher salary (Oduro and Agyei, 2013). Also, agency theory assumes agency problems in the form of wealth transfers between target and acquirers companies' shareholders (Geiger and Schiereck, 2014). The theory consider that managers and shareholders' interests differ, therefore managers not always maximize shareholder wealth but act for their private benefits (Oduro and Agyei, 2013). The hubris theory analysing motives for M&A assumes that managers of acquirers are non-rational and their overconfidence leads to mistakes overestimating the value of the target companies (Roll, 1986). In the other words, it assumes the hubris of management through the overestimation of potential synergies and overpayment of the target (Geiger and Schiereck, 2014). As a result of overestimation

manager are motivated to involve in M&A activities. Both agency and hubris theories are focused on managers' behaviour and explains that M&A motive is to satisfy the desire of managers.

Monopolistic collusion theory claims that M&A activities are performed to improve market positioning in order to achieve market power (Geiger and Schiereck, 2014). Chatterjee (1986) claims that mergers are usually driven by monopolistic collusion in concentrated industries, as tendencies to limit output, lower factor prices and raise product prices. However, this theory is controversial as there are studies providing empirical results rejecting collusion motive. Eckbo (1983) was the first scholar who tested the collusive merger theory and rejected it as no significant negative abnormal returns were identified when antitrust authorities challenged the merger. In addition, more recently, Shahrur (2005) conducted large sample study that investigates the collusion motive by examining the horizontal takeovers wealth effects on supplier and customer firms finds no support for collusion as a motive and as a result author ultimately rejects collusion motive. Even though monopolistic collusion in literature is defined as one of motives for M&A, it is lack of empirical evidences.

To conclude, three theories discussed above provide the motives to engage in M&A activities. Collusion theory gives market positioning and market leader motive, while agency and hubris theories are focused on managers' decisions and their aims satisfaction.

### **1.1.3.3 Other Motives**

Motives for M&A can be also explained by companies' desire to growth, achieve full control, to become a competitive market leader, achieve higher profits and reach outside markets. Firstly, companies that seek to grow usually choose M&A strategy against the internal development or forming groups, alliances or clusters because shareholders wish to hold full control and to protect themselves from other decision makers' influence. Also, looking into it from a financial point of view it is much easier to acquire another company through share exchange, than to invest in a new one (Sticlosu, 2015). Secondly, companies seek to take a stronger position in a sector (Sticlosu, 2015). A motive for horizontal M&A that combine companies within the same industry is usually a desire to achieve profit and revenue growth by creating new product lines or through market expansion facing the most favourable costs (Rahman and Lambkin 2015). Also, companies expect to earn higher revenue amounts after M&A compared to the revenue of each company before the merger (Sticlosu, 2015). Lower costs, higher revenue and profits amounts gives a possibility to get a greater position in the market. Thirdly, besides the above mentioned motives Grave et al. claim that companies, especially that operates in the emerging markets, are motivated by the benefit from M&A transactions

from accelerating growth and possibility to go outside their current markets and reach greater diversification (Grave et al., 2012). To summarize the above, there are many different factors that motivates companies to involve in M&A activities, however the main motivator behind each of them is higher profits and value creation.

On a final note, usually companies have more than one motive for M&A. Nguyen et al. (2012) conducted research found the evidence that single-motive M&A transactions are relatively uncommon. Using a sample of 3,520 acquisitions it was found that 80% acquires had more than one motive. Based on described research and literature analysis it might be suggested that companies usually have multiple motives for M&A transactions and the main of them are financial and operating synergy, desire to growth, achieve full control, to become a competitive market leader, achieve higher profits and reach outside markets.

Taking all reviewed M&A theoretical background into account, it can be summarized that mergers and acquisitions definitions are strongly related and in the literature they are usually presented together as M&A. Secondly, M&A has a long history and tend to occur in waves that are close to business cycles. Europe has more recent M&A history than USA and focusing on Easter European countries it can be concluded that the greatest contribution to M&A activities' growth was achieved when countries have joined the European Union. Lastly, companies usually decide to involve in M&A activities by combination of various motives: financial and operating synergies, managers' desire to achieve personal gain, willingness to grow and develop.

## **1.2 Event Study Theoretical Context**

This subsection provides the backdrop for an introduction to and brief review of event study methodology and identifies possible issues. After methodology review previous researches on M&A performance are analysed.

### **1.2.1 Overview of Event Study Methodology**

Firstly, in this subchapter event study methodology definition will be presented with historical method background. Secondly, the method will be described in more details emphasizing its score idea. Lastly, this section ends by distinguishing between short and long term study methods and summarizing the reviewed literature.

Event study is an empirical analysis used to measure the effect of a particular event on stock prices. The analysis is conducted identifying an event, estimating abnormal stock returns caused by the defined event and testing the significance of the event. MacKinlay (1997) suggests that most likely the first event study is published by James Dolley (1933). In his study Dolley examines stock price reaction to stock split, studying nominal price changes at the time of the split. Later, more advanced and sophisticated studies were conducted by Ball and Brown (1968) in the study of earning announcements and Fama, Eugene F, et al (1969) in the study of stock splits effect on the prices. Brown's and Ball's as well as Fama's presented event study methodology is exactly the same as it is used today even though a number of modifications have been developed (MacKinlay, 1997).

The central part of event study methodology is measuring abnormal returns (Wang and Moini, 2012). Normally abnormal returns are calculated deducting the expected return from the actual return (Halperin and Lusk, 2013). However, before measuring abnormal returns researcher should take into consideration a few more things. Firstly, event should be specifically defined, then the date when the event was made public should be known. Thirdly, event window or few windows should be indicated. Event window is the time range that includes the day of the event, for example [-1;1] event window would indicate a window one day before the event, the day of the event, and one day after the event. Finally, the change in price or total return of the company's stock around the event date should be identified and then abnormal returns assessed (Halperin and Lusk, 2013). Abnormal returns are key in the analysis because it shows the effect of the event on the stock prices as all investors seek to earn positive abnormal returns through their investment (Reese and Robins, 2017).

Event studies can be focused either on the short or long term based on the measurement period of abnormal returns. Short-term studies normally use daily stock prices while in the long-term studies longer windows are used (Keleş and Ülengin, 2019). Wang and Moini (2012) explains that short-term event study refers to an ex-ante analysis which could help to predict the future profitability and long-term studies refers to the consideration that stock prices cannot quickly capture the effect of the event. More specifically, in the literature event study is defined a long-term when event window is at least about one year length. Even though both long and short period studies are based on the same principle to try gauge the acquiring's company's success or failure in value capture for its shareholders as a result of the transaction (Cording et al., 2010) in the literature researcher usually prefer the short-term studies. For instance, Ding et al. (2018) claims that short-term event studies are more reliable as long-term studies have many limitations. Ang and Zhang (2015) in their study states that over a long time period local and global factors changes that affect stock price and it is difficult to eliminate these



effects. However, the length of event window should be selected particularly considering the specific event and its characteristics, especially evaluating how quickly stock prices capture the effect of the event.

Reviewed literature suggests that event study methodology has a long history and helps to define unusual returns allowing to assess event's impact on company's stock price. The score part of this method is abnormal returns calculation that enables to evaluate the effect of the event. Most commonly used is short-term event study method as long-term method has more limitations, however it is important to select time horizon considering the analysing event characteristics.

### **1.2.2 Assumptions of Event Study**

Before conducting event study methodological assumptions should be taken into account. In this subchapter three central assumptions of event study methodology are described: market efficiency, the unexpectedness of the event and no confounding effects assumption.

To begin with, investigating stock price changes after an event, event study relies on market efficiency concept. Market efficiency means that publicly accessible information immediately update the security prices after it is published (Keleş and Ülengin, 2019). Cording et al. (2010) explains that under market efficiency assumption investors act rationally and can access all the necessary and essential information to future cash flows accurately, thus driving the stock price to its true value today. The main advantage of this assumption of quick stock prices changes defined by Keleş and Ülengin (2019) is that it allows to isolate the effect of the other events or factors and determine the impact of related events. Similarly, Cording et al. (2010) also emphasizes the advantage of this method explaining that as results are assessed over a quite short period of time, other factors that might have the impact on stock price can be largely eliminated.

On the other hand, despite of the above defined advantage there are authors who see difficulties in meeting efficient market assumption. Oler et al. (2008) argue that described rationality assumption might be not enough realistic and more precisely would be to assume that in some cases investors are lack of the necessary information to make optimal choices and thus their investments might deviate from the optimal assessment of an acquisition's potential. In addition, Sitthipongpanich (2011) supports this opinion and also states that sometimes markets are not efficient and observed stock prices might not fully immediately reflect all information. Even though, market efficiency assumption relays on the concept that securities prices are immediately updated after information is made publicly

available, however usually investor are lack of necessary information to assess the impact of the event properly.

The other assumption that should be made by researchers is that event under the study is unanticipated (Cording et al., 2010). Unanticipated event means that the event is unexpected and has not yet been factored into the stock price. This assumption is also criticized by, Sitthipongpanich (2011) who argues that events in some circumstances might be anticipated and abnormal returns are not only the result of market reaction to the specific event. Lastly, also it is necessary to assume that there were no confounding effects during the analysing event window. No confounding effects means that there are no other events during the selected event window, which could affect stock prices changes. Unfortunately, it is also difficult to achieve especially for a longer event windows (Wang and Moini, 2012).

To summarize, under the three score event study assumptions prices of the stock should change in response to newly provided information, event under study should be unanticipated and there should be no other confounding events. All assumption were criticized and are not easy to achieve, however if any of these assumptions are violated, empirical results might be unreliable (Wang and Moini, 2012).

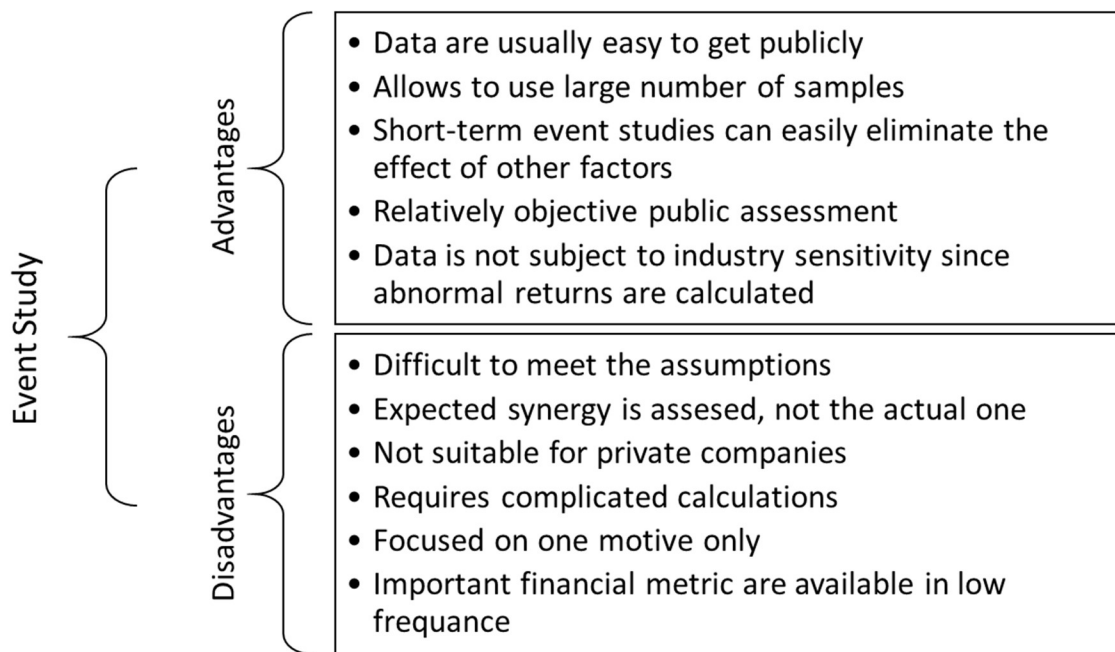
### **1.2.3 Advantages and Disadvantages of Event Study**

Event study methodology have its strengths and weaknesses. In order to get better understanding of applicability of the method it is necessary to analyse both benefits and drawbacks of the method. In this subchapter the man advantages and disadvantages of event study methodology are introduced.

To begin from the positive side, Wang and Moini (2012) in their study clearly defines a number of advantages of event study method. First of all, it is determined that the method gives quite objective and accurate assessment, so that measurement is impartial. Further, data necessary for analysis are publicly available and easy to access and it allows to study on large sample. What is more, short-term event studies can easily eliminate the effect of other factors, especially using short period event window. The last indicated advantage is that data is not subject to industry sensitivity since abnormal returns are calculated (Wang and Moini, 2012). All described benefits makes the method reliable and applicable and it is the reason why event study method is widely used by researchers.

On the other side, disadvantages of the method cannot be overlooked. At first, it is difficult to meet the assumptions described in xx section and failure to meet any of them might lead to not accurate

results. Furthermore, expected synergy is assessed instead of realized, so the performance evaluation is expected and not the actual one. Also, method is not suitable for private companies since their stock prices are not available publicly and it leads to sampling bias. Moreover, even though it is easy to get data, method calculations are complicated. In addition, event study focuses only on value adding for shareholder motive while ignoring the others (Wang and Moini, 2012). Keleş and Ülengin (2019) as a drawback of the method also indicates that data of some important financials metrics, for example return on equity or return on sales is available in quite low frequency, mostly annually or monthly. Authors claim that more frequent availability of financial metrics is important to evaluate other events and determine expected returns. The above mentioned weaknesses of the method should be taken into consideration before conducting the analysis and their impact on the study should be precisely evaluated.



Picture 1. **Advantages & Disadvantages of Event Study**  
 (Source: based on Wang, Moini, 2012; Keles, Ulengin, 2019)

To conclude, event study methodology is valued for its reliability and objective assessment, nevertheless difficulties to meet all the assumptions and perform complicated calculations needs to be overcome. The picture 1 above represents the summary of event study advantages and disadvantages that allows compare them in more clear view.

## **1.2.4 Previous Literature on Mergers & Acquisitions Performance**

The below previous event studies of M&A performance are presented. Firstly in general do not focusing on any particular region, then analysing Eastern Europe region.

### **1.2.4.1 Previous Event Studies of Mergers & Acquisitions in Different Regions**

Event study is widely used in finance to measure stock market reaction to M&A announcement (Duso et al., 2010). Cording et al. (2010) analysis event study method in the field of M&A and describes it as a method that measures M&A activity performance as the creation additional wealth for the shareholders, assessed by abnormal stock market returns in a relatively short period around the announcement day. In this subsection most common findings of event studies analysing M&A events will be described by providing examples focusing on different regions.

In the literature there are a number of event studies analysing M&A effect on stock prices in different regions and industries and concluding that announcement has a positive effect in the short-run for the target companies and no clear conclusions are unusually found about the bidders. For instance, Papadakis and Thanos (2010) conducted analysis of M&A impact on Greek firms' stock prices gives results that using short-term event window positive abnormal returns are generated for 80% of acquired firms, however for the acquirers results are controversial. Similar conclusions have been done by Shah and Arora (2014) whose study covers Asia-Pacific region. Findings of the analysis reveals that the abnormal returns are statistically significant for the target firms and neither significant positive nor negative abnormal returns were identified for the bidders. In addition to the above described findings Renneboog and Vansteenkiste (2019) also claims that most academic studies find that despite the huge amount of resources and money spend on takeovers the bidder shareholders do not gain from the transaction as the returns are close to zero, negative or that any positive return in the short-run are not sustained in the long-run. All review studies suggest the same conclusion that the main gainer for M&A transactions are target firms' shareholders and no significant results are noticed for bidder firms.

On the other side, there are also different results presenting researches. Reed Bergmann et al. (2015) conducted event study analysis of M&A effect on Brazilian banking sector reveals that neither can be confirmed that transactions had a significant impact on value for banks and purchasers, nor can it be denied, so these results differ from previously described as no positive returns were noticed for the target firms. Also, Rani et al. (2014) work analysing Indian companies gives results that around

the announcement date the acquirer shareholder' equity in most case increases while no one in the previous paragraph presented studies indicated significant returns for acquirers.

Reviewed examples suggests that usually positive abnormal returns are noticed for target companies, while no significant impact are captured for acquiring firms. Even though, there are many researches showing positive abnormal returns in the short-run for the target firms and no significant returns for bidders, it is not the rule for all cases as result might differ regarding the region and other criteria. In order to make a conclusion about a specific region or country event study analysis should be employed analysing particular region.

#### **1.2.4.2 Previous Event Studies of Mergers & Acquisitions in Eastern Europe**

Analysing existing literature concerning M&A transactions effect on stock prices it was found that there are only few researches particularly concentrated on Eastern European countries. In addition, existing studies usually represent Central and Eastern European countries together or are focused only on specific industry. In this subchapter three of these studies will be represented.

Firstly, Bednarczyk, Schiereck and Walter (2010) have conducted analysis of cross-border acquisitions effect on shareholders wealth in Central and Eastern European countries focusing on energy industry. The research represents significant short-term positive and long-term negative effect for target companies in Czech Republic, Hungary, Poland and Slovak Republic countries. Average abnormal stock return analysis gives 2.23 % significant positive results using [-5;5] event window and significant negative effect on stock prices when announcement window is prolonged up to 61 days. Authors consider that the positive share price performance in the short-term might be driven by psychological factors availability biases (Bednarczyk et al., 2010). Described study suggests that in Czech Republic, Hungary, Poland and Slovak Republic countries M&A transactions in energy industry tend to create additional value in the short-run for target companies, however in the long-run these positive returns are not sustained.

Secondly, Zaremba and Potnicki (2014) have conducted research analysing Eastern and Central Europe M&A deals effect on stock price where the biggest part of transactions were performed in Poland, Czech Republic and Hungary. In the short run significant positive abnormal returns were observed for target companies. The results of the research shows that the highest positive returns were around the event date and it was decreasing while extending event window. Like first example, this study again approves that from M&A transactions gains not the shareholder of the bidder but the shareholder of the target and that the gain tend to decrease while extending event window.

Thirdly, Dušan and Saikevičius (2015) have performed comparative analysis of M&A in the new member states of European Union (EU-10) that includes Central and Eastern European countries. Findings of the analysis present positive effect on the value of the target companies giving 10.2 % positive cumulative abnormal returns using [-30; 30] event window and 3.4-5.4 % less positive returns with shorter event windows. The other finding of the research is that the effect on the price of the company differs greatly when separated countries are analysed. The greatest positive abnormal returns were found out in the Baltic States (6.6 – 19.5%), then Cyprus (5.7 – 15.1%) and deals performed in Poland gave 3.6 – 6.0 % returns. Therefore, lastly presented study also shows positive returns to target companies' shareholders, however it differs from the first two examples as abnormal returns tend to decrease using shorter event windows.

All in all, reviewed M&A literature analysing Eastern European countries revealed that usually target companies' shareholders gain from transactions in the short-run, however analysed studies are focused only on particular industry or also include other region countries.

Considering all literature reviewed, firstly, it can be concluded by saying that M&A in history occurred in waves each with its specific characteristics. In Eastern European countries the highest M&A boom was triggered by globalization and European Union enlargement. Secondly, companies usually are motivated by financial and operating synergy and have multiple motives for M&A activities. Reviewed event study methodology literature suggest that it is widely applicable assessing the effect of M&A on stocks prices and allows accurately evaluate the impact of the event. However, in spite the fact that the method is reliable and allows to make objective assessment it is not easy to meet all the assumptions required to get these reliable empirical results. The other conclusion can be done based on analyzed previously performed M&A event studies that in most cases gives positive returns to target companies and no significant impact to acquires. However, there are few researches analyzing M&A performance in Eastern European countries and in order to have reliable data to make comprehensive analysis and conclusions about M&A impact on Eastern European countries companies' stock prices further research is needed.

## **DATA DESCRIPTION AND EVENT STUDY METHODOLOGY**

The main object of further analysis is to examine the short-term M&A impact on stock prices of both targets and bidders of Eastern European countries companies. In addition, we will seek to compare intra region differences as well as to compare the results for target shareholders and acquirer shareholders. From the objective the main research question arises: do M&A create value for target and bidder shareholders in Eastern European countries? This chapter describes the data and event study methodology in details which will be employed to perform the empirical analysis in order to answer the research question.

### **1.3 Data selection and description**

This part of paper begins by data selection and provides the criteria applied in order transaction to be included in the sample. Then, acquirer and target data sample descriptive statistics are provided.

#### **1.3.1 The sample**

This section presents the sample used in the research. To get necessary data for the analysis and determine the effect of M&A on companies' performance Bloomberg database was used which is a large database for M&A deals. Bloomberg database provides all the necessary information: deal status, deal type, target and acquirer country, industry sector, percent owned and sought and ticker. The following key criteria were defined on Bloomberg database M&A transaction to be included in the sample:

- Both target and acquirer are Eastern European companies
- Transaction took place between January 2005 and December 2019. 15 years period was selected to get a sufficient number of observations.
- Both target and acquirer companies must be listed.
- The status of transaction must be completed.
- Transaction must be classified as mergers and acquisitions

After applying the above filters 5325 samples were retrieved. The second data screening stage included additional filters:

- The acquirer must own less than 50% of the target shares before the announcement, acquire at least 10% of the shares and own more than 50% of the shares after the acquisition (4619 samples remained).
- Companies that do not have available stock prices in Bloomberg in some days of the event or estimation window e.g. 120 days before and 30 days after the announcement were removed from the sample. In this step the biggest number of samples were removed, 650 available samples remained for acquirer's stock data and only 204 for target's. Only 96 samples had both target and acquirer stock data available, therefore it was decided to make analysis separately for target and acquirer firms in order to have more samples in the analysis.
- The transactions that were performed between the related parties were rejected in order to avoid confounding events (618 samples remained for acquirers' data and 184 for targets).
- If the company earlier than two year ago was the object of similar transaction, the sample included only the first transaction (353 samples remained for acquirers (Appendix 2) and 162 for targets (Appendix 3)).

Even though the initial number of samples was huge, only the small part of it remain after applying all the criteria necessary to get reliable data for the research. In order to have a sufficient number of samples it was decided to perform the research not only for the same transactions for target and acquirer companies' but for all companies' that passed all the criteria even though the stock data is available for the one side. Therefore, 353 samples will be used to test M&A impact on acquirers' stock price and 162 on target companies. Further, sample data is analysed separately for target and acquirer.

### **1.3.2 Acquirer sample descriptive statistics**

In this section the sample data are analysed that will be used to evaluate M&A impact on acquirer companies' stock price. Firstly, the sample number by country is analysed, secondly, the sample per year, than the proportions of domestic and cross-country samples are provided and lastly, the acquirers companies' industry information is analysed.

The table 1 below represents the number of M&A deals by acquirer country. 16 different countries are included in the sample. As can be noted from the table, the largest share (32%) comes from Poland, following by Turkey (18%) and Russia (15%). Whereas other countries have share less



than 6% it was decided to group them and make the research analysing their aggregated results. The first group contain five south Slavic countries and the biggest number of samples comes from Croatia (17). The second group is Baltic countries having 24 samples and more than a half coming from Estonia. To the third group all other remaining countries were assigned that cannot be assigned to any of the previous group. Therefore, 6 different countries/county groups will be analysed in the acquirer research.

Country/group of countries	Country	Number of Transactions	Share (%) of total transactions	Share (%) of the group
<b>Poland</b>	Poland	112	32%	100%
<b>Turkey</b>	Turkey	62	18%	100%
<b>Russia</b>	Russia	54	15%	100%
<b>South Slavic countries</b>	Croatia	17	5%	41%
	Bulgaria	12	3%	29%
	Slovenia	10	3%	24%
	Montenegro	1	0%	2%
	Serbia	1	0%	2%
	<i>Total</i>	<i>41</i>	-	<i>100%</i>
<b>Baltic</b>	Estonia	13	4%	54%
	Lithuania	9	3%	38%
	Latvia	2	1%	8%
	<i>Total</i>	<i>24</i>	-	<i>100%</i>
<b>Other countries</b>	Hungary	19	5%	32%
	Czech Republic	13	4%	22%
	Romania	12	3%	20%
	Ukraine	14	4%	23%
	Slovakia	2	1%	3%
	<i>Total other countries</i>	<i>60</i>	-	<i>100%</i>
<b>Total</b>		<b>353</b>	<b>100%</b>	-

Table 1. **Number of M&A deals by acquirer country**

(Source: based on data retrieved from Bloomberg)

Table 2 represents the number of M&A transactions by each year from 2005 to 2019 in total and by country/country group. The percentage distribution in total is quite wide, however it can be noticed that around the global financial crisis years the percentage share is higher. The most analysing transactions were conducted in 2008 (46), 2010 (42) and 2007 (37). Only 10 transactions are included in the sample from the most recent year (2019). However, overall M&A distribution through the years are quite similar to the Graph 1 represented in 1.1.2.2. paragraph showing the total number of M&A by the year in Eastern Europe, even though some small differences can be noticed because of data selection bias.

Year	Poland		Turkey		Russia		South Slavic countries		Baltic Countries		Other Countries		Total	
	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%
2005	1	1%	4	6%	0	0%	1	2%	3	13%	5	8%	14	4%
2006	8	7%	4	6%	1	2%	2	5%	1	4%	3	5%	19	5%
2007	14	13%	5	8%	3	5%	6	15%	4	17%	5	8%	37	10%
2008	10	9%	11	18%	7	11%	3	7%	4	17%	11	18%	46	13%
2009	3	3%	3	5%	7	11%	1	2%	2	8%	5	8%	21	6%
2010	15	13%	10	16%	5	8%	4	10%	1	4%	7	12%	42	12%
2011	14	13%	6	10%	4	6%	2	5%	1	4%	6	10%	33	9%
2012	6	5%	6	10%	7	11%	2	5%	1	4%	1	2%	23	7%
2013	8	7%	2	3%	7	11%	1	2%	1	4%	4	7%	23	7%
2014	5	4%	3	5%	2	3%	4	10%	2	8%	1	2%	17	5%
2015	8	7%	1	2%	1	2%	3	7%	1	4%	0	0%	14	4%
2016	5	4%	2	3%	4	6%	3	7%	2	8%	4	7%	20	6%
2017	6	5%	3	5%	3	5%	4	10%	0	0%	2	3%	18	5%
2018	3	3%	2	3%	2	3%	5	12%	1	4%	3	5%	16	5%
2019	6	5%	0	0%	1	2%	0	0%	0	0%	3	5%	10	3%
<b>Total</b>	<b>112</b>	<b>100%</b>	<b>62</b>	<b>100%</b>	<b>54</b>	<b>87%</b>	<b>41</b>	<b>100%</b>	<b>24</b>	<b>100%</b>	<b>60</b>	<b>100%</b>	<b>353</b>	<b>100%</b>

Table 2. Number of M&A deals by year in acquirer sample

(Source: based on data retrieved from Bloomberg)

Table 3 exhibits the number and the share (%) of domestic and cross-border M&A transactions by country/country group. As can be noticed from the table, there are 284 (80%) domestic and only 69 (20%) cross-border transactions. Domestic transaction dominates in all countries/country groups having the share between 66% - 94%. Thus, we can see from this sample that Eastern European countries companies are more likely to engage in domestic transactions and the difference is quite significant.

Type	Poland		Turkey		Russia		South Slavic countries		Baltic Countries		Other Countries		Total	
	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%
Domestic	92	82%	52	84%	51	94%	27	66%	19	79%	43	72%	284	80%
Cross-border	20	18%	10	16%	3	6%	14	34%	5	21%	17	28%	69	20%
<b>Total</b>	<b>112</b>	<b>100%</b>	<b>62</b>	<b>100%</b>	<b>54</b>	<b>100%</b>	<b>41</b>	<b>100%</b>	<b>24</b>	<b>100%</b>	<b>60</b>	<b>100%</b>	<b>353</b>	<b>100%</b>

Table 3. Domestic and cross-border M&A share in acquirer sample

(Source: based on data retrieved from Bloomberg)

A large number of M&A transactions are inter-industry, as table 4 below shows 64% of total transactions are between companies operating in the same industry group. The share of inter-industry transactions in every country/country group is also very similar and varies from 58% to 67%. This

sample shows that companies in Eastern Europe prefer to merge or acquire companies operating in the same industry rather than in another industry group.

Type	Poland		Turkey		Russia		South Slavic Countries		Baltic Countries		Other Countries		Total	
	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%
Inter-industry	72	64%	36	58%	35	65%	26	63%	16	67%	40	67%	225	64%
Cross-industry	40	36%	26	42%	19	35%	15	37%	8	33%	20	33%	128	36%
<b>Total</b>	<b>112</b>	<b>100%</b>	<b>62</b>	<b>100%</b>	<b>54</b>	<b>100%</b>	<b>41</b>	<b>100%</b>	<b>24</b>	<b>100%</b>	<b>60</b>	<b>100%</b>	<b>353</b>	<b>100%</b>

**Table 4. Inter-industry and cross-industry M&A share in acquirer sample**

(Source: based on data retrieved from Bloomberg)

All companies included in the sample are divided into ten different industry groups according to the Bloomberg database and are presented in table 5. The largest share of acquirers included in this study operates in Financial (22%) and Consumer Non-cyclical (16%) industries. However, in Poland the highest share has Industrial Basis (20%), in Baltic countries Customer Non-cyclical and Communications have the same share of 25%. Therefore, in the sample a wide range of industries are included.

Industry	Poland		Turkey		Russia		South Slavic Countries		Baltic Countries		Other Countries		Total	
	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%	N.	%
Financial	20	18%	14	23%	12	22%	15	37%	3	13%	12	20%	76	22%
Consumer, Non-cyclical	11	10%	9	15%	9	17%	9	22%	6	25%	15	25%	59	17%
Consumer, Cyclical	16	14%	12	19%	1	2%	8	20%	4	17%	3	5%	44	12%
Communi - cations	10	9%	5	8%	10	19%	4	10%	6	25%	8	13%	43	12%
Industrial Basic	23	21%	6	10%	4	7%	1	2%	5	21%	3	5%	42	12%
Materials	7	6%	4	6%	10	19%	0	0%	0	0%	3	5%	24	7%
Energy	10	9%	0	0%	3	6%	0	0%	0	0%	5	8%	18	5%
Utilities	8	7%	0	0%	3	6%	1	2%	0	0%	4	7%	16	5%
Diversified	0	0%	10	16%	1	2%	3	7%	0	0%	4	7%	18	5%
Technology	7	6%	2	3%	1	2%	0	0%	0		3	5%	13	4%
<b>Total</b>	<b>112</b>	<b>100%</b>	<b>62</b>	<b>100%</b>	<b>54</b>	<b>100%</b>	<b>41</b>	<b>100%</b>	<b>24</b>	<b>100%</b>	<b>60</b>	<b>100%</b>	<b>353</b>	<b>100%</b>

**Table 5 Industry classification of acquirer firms**

(Source: based on data retrieved from Bloomberg)

Therefore, in this study acquirers countries are divided in to six counties/country groups and Poland has the biggest percentage share (31%) in the sample. The M&A transactions number distribution through the years vary from 3% to 13% having the most transactions in 2008 and the least

in 2019. Also, according to our sample most Eastern European countries are more likely to engage in domestic inter-industry transaction than cross-border and cross-industry transaction.

### 1.3.3 Target sample descriptive statistics

In this section target companies' data are analysed that will be used in the research to test M&A transactions effect on target companies' stock price. Target data are presented based on the same criteria and dimensions as acquirer data was presented in the previous section. Thus, firstly, the transactions by country and sample number per year are presented, then the shares of domestic and cross-borders transaction are analysed and finally the industry information is provided.

Table 6 below shows M&A transactions included in the target sample distribution by country. About one third of samples comes from Russia (33%), 27% from Poland and 19% from Turkey. As in this case there are less transaction than in acquirer sample all other countries are grouped together not separating Baltic countries and South Slavic countries. Other countries group consists of 10 different countries and the biggest shares of transactions (18%) comes from Croatia and Serbia. Therefore, four countries/country groups will be analysed analysing target sample data.

Country/group of countries	Country	Number of Transactions	Share (%) of total transactions	Share (%) of the group
<b>Russia</b>	Russia	53	33%	100%
<b>Poland</b>	Poland	44	27%	100%
<b>Turkey</b>	Turkey	31	19%	100%
<b>Other countries</b>	Croatia	6	4%	18%
	Serbia	6	4%	18%
	Hungary	5	3%	15%
	Lithuania	4	2%	12%
	Slovenia	4	2%	12%
	Czech Republic	3	2%	9%
	Montenegro	2	1%	6%
	Romania	2	1%	6%
	Bulgaria	1	1%	3%
	Ukraine	1	1%	3%
	<i>Total other countries</i>	<i>34</i>	<i>-</i>	<i>100%</i>
<b>Total</b>		<b>162</b>	<b>100%</b>	<b>-</b>

Table 6. Number of M&A deals by target country

(Source: based on data retrieved from Bloomberg)

Table 7 represent transactions distribution by year in total and by country/country group. The biggest share of the deals similarly as in acquirer sample were announced in 2008 (12%), 2010 (12%) and 2007 (10%). However analysing country/country group it can be noticed the in Poland most

transactions were announced in 2006 (14%) and in other counties group in 2011, 2014 and 2018 (12%).

Year	Russia		Poland		Turkey		Other Countries		Total	
	N.	%	N.	%	N.	%	N.	%	N.	%
2005	1	2%	1	2%	3	10%	2	6%	7	4%
2006	1	2%	6	14%	4	13%	2	6%	13	8%
2007	6	11%	5	11%	3	10%	3	9%	17	10%
2008	7	13%	5	11%	5	16%	3	9%	20	12%
2009	4	8%	2	5%	1	3%	0	0%	7	4%
2010	12	23%	2	5%	3	10%	2	6%	20	12%
2011	3	6%	2	5%	1	3%	4	12%	10	6%
2012	5	9%	2	5%	3	10%	0	0%	10	6%
2013	2	4%	1	2%	1	3%	3	9%	7	4%
2014	1	2%	3	7%	1	3%	4	12%	11	7%
2015	3	6%	4	9%	2	6%	2	6%	12	7%
2016	3	6%	3	7%	2	6%	1	3%	10	6%
2017	2	4%	4	9%	1	3%	1	3%	9	6%
2018	1	2%	2	5%	1	3%	4	12%	8	5%
2019	2	4%	2	5%	0	0%	3	9%	8	5%
<b>Total</b>	<b>53</b>	<b>100%</b>	<b>44</b>	<b>100%</b>	<b>31</b>	<b>100%</b>	<b>34</b>	<b>100%</b>	<b>162</b>	<b>100%</b>

Table 7. Number of M&A deals by year in target sample

(Source: based on data retrieved from Bloomberg)

Table 8 exhibits domestic and cross-border M&A transactions numbers and proportions. This target sample shows that Eastern European companies were more likely to engage in domestic transactions even more than analysing acquirer data. 90% of all transaction were conducted between the same country companies.

Type	Russia		Poland		Turkey		Other Countries		Total	
	N.	%	N.	%	N.	%	N.	%	N.	%
Domestic	52	98%	41	93%	30	97%	23	68%	146	90%
Cross-border	1	2%	3	7%	1	3%	11	32%	16	10%
<b>Total</b>	<b>53</b>	<b>100%</b>	<b>44</b>	<b>100%</b>	<b>31</b>	<b>100%</b>	<b>34</b>	<b>100%</b>	<b>162</b>	<b>100%</b>

Table 8. Domestic and cross-border M&A share in target sample

(Source: based on data retrieved from Bloomberg)

In addition, the distribution of transactions between inter-industry and cross-industry is also very similar as in acquirer sample. As table 9 presents 57% of total deals are inter-industry. Turkey is the only country/country group where we have more cross-industry deals in the sample. Therefore, the same industry M&A are more attractive for companies.

Type	Russia		Poland		Turkey		Other Countries		Total	
	N.	%	N.	%	N.	%	N.	%	N.	%
Inter-industry	33	62%	26	59%	15	48%	18	53%	92	57%
Cross-industry	20	38%	18	41%	16	52%	16	47%	70	43%
<b>Total</b>	<b>53</b>	<b>100%</b>	<b>44</b>	<b>100%</b>	<b>31</b>	<b>100%</b>	<b>34</b>	<b>100%</b>	<b>162</b>	<b>100%</b>

Table 9. **Inter-industry and cross-industry M&A share in acquirer sample**

(Source: based on data retrieved from Bloomberg)

Table 10 shows target companies' distribution by operating industry. Most companies included in the sample operate in Customer Cyclical (20%) and Financial (17%) industries. However, most Russian target companies operate in Utilities (28%) and Communication (21%) industries. Similarly as in acquirer sample data there are quite wide industries distribution

Industry	Russia		Poland		Turkey		Other Countries		Total	
	N.	%	N.	%	N.	%	N.	%	N.	%
Financial	9	17%	4	9%	8	26%	6	18%	27	17%
Consumer, Cyclical	4	8%	10	23%	9	29%	10	29%	33	20%
Consumer, Non-cyclical	1	2%	9	20%	5	16%	8	24%	23	14%
Industrial	5	9%	9	20%	2	6%	4	12%	20	12%
Communications	11	21%	4	9%	2	6%	1	3%	18	11%
Utilities	15	28%	0	0%	0	0%	2	6%	17	10%
Basic Materials	5	9%	0	0%	4	13%	0	0%	9	6%
Technology	0	0%	7	16%	0	0%	0	0%	7	4%
Energy	3	6%	1	2%	1	3%	2	6%	7	4%
Diversified	0	0%	0	0%	0	0%	1	3%	1	1%
<b>Total</b>	<b>53</b>	<b>100%</b>	<b>44</b>	<b>100%</b>	<b>31</b>	<b>100%</b>	<b>34</b>	<b>100%</b>	<b>162</b>	<b>100%</b>

Table 10. **Industry classification of target firms**

(Source: based on data retrieved from Bloomberg)

Therefore, target companies sample data are grouped into four counties/country groups and Russia has the biggest percentage share (32%) in the sample. The M&A deals number distribution through the years vary from 4% to 12% having the most transactions in 2008 and 2010. Also, the most transaction included in the sample are domestic and inter-industry.

To summarize, after applying all the necessary criteria 353 samples left for the acquirer data and 162 for target. Therefore, to have a sufficient number of transactions impact on M&A will be analysed separately for acquirer and target companies. Descriptive statistics of the samples have showed that target and acquirer data characteristics are very similar. Most transactions were perform between

Poland, Russia and Turkey countries companies' during 2007-2010. Also, companies' in the sample are more likely to engage in inter-industry domestic transactions than cross-border and cross-country transitions. The biggest share of companies in the sample operates in Financial and Consumer Cyclical industries.

## 1.4 Event Study Methodology

Event study methodology uses financial market data and allows to measure the impact of the event. This methodology supports a relevant part of M&A literature (MacKinlay, 1997). Event study methodology evaluates the financial performance of M&A transactions by measuring the abnormal returns of the company's stock price that are generated by the announcement of the transaction. Abnormal returns ( $AR_{it}$ ) are calculated extracting expected stock price returns ( $E(R_{it})$ ) from the actual returns ( $R_{it}$ ):

$$AR_{it} = R_{it} - E(R_{it}) \quad (1)$$

Where:

$i$  – Particular stock

$t$  – Event time (assuming  $t = 0$  is an event date)

Positive abnormal returns reflects good financial performance of the transaction and negative results reflects poor financial performance and decreased value for the shareholders (Wang and Moini, 2012).

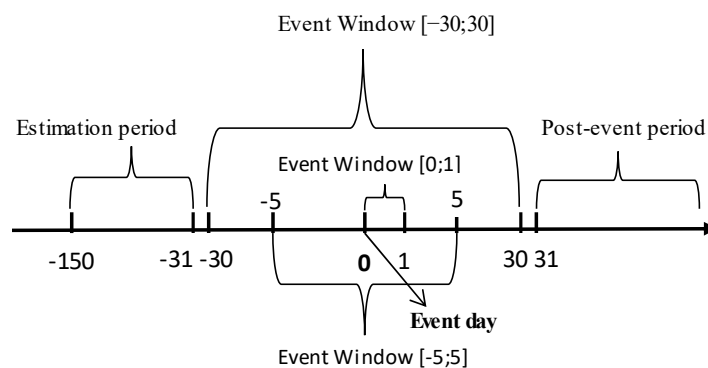
This research follows an event study methodology applying the assumptions described in 1.2.2 section: market efficiency, the unexpectedness of the event and no confounding effects assumption. This section provides detailed event study methodology description explaining how the results of the analysis are calculated. Firstly, event and estimation windows are identified, then measure of abnormal returns are described providing the equations for  $\alpha$  and  $\beta$  parameters that are used to calculate abnormal returns in the later stage. Lastly, parametric t-test and non-parametric rank test are presented that are used to test if abnormal returns significantly differ from zero.

### 1.4.1 Estimation window and event window

According to MacKinlay (1997) the initial task of conducting an event study is event of interest definition and identification the period over which the stock prices of the companies involved in this

event will be examined – the event window. Event window of one day that is announcement day is sufficient to conduct the study, but in practice it is usually expanded to multiple days around the event day. However, event window should not be too long because the longer the period, the higher the risk of confounding events to occur. In this thesis three different event windows are examined: starting on the event date and ending 1 day after the event  $[0; 1]$ , starting five days before the event and ending five days after event  $[-5; 5]$ , starting 30 days before the event and ending 30 days after selected event  $[-30;30]$ . Several different duration event windows are selected in order to test which event window is the most relevant in this study by comparing the results of different windows.

Estimation window is the time period, which is used to estimate expected normal returns (Peterson, 1989). There is no standard length of estimation period in the methodology and different duration periods are used in the literature, however according to Peterson (1989) the appropriate estimation period analysing daily data should be between 100 – 300 days. Other authors suggest that using daily data and market model, the model parameter could be estimated using 120 days prior the announcement date (Campbell et al., 2012). Following the recommendation in this research 120 days of estimation window are selected.



Picture 2. **Event windows and estimation period**

(Source: made by author based on this study)

The main rule selecting event window and estimation window is that they should not overlap in order to avoid the event influence to the estimation parameters. Overlapped estimation and event periods could lead to case where both expected normal and abnormal returns capture the effect of the event (MacKinlay, 1997). The picture 2 above shows estimation and event windows used in this study.



## 1.4.2 Measure of abnormal returns

As already discussed abnormal return is the difference between the actual and the expected returns. Firstly, in this section model selection for expected return calculation and its description is provided and secondly detailed abnormal return calculation is explained.

### 1.4.2.1 Expected returns

The expected return is the normal return that the shareholders may earn in case the event announcement have not occurred. There are three different models that are commonly used for expected returns calculation: Constant Mean Return Model, Market Model and Capital Asset Pricing Model (CAPM) (MacKinlay, 1997). Constant mean return model is the simplest model assuming the security return mean being constant through time. In this research we reject choosing this model because it do not adapts market movements and systematic risk. CAPM expected returns determines by its covariance with the market portfolio (MacKinlay, 1997). However, according to Seyhun (1986) CAPM has problem with parameter stationarity which can lead to biased results, hence this model is also disregarded. Market model assumes that every security return is related with market portfolio and allows to eliminate the return that is related to market variation increasing the ability to detect the effect of the event (MacKinlay, 1997). After reviewing the main three models market model is selected to evaluate expected normal stock returns and national market indices will be used (Appendix 1).

Liner relationship between stock return and market return is assumed in the market model (MacKinlay, 1997). According to this model:

$$\begin{aligned} R_{it} &= \alpha_{it} + \beta_i R_{mt} + \varepsilon_{it} \\ E(\varepsilon_{it}) &= 0 ; \text{var}(\varepsilon_{it}) = \sigma_{\varepsilon_i}^2 \end{aligned} \quad (2)$$

Where:

$R_{it}$  – Return of stock  $i$  on day  $t$

$R_{mt}$  – Return of the market index on day  $t$

$\alpha_{it}$  – Model parameter estimated with OLS regression (intercept)

$\beta_{it}$  – Model parameter estimated with OLS regression (slope)

$\sigma_{\varepsilon_i}^2$  – Model parameter estimated with OLS (variance)

$\varepsilon_{it}$  – Zero mean disturbance term

According to Gauss-Markov Assumptions for Simple Regression market model requires to apply Ordinary Least Squares (OLS) calculating model parameters (Wooldridge, 2009). The OLS approach is consistent with MacKinlay (1997) view who provides the following equations for parameters  $\alpha_{it}$ ,  $\beta_{it}$  and  $\sigma_{\varepsilon_i}^2$  estimation:

$$\hat{\beta}_i = \frac{\sum_{t=T_0+1}^{T_1} (R_{it} - \hat{\mu}_i)(R_{mt} - \hat{\mu}_m)}{\sum_{t=T_0+1}^{T_1} (R_{mt} - \hat{\mu}_m)^2} \quad (3)$$

$$\hat{\alpha}_i = \hat{\mu}_i - \hat{\beta}_i \hat{\mu}_m \quad (4)$$

$$\hat{\mu}_i = \frac{1}{L_1} \sum_{t=T_0+1}^{T_1} R_{it}; \quad \hat{\mu}_m = \frac{1}{L_1} \sum_{t=T_0+1}^{T_1} R_{mt}$$

3th and 4th equations reflects the assumption that the error expected value is zero and the variance is constant. 5th equation presents the variance calculation using the estimation window [-150; -31]:

$$\hat{\sigma}_{\varepsilon_i}^2 = \frac{1}{L_1 - 2} \sum_{t=T_0+1}^{T_1} (R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt})^2 \quad (5)$$

Were:

$L_1$  – The length of estimation window ( $L_1 = T_1 - T_0$ )

$T_1$  – The last day of estimation window

$T_0 + 1$  – The first day of estimation window

In this research there is a need to calculate daily stock rate of returns, to do it the following equation is used:

$$R_{it} = \frac{(P_t - P_{t-1})}{P_{t-1}} \times 100\% \quad (6)$$

Where:

$R_{it}$  – Return of stock  $i$  on day  $t$

$P_t$  – Stock  $i$  closing price on day  $t$

$P_{t-1}$  – Stock  $i$  closing price on day  $t-1$

Daily market index returns are calculated using the same formula in order to compare it with expected stock returns:

$$R_{mt} = \frac{(P_t - P_{t-1})}{P_{t-1}} \times 100\% \quad (7)$$

Where:

$R_{mt}$  – Return of market index on day  $t$

$P_t$  – Market index closing price on day  $t$

$P_{t-1}$  – Market index closing price on day  $t-1$

Therefore, the expected returns are calculated using market model and the above indicated formulas. Estimated expected returns are used in further abnormal returns calculation.

#### 1.4.2.2 Average abnormal returns and cumulative abnormal returns

This subsection provides average abnormal returns (AR) and cumulative abnormal returns (CAR) calculation methodology that are used for M&A announcement impact evaluation for target and acquirer companies. After market model parameters estimation average abnormal returns are calculated that will be used in AR calculation, following MacKinlay (1997) average abnormal returns are calculated as:

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt} \quad (8)$$

Where:

$AR_{it}$  – Abnormal return of stock  $i$  on day  $t$

After calculating abnormal returns for individual stock on a specific day we aggregate results through two dimensions: time and stocks. Aggregation is needed in order to see overall performance during selected event windows and securities. Keeping following MacKinlay (1997) firstly aggregation is done through time calculating cumulative average abnormal returns ( $CAR_{i(t_1, t_2)}$ ):

$$CAR_{i(t_1, t_2)} = \sum_{t=t_1}^{t_2} AR_{it} \quad (9)$$

$$T_1 < t_1 \leq t_2 \leq T_2$$

Where:

$T_1$  – The last day of the estimation window

$T_2$  – The last day of the event window

Secondly, individual stocks abnormal returns for N number of events are aggregated calculating average abnormal returns:

$$AAR_t = \frac{1}{N} \sum_{i=1}^{N_t} AR_{it} \quad (10)$$

Where:

$AAR_t$  – Average abnormal return on time period  $t$

$N_t$  – Number of events

Lastly, we calculate cumulative effect of the M&A announcement taking into consideration both time and all stocks:

$$CAAR_{(t_1, t_2)} = \sum_{t=t_1}^{t_2} AAR_t = \frac{1}{N} \sum_{i=1}^{N_t} CAR_{i(t_1, t_2)} \quad (11)$$

Where:

$CAAR_{(t_1, t_2)}$  – Cumulative average abnormal return

Cumulative abnormal returns calculation is the last step in abnormal return estimation.

Positive results suggest that M&A announcements were considered as good news and increased the stock price, negative returns refers to negative impact for shareholders (Wang and Moini, 2012).

However, it is not sufficient to calculate CAAR to make a conclusion, in addition it is necessary to check the results significance.

### 1.4.3 Test statistics

In the next step we seek to specify if the calculated CAARs are statistically significant and not the result of pure chance. According to Corrado (1989) in order to test the significance of the event using event study methodology the most appropriate approach would be to use both parametric t-test and non-parametric test. The usage of different tests allows to avoid separate tests drawbacks, compare

the results and get more reliable data. The results of this thesis research are tested using parametric t-test and non-parametric Corrado test in order to test the following  $H_0$  and  $H_A$  hypothesis:

1.  $H_0$  – M&A announcements in Eastern European countries have no effect on target companies stock prices ( $CAAR_{(t_1, t_2)} = 0$ ).
2.  $H_A$  – M&A announcements in Eastern European countries have effect on target companies stock prices ( $CAAR_{(t_1, t_2)} \neq 0$ ).
3.  $H_0$  – M&A announcements in Eastern European countries have no effect on acquirer companies stock prices ( $CAAR_{(t_1, t_2)} = 0$ ).
4.  $H_A$  – M&A announcements in Eastern European countries have effect on acquirer companies stock prices ( $CAAR_{(t_1, t_2)} \neq 0$ ).

#### 1.4.3.1 T-test

Parametric t-test in this research is conducted based on Brown and Warner (1985) assuming that CAARs are normally distributed, have independent and identical distribution over time and the expected value of the return is zero. T-test tests the variance in the cumulative abnormal returns during the event window and is calculated as per the formula below:

$$t_{stat} = \frac{CAAR}{\hat{S}(CAAR)} \quad (12)$$

Where:

$t_{stat}$  – T-test value

$\hat{S}(CAAR)$  – Standard deviation of CARR

$\hat{S}(CAAR)$  can be calculated using the following equation:

$$\hat{S}(CAAR) = \sqrt{\frac{1}{N-1} \sum_{i=1}^N (CAR_i - CAAR)^2} \quad (13)$$

Where:

$N$  – The number of companies stocks

$CAR_i$  – Cumulative abnormal return of stock  $i$

Dutta (2014) suggests that the biggest part of event studies researches rely on parametric test, however in addition on this research one more non-parametric test is conducted.

### 1.4.3.2 Corrado Rank test

In conjunction to parametric t-test non-parametric Corrado (1989) test is performed in order to have supportive and more reliable abnormal returns significance evaluation. The test presented by Corrado (1989) is the rank test that does not require symmetry assumption. Using rank test all companies' abnormal returns in the event and estimation periods are ranked assigning 1 to the smallest abnormal return. Keeping following Corrado (1989) methodology we perform test in order to test if the expected ranks are equal actual ranks on the particular days. The equations below are used for rank test calculations:

$$T_C = \frac{\frac{1}{N} \sum_{i=1}^N (K_{it} - \frac{T_2 + 1}{2})}{S(K_t)} \quad (14)$$

$$S(K_t) = \sqrt{\frac{1}{L} \sum_{t=T_0+1}^{T_2} \left( \frac{1}{N} \sum_{i=1}^N (K_{it} - \frac{T + 1}{2}) \right)^2} \quad (15)$$

Where:

$T_C$  – Corrado test value

$K_{it}$  – The rank of the abnormal return of stock  $i$  during the event and estimation periods

$L$  – The length of estimation and event period ( $L = T_2 - T_0$ )

$N$  – Each stock

$S(K_t)$  – Standard deviation of abnormal return rank

Campbell and Wesley (1993) have extended Corrado rank test making in more powerful and allowing to apply the test for the cumulative average abnormal returns for the event windows longer than one day. The adjusted equation accumulates the initial formula (14) numerator and denominator over the event window. Therefore, for the below formula is used to perform the test:

$$T_{C,CAAR} = \frac{\sum_{t=T_1}^{T_2} \frac{1}{N} \sum_{i=1}^N \left( K_{it} - \frac{T_2 + 1}{2} \right)}{\sqrt{\sum_{t=T_1}^{T_2} S^2(K_t)}} \quad (16)$$

Where:

$T_{C,CAAR}$  – *Corrado test value for multiple days event window*

The results of the tests are compared with critical values at a significance level of 1%, 5% and 10%:

- If the value of the test is outside the  $[-2,576; 2,576]$  interval  $H_0$  is rejected at the significance level of 1%. Otherwise,  $H_0$  is approved.
- If the value of the test is outside the  $[-1,960; 1,960]$  interval  $H_0$  is rejected at the significance level of 5%. Otherwise,  $H_0$  is approved.
- If the value of the test is outside the  $[-1,645; 1,645]$  interval  $H_0$  is rejected at the significance level of 10%. Otherwise,  $H_0$  is approved.

According to Cowan and Sergeant (1996) Corrado test is more powerful and reliable than parametric tests if the CAAR variance is not increasing over time, however in case of increasing variance this test might be misleading. Therefore, both tests are performed in order to check the variance and compare the results of the tests.

Therefore, this study research will use 150 days of estimation window and three different event windows 1, 11 and 31 days length. The expected stock price returns will be evaluated using market model and the results tested with t-statistic and Corrado tests.

To conclude, the research will be performed separately for acquirer and target companies'. In both researches Russia, Poland and Turkey will be analysed separately. In acquirer evaluation three more country groups will be tested: South Slavic countries, Baltic countries and other countries while in the target only one other countries group will be tested. Most M&A deals included in the samples are inter-industry domestic transactions and the most of them operate in Financial, Consumer Cyclical and Consumer Non-cyclical industries. To perform the research event study methodology will be employed and three different event windows will be tested calculating abnormal returns using market model. The significance of the results of the analysis will be tested using parametric t-test and non-parametric Corrado test.

# **THE EMPIRICAL RESULTS OF MERGERS AND ACQUISITIONS IMPACT ON COMPANIES' STOCK PRICE**

This chapter presents results of the research that was performed using Microsoft Excel and is based on the methodology and data described in the previous paragraphs. The average reaction of the stock market to M&A announcements is investigated and analyzed. The value creation or destruction is evaluated based on both acquiring and bidder companies' shareholders cumulative average abnormal returns (CAARs) during few different event windows. Positive CARR suggest that M&A have positive impact on company performance and negative CAAR implies a negative impact. Parametric t-test and non-parametric Corrado Rank test values are analysed to evaluate the significant of the results. Based on CARRs and other analysis results in this chapter the research question are answered in detail.

## **1.5 The empirical results of Mergers and Acquisitions impact on Acquirer companies' stock price**

In this section the impact of M&A on Eastern European countries acquiring firms' stock price are presented. Firstly, the overall region results are presented, secondly the CAARs by country and country group are analysed during multiple event windows and thirdly, the statistical significance of the results are evaluated.

### **1.5.1 Cumulative abnormal returns and its significance of Acquirer sample**

In the first step of the research CAARs for all 353 samples of Eastern European acquiring firms were calculated using event study methodology and the results were tested using both parametric t-test and non-parametric Corrado test. This section represents the insights and summary of the results.

Table 11 below shows CAARs for every event window and its significance. Positive cumulative abnormal returns are noticed for all 3 event windows, however the returns are quite low 0.6%, 1.6% and 1.2% for event windows [0; 1], [-5; 5] and [30; 30] respectively. Even though the CAARs are low t-test approves the statistical significant of abnormal returns during [0; 1] and [-5; 5] event windows with a significance level of 1%. Corrado Rank test values shows no significance abnormal returns



during any analysing event window. No returns were approved as statistically significant during any event window by both tests.

Event window	CAAR	t-test value	Significance level	Corrado test value	Significance level
[0; 1]	0.6%	2.903	1%	1.169	-
[-5; 5]	1.6%	3.421	1%	1.095	-
[-30; 30]	1.2%	1.499	-	1.288	-

Table 11. CAARs of the acquire firms sample and their significance levels

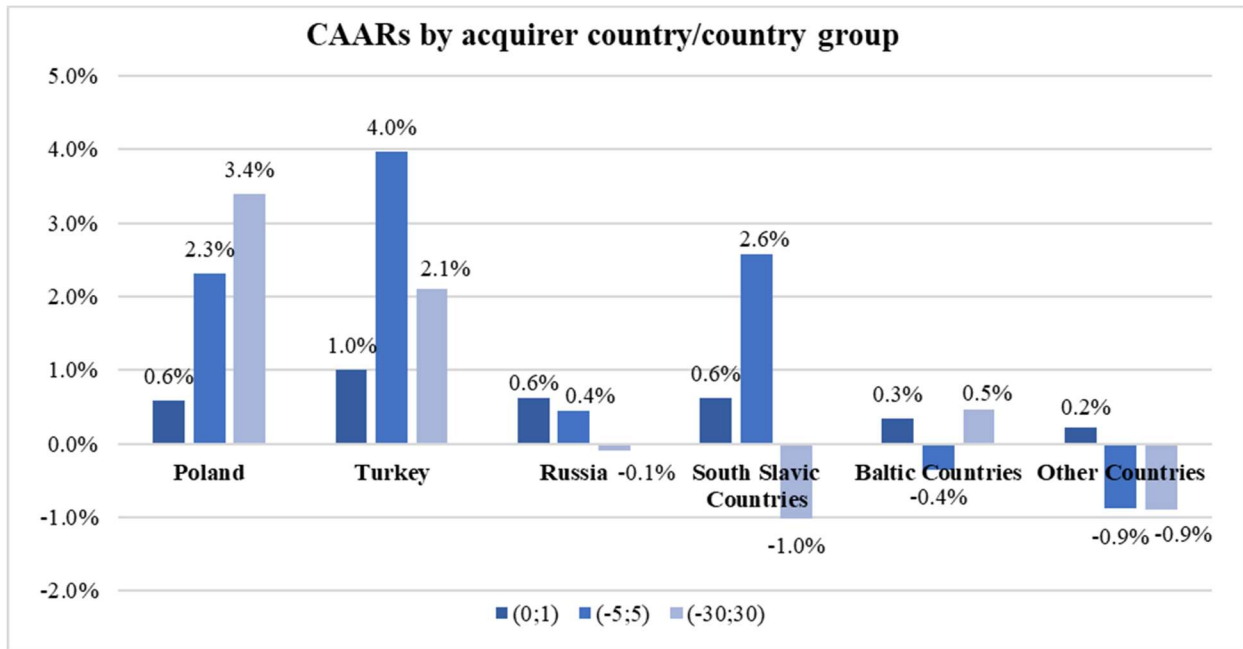
(Source: prepared by author based on data retrieved from Bloomberg)

Therefore, only a small positive significant impact approved by parametric t-test for acquiring companies' stock prices are noticed. The highest CAARs was five days before and five days after the event (1.6%), however while extending event window the significance of the abnormal returns vanished.

### 1.5.2 Cumulative Abnormal Returns by Acquirer Country or Country group

Further cumulative abnormal returns were calculated for every country or country group during multiple event windows in order evaluate how the results vary through the countries in the region.

Graph 2 represents CAARs for very country or country group during 2, 11 and 61 days length event windows. The graph shows that the abnormal returns for countries or country groups are different and vary from -0.9% till 4% during different event windows. The highest positive returns are noticed for Turkey during 11 days event window [-5; 5] and Poland during the longest event window of 61 days [-30; 30]. Not more than 1% impact are captured for all of the rest countries and country groups besides South Slavic Countries group during 11 days event window that shows 2.6% of positive abnormal returns. Also, there is no clear relationship between the CAARs and the length of the event window. However if we look into the highest abnormal returns generating countries (Poland and Turkey) it can be noticed that highest returns are during the longer windows (11 and 61 days) comparing with 2 days event window.



Graph 2. CAARs by acquirer country/country group during multiple event windows  
(Source: prepared by author based on data retrieved from Bloomberg)

Thus, the positive CAARs calculated for the whole sample mainly comes from Poland and Turkey during 5 and 61 days event windows.

### 1.5.3 Statistical significance of the results by Acquirer Country or Country group

After the M&A impact evaluation for different countries it is important to evaluate the significance of the results. This section provides details for statistical significance of the results by acquirer country or country group during multiple event windows.

The data in Table 12 represents t-test and Corrado test significance levels for every event window by country. The table shows that CAARs indicators are significant in accordance with t-test only for Poland, Turkey and South Slavic countries during 2 of 3 event windows. Similarly, Corrado rank test suggests the significance of the results for the same countries or country groups. However, for Poland and South Slavic countries results are assumed to be significant only in 11 days event window [-5; 5], while for Turkey for two event windows (2 and 11 days). Both tests suggest the significance of the CAARs for Poland, Turkey and South Slavic countries during 11 days event window, even the CAARs for South Slavic Countries are only 2.6% both test shows the significance level of 1%. In addition, t-test and Corrado test shows that 1% of increased returns in Turkey during event day and one day after [0; 1] is significant at the level of 5% and 10% respectively.

Therefore, small (0.6% – 4%) but significant impact of M&A on stock prices are noticed for Poland, Turkey and South Slavic Countries, while no significant abnormal returns are captured for Russia, Baltics and Other Country group.

<b>Event window</b>	<b>CAAR</b>	<b>t-test</b>	<b>Corrado test</b>
<b>Poland</b>			
[0;1)	0.6%	-	-
[-5;5)	2.3%	5%	10%
[-30;30)	3.4%	10%	-
<b>Turkey</b>			
[0;1)	1.0%	5%	10%
[-5;5)	4.0%	1%	10%
[-30;30)	2.1%	-	-
<b>Russia</b>			
[0;1)	0.6%	-	-
[-5;5)	0.4%	-	-
[-30;30)	-0.1%	-	-
<b>South Slavic Countries</b>			
[0;1)	0.6%	10%	-
[-5;5)	2.6%	1%	1%
[-30;30)	-1.0%	-	-
<b>Baltic</b>			
[0;1)	0.3%	-	-
[-5;5)	-0.4%	-	-
[-30;30)	0.5%	-	-
<b>Other Countries</b>			
[0;1)	0.2%	-	-
[-5;5)	-0.9%	-	-
[-30;30)	-0.9%	-	-

Table 12. **Statistical significance of CAARs for acquirer country/country group**

(Source: prepared by author based on data retrieved from Bloomberg)

To summarize, only a very small positive gain for acquiring companies has been noticed analysing the sample of 353 M&A transactions in Eastern European region. The highest CAARs are noticed during the 11 days event window (1.6%) that was driven mainly by Poland, Turkey and South Slavic countries that significance of abnormal returns was approved by both parametric and non-parametric tests.

## 1.6 The empirical results of Mergers and Acquisitions impact on Target companies' stock price

In this section the results of the research are presented for Eastern European target companies evaluating the effect of M&A transactions. CAARs and their significance are presented for the whole sample firstly, then the abnormal returns are presented in the graph for every country or country group during different event windows. Lastly, the significance level of the CAARs are evaluated for every event window and country.

### 1.6.1 Cumulative abnormal returns and its significance of Target sample

This section represents cumulative abnormal returns and its significance for the sample of 162 Eastern European target companies.

Table 13 shows abnormal returns generated through mergers and acquisitions for every event window with t-test and Corrado test significance levels. For all three event windows positive CAARs are captured with the highest value of 4.7% during 11 days event window, 1.6% during 61 days event window and the lowest gain of 1.6% was noticed during event day and one day after the transaction. Parametric t-test approves the significance for all event windows with the significance level of 1% for [0; 1] and [-5; 5] event windows and 10% for [-30; 30] event window. Corrado rank test suggest the results significance at the level of 10% for 2 and 11 days event windows. The abnormal returns during the two shortest event windows were approved by both parametric and non-parametric tests.

Event window	CAAR	t-test value	Significance level	Corrado test value	Significance level
[0; 1]	1.6%	4.265	1%	1.815	10%
[-5; 5]	4.7%	5.194	1%	1.782	10%
[-30; 30]	2.9%	1.948	10%	1.587	-

Table 13. CAARs of the target firms sample and their significance levels

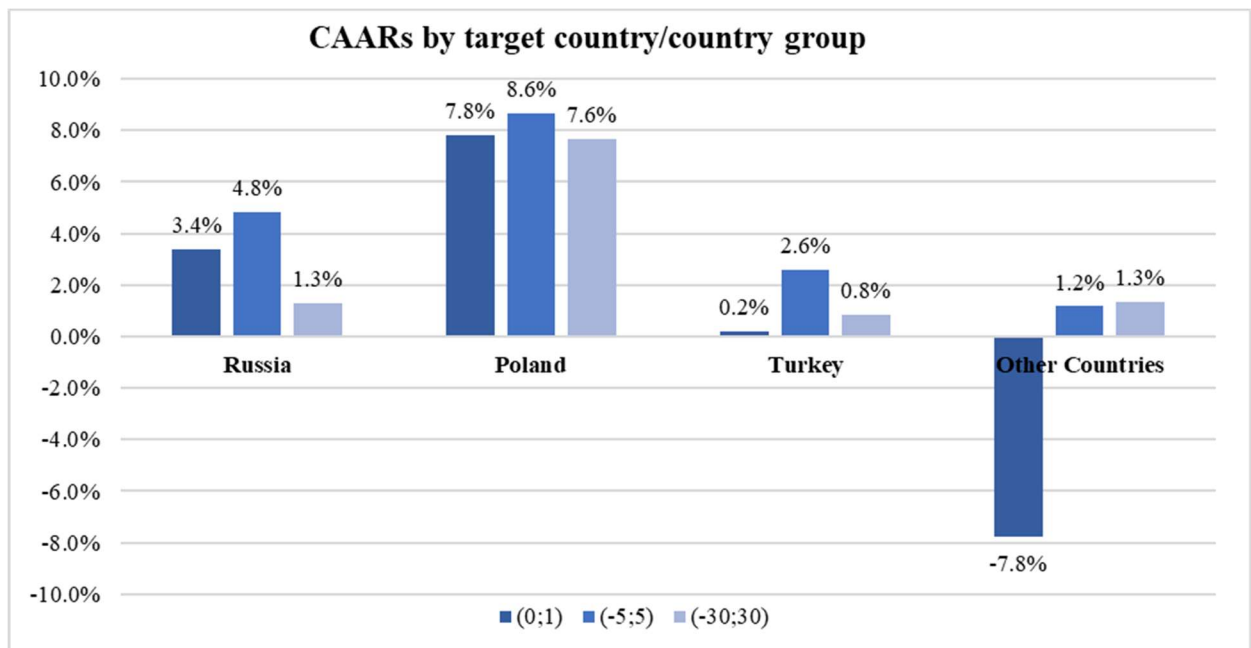
(Source: prepared by author based on data retrieved from Bloomberg)

Therefore, CAARs generated through M&A transactions for target companies are statistically significant and vary from 1.6% till 4.7% during multiple event windows.

### 1.6.2 Cumulative Abnormal Returns by Target Country or Country group

In this subsection intra region differences are investigated comparing cumulative abnormal returns for every target country or country group in each event window.

Graph 3 represents abnormal returns during [0; 1], [-5; 5] and [-30; 30] event windows for Russia, Poland, Turkey and Other countries group. The graph reveals that intra region differences are significant as CAARs vary from 7.8% (other countries group) negative impact till 8.6% positive impact (Poland). The highest positive impact is noticed for Poland target companies where abnormal returns are in the range of 7.6 % – 8.6% during different event windows. For other countries CAARs are lower, for instance gain for Russian target firms vary from 1.3% till 4.8%, for Turkish only 0.2% – 2.6% of positive returns are captured. However, the most notable deviation for the total target sample results can be seen for Other countries group where in the shortest event window (2 days) the impact of the transactions created -7.8% negative impact on target companies stock prices. Even though, the negative impact was high it was not sustained in the longer periods, controversially even a small positive impact can be noticed in 11 and 61 days event windows. The graph also shows that the highest abnormal returns were generated 11 days around the event date (except for Other countries group) and only in Poland in the longer period after the event the returns were sustained almost unchanged (only 1.2 % lower).



Graph 3. CAARs by target country/country group during multiple event windows

(Source: prepared by author based on data retrieved from Bloomberg)

Thus, Poland makes the greatest contribution to positive abnormal returns for target sample generating about 8% of return during every event window. Negative abnormal returns of 7.8% for Other countries group firms explains why the returns in the shortest event window are lowest analysing the whole 162 samples.

### **1.6.3 Statistical significance of the results by Target Country or Country group**

Further in order evaluate if calculated cumulative abnormal returns for target companies are statistically significant t-test and Corrado Rank test results are analysed in this section.

Table 14 displays CAARs significance levels calculated for t-test and Corrado test for every event window by country or country group. The table shows that t-test approves the significance for every CAARs except for Russia during 61 days event window, Turkey for 2 and 61 days event windows and Other countries 11 days event window. While Corrado test suggest that results are significant only for Poland during all event windows and for Russia during [-5; 5] event window. No statistical significance is approved for Turkey and Other countries group by Corrado test. The most surprising result is that during the shortest event window the negative abnormal returns of 7.8 % are noticed for Other countries group and significance is approved by t-test at the significance level of 1%. However, negative abnormal returns are not sustained in the longer periods.

Therefore, Poland target companies in the selected sample gained the most from the transactions and even managed to sustain the returns in the longer period. The least gained Other countries group companies that even faced negative impact of M&A transactions on their stock price in the event window of two days.

<b>Event window</b>	<b>CAAR</b>	<b>t-test</b>	<b>Corrado test</b>
<b>Russia</b>			
[0; 1]	3.4%	1%	-
[-5; 5]	4.8%	5%	1%
[-30; 30]	1.3%	-	-
<b>Poland</b>			
[0; 1]	7.8%	1%	1%
[-5; 5]	8.6%	1%	1%
[-30; 30]	7.6%	1%	5%
<b>Turkey</b>			
[0; 1]	0.2%	-	-
[-5; 5]	2.6%	10%	-
[-30; 30]	0.8%	-	-
<b>Other Countries</b>			
[0; 1]	-7.8%	1%	-
[-5; 5]	1.2%	-	-
[-30; 30]	1.3%	10%	-

Table 14. **Statistical significance of CAARs for acquirer country/country group**

(Source: prepared by author based on data retrieved from Bloomberg)

All in all, significant positive returns were generated for target companies analysing the sample of 162 M&A transactions in Eastern European region. The significance of the abnormal returns generated during all 3 event windows are approved by both t-test and Corrado test except [-30; 30] event window is not approved by Corrado test. The highest positive CAARs are noticed during the [-5; 5] event window (4.7%) during which highest positive returns are captured for Poland (8.6%) and Russia (4.8%) companies.

To summarize, the research has examined 353 samples of M&A impact to acquirer and 162 to target companies' stock price. The results of the analysis revealed the significant abnormal returns for target companies varying from 1.6% till 4.7 % during different event windows and much lower returns for acquirer companies varying from 0.6% till 1.6%. In addition, the significance of the results was approved by both parametric and non-parametric test for target sample for all except one event window not approved by Corrado test while for acquirer, however no one event window was approved by both tests, only 2 event windows approved by t-test (2 and 11 days). The similarity is that in both samples the highest CAARs are noticed during the 11 days event window. Analyzing inter region differences the highest abnormal returns were noticed for Poland target companies (7.6% – 8.6%) and

Russia target companies (1.3% – 4.8%), then for Turkey (1% – 4%) and Poland (0.6% – 3.4%) acquiring firms. No significant impact noticed for Russia, Baltic and Other acquiring firms' sample. The results suggest that both  $H_0$  hypothesis stating that M&A announcements in Eastern European countries have no effect on target and acquiring companies' stock prices has to be rejected and alternative hypothesis approved. Therefore, the research results are similar to the other research findings described in the theoretical part (Papadakis and Thanos, 2010; Shah and Arora, 2014; Zaremba and Potnicki, 2014) that suggest that the main gainer for M&A transactions are target firms.



## CONCLUSIONS AND RECOMMENDATIONS

1. Reviewed literature suggests that M&A in history occurred in waves each with its specific characteristics and the highest boom in Eastern European countries was triggered by globalization and European Union enlargement. Also, it was identified that companies usually are motivated by financial and operating synergy and have more than one motive for M&A activities.
2. Analysed event study methodology literature revealed that it is the most common and widely applicable method evaluating M&A impact on stock prices allowing accurate evaluation, even though it is complicated to meet all the necessary assumptions, get all the necessary data and perform complex calculations.
3. Theoretical analysis of other authors' event study researches that were analysed in the theoretical part gave the suggestion that the main gainer of M&A transactions are target companies who usually faces positive abnormal returns in the short run and no significant value is created for acquirer firms.
4. Conducted event study research analysing 353 samples of Eastern European countries acquirer companies' stock prices gave the result that only 0.6% - 1.6% positive abnormal returns were created during the different length of event windows with the highest value during 11 days of event window. In addition, no one event window was approved by both tests, only 2 event windows approved by t-test (2 and 11 days). Therefore, only very small positive returns were created for acquiring firms during 2005-2019 period.
5. Intra region analysis of abnormal returns for acquiring firms gave the result that the highest CAARs were created for Poland (up to 3.4%), Turkey (up to 4%) and South Slavic countries (up to 2.6%). Both parametric and non-parametric test suggests that the results are significant for at least one event window for all 3 countries. No significance returns were noticed for Baltic, Russia and Other countries groups.
6. Obtained results from performed event study research analysing 162 samples of Eastern European countries target companies' stock prices suggests that target companies gained from transactions during 2005-2019. Firms' stock prices abnormally increased from 1.6% till 4.7% during multiple event windows, similarly as analysing acquirer sample the highest returns were captured during 11 days event window. The results significance

was approved by t-test and Corrado test, only CAARs during [-30; 30) event window was not approved as significant by Corrado test.

7. After analysing intra region differences of M&A impact for target companies the highest CAARs were obtained for Poland (7.6% – 8.6%) and Russia (1.3% – 4.8%). The abnormal return generated for Turkey and Other countries groups were significantly lower, for Turkey only 2.6% significant CAAR's were obtained during [-5;5] event window and for other countries 1.3% during [-30;30] event window. Also, analysing Other counties group significant 7.8% negative abnormal returns were identified during the event day and one day after, however this negative returns were not sustained and disappear extending event window to 11 and 31 days.
8. Therefore, the obtained research results are consistent and similar to other authors' researches findings that abnormal returns created through M&A transactions are positive for target companies and no or significantly less gain is generated for acquiring companies.
9. Even though our research find out low abnormal returns for acquirer companies in Eastern European during 2005-2019 and significantly higher CAARs for target companies both  $H_0$  hypothesis stating that M&A announcements in Eastern European countries have no effect on target and acquiring companies stock prices has to be rejected and alternative hypothesis approved. Therefore, based on the performed research M&A transactions create value for target and acquirer firms in Eastern European countries.
10. The limitation of this study is that only one data source was used for data extraction (Bloomberg) and quite low number of transactions were used in the research, especially in the acquirer sample (162). For further analysis and researches I would recommend to use more data sources in order to get more samples in the research and get better representation of the region or country.
11. Also, as literature analysis revealed that the impact of the M&A might be different in the same region analysing different sectors for further investigation I would recommend to perform research by companies' industry that would allow to evaluate the existence of the differences in the particular region.

# SUMMARY

## EVENT STUDY BASED ANALYSIS OF MERGERS AND ACQUISITIONS IN EASTERN EUROPEAN COUNTRIES

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Master Thesis

Finance and banking programme

Faculty of Economics and Business Administration of Vilnius University

Supervisor: Lec. D. Saikevičius

Vilnius, 2021

Size: 50 pages, 14 tables, 3 graphs, 16 formulas, 2 pictures, 73 references, 3 appendixes.

The main purposes of this study is to fill the gap in existing M&A literature by providing empirical evidence for M&A taken place in Eastern European countries. The research seeks to examine the short time M&A impact on stock prices of both targets and bidders of Eastern European countries companies and find out intra region differences.

The thesis consists of four main parts: literature review, data description and methodology, research results representation, conclusions and recommendations.

Literature analysis reviews M&A definitions, history, motives and event study theoretical context. In the last part of the theory the results of similar previous event studies are analysed.

Data description and methodology part begins describing data separately for target and acquirer sample providing number of transactions by country, year, type and industry. Further event study methodology is described in details providing all the formulas used in the research.

The performed research revealed small significant positive gain for acquiring companies (up to 1.6% of CAARs) that was driven mainly by Poland (3.4%), Turkey (4%) and South Slavic (2.6%) countries. While for target companies almost 3 times higher CAARs were noticed (up to 4.6%) with highest positive returns for Poland (8.6%) and Russia (4.8%) companies. The significance of the results was tested with t-test and non-parametric Corrado test and both test suggested results significance for target and acquirer firms at least for some countries and event windows.

The last part of the study conclusions and recommendations summarizes the main parts of the study focusing on research results. In the end author provides recommendations for further researches.

# SANTRAUKA

## RYTŲ EUROPOS ŠALIŲ ĮMONIŲ ĮSIGIJIMŲ IR SUSIJUNGIMŲ ANALIZĖ REMIANTIS ĮVYKIO ANALIZĖS METODU

BIRITĖ ABRAGIMOVIČ

Magistrinis darbas

Finansų ir bankininkystės programa

Vilniaus Universitetas, Ekonomikos ir verslo administravimo fakultetas

Darbo vadovas: Lec. D. Saikevičius

Vilnius, 2021

Apimtis: 50 puslapių, 14 lentelių, 3 grafikai, 16 formulių, 2 paveikslai, 73 šaltiniai, 3 priedai.

Pagrindinis šio darbo tikslas papildyti įmonių įsigijimų ir susijungimų literatūrą analizuojant Rytų Europos įmones. Tyrimu siekiama iširti trumpalaikį įmonių įsigijimų ir susijungimų poveikį parduodamų ir perkančių įmonių akcijų kainoms ir išsiaiškinti tarpregioninius skirtumus.

Darbą sudaro keturios pagrindinės dalys: literatūros analizė, duomenų ir metodologijos aprašymas, tyrimo rezultatų aprašymas, išvados ir rekomendacijos.

Literatūros analizės dalyje paaiškinamos įmonių įsigijimų ir susijungimo sąvokos, analizuojama transakcijų istorija, motyvai ir įvykio analizės teorinis pagrindas. Paskutinėje literatūros analizės dalyje aptariami ankstesni kitų autorių įvykių analizės darbai.

Duomenų analizės ir metodologijos dalyje aprašomi įsigyjančių ir parduodamų įmonių imties duomenys, analizuojant transakcijų skaičių pagal šalis, metus, tipą ir industriją. Metodologijos dalyje detalai aprašomas įvykio analizės metodas, pateikiamos formulės, naudojamos tyrimui atlikti.

Atliktas tyrimas parodė sukurtą nedidelę naudą įsigyjančioms įmonėms (iki 1.6% nenormalios grąžos), kurios atsiradimui didžiausią įtaką turėjo Lenkija (3.4%), Turkija (4%) ir Pietų Slavų šalys (2.6%). Tuo tarpu parduodamoms įmonėms gauta beveik tris kartus didesnė grąža (iki 4.6%), didžiausia teigiama grąža pastebėta Lenkijos (8.6%) ir Rusijos (4.8%) įmonėms. Atlikus analizę duomenų statistinis reikšmingumas buvo patikrintas su t-testu ir Corrado testu, abiejų testų rezultatai parodė reikšmingumą parduodančioms ir perkančioms įmonėms bent keletui šalių.

Paskutinė darbo dalis apibendrina visą darbą, daugiausiai dėmesio skiriant tyrimo analizės rezultatams. Pabaigoje pateikiamos rekomendacijos ateities darbams ir tyrimo plėtojimui.

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## APPENDIXES

### Appendix 1. Market indices by country

Country	Market index
Romania	ROTX EUR
Turkey	BIST 100
Poland	PTX EUR
Hungary	HTX EUR
Croatia	CROX EUR
Slovenia	SBITOP
Estonia	OMXT
Lithuania	OMXV
Russia	MOEX
Ukraine	PFTS index
Bulgaria	SOFIX
Serbia	Belex 15
Czech Republic	PX
Montenegro	MONEX
Slovakia	SAX
Latvia	OMXR
Montenegro	MONEX 20

Appendix 2. Acquirer sample CAARs, t-statistics and Corrado test values with significance levels

	CAAR	t-statistics of CAAR	t-test significance level	Rank test	Rank test significance level
<b>[0:1]</b>					
Russia	3.4%	3.747	1%	1.491	-
Poland	7.8%	12.898	1%	3.826	1%
Turkey	0.2%	0.314	-	-0.665	-
Other Countries	-7.8%	-12.106	1%	0.182	-
<b>Total</b>	<b>1.6%</b>	<b>4.265</b>	<b>1%</b>	<b>1.815</b>	<b>10%</b>
<b>[-5:5]</b>					
Russia	4.8%	2.276	5%	3.342	1%
Poland	8.6%	6.090	1%	3.474	1%
Turkey	2.6%	1.845	10%	1.541	-
Other Countries	1.2%	0.775	-	0.078	-
<b>Total</b>	<b>4.7%</b>	<b>5.194</b>	<b>1%</b>	<b>1.782</b>	<b>10%</b>
<b>[-30:30]</b>					
Russia	1.3%	0.359	-	1.187	-
Poland	7.6%	3.210	1%	2.033	5%
Turkey	0.8%	0.363	-	1.353	-
Other Countries	1.3%	0.529	-	1.519	-
<b>Total</b>	<b>2.9%</b>	<b>1.948</b>	<b>10%</b>	<b>1.587</b>	<b>-</b>

Appendix 3. Target sample CAARs, t-statistics and Corrado test values with significance levels

	CAAR	t-statistics of CAAR	t-test significance level	Rank test	Rank test significance level
<b>[0:1]</b>					
Poland	0.6%	1.233	-	0.408	-
Turkey	1.0%	2.334	5%	1.694	10%
Russia	0.6%	1.357	-	0.596	-
South Slavic countries	0.6%	1.700	10%	0.444	-
Baltic	0.3%	0.557	-	0.328	-
Other Countries	0.2%	0.502	-	1.518	-
<b>Total</b>	0.6%	2.903	1%	1.169	-
<b>[-5:5]</b>					
Poland	2.3%	2.093	5%	1.872	10%
Turkey	4.0%	3.918	1%	1.670	10%
Russia	0.4%	0.411	-	1.385	-
South Slavic countries	2.6%	3.022	1%	3.892	1%
Baltic	-0.4%	-0.243	-	0.962	-
Other Countries	-0.9%	-0.887	-	0.600	-
<b>Total</b>	1.6%	3.421	1%	1.095	-
<b>[-30:30]</b>					
Poland	3.4%	1.834	10%	1.469	-
Turkey	2.1%	1.230	-	1.604	-
Russia	-0.1%	-0.049	-	0.578	-
South Slavic countries	-1.0%	-0.714	-	0.441	-
Baltic	0.5%	0.193	-	0.065	-
Other Countries	-0.9%	-0.536	-	0.985	-
<b>Total</b>	1.2%	1.499	-	1.288	-