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POST-MERGER OPERATIONAL PERFORMANCE OF ICT COMPANIES IN NORTH AMERICA AND EUROPE

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Abstract

This thesis analyses operational performance of ICT companies in North America and Europe after mergers completed from 2000 to 2011. The measure of operational performance is EBITDA returns on the market value of assets, which is not dependent on the methods of financing the transaction or merger accounting. European merged companies demonstrate considerably lower abnormal returns on assets than North American firms, though the present study does not reach statistical significance of the American abnormal return coefficient due to the small sample. The results hold after controlling for the price-to-book ratios of the target and the acquirer, value of transaction, method of payment, relative value of the target to the acquirer, and cross-border nature of acquisitions. In addition, they are robust to equity fluctuations during the time studied and variance in industry definitions. Furthermore, there is a strong positive correlation between efficiency improvements after acquisitions and stock price returns around the merger announcements. The underperformance of European companies may be explained by the differences in telecom industry regulation between the EU member states as well as cross-border cultural differences.

Keywords mergers, acquisitions, operational performance, ICT, telecommunications

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1 INTRODUCTION

The current thesis studies post-merger operational performance of European and North American ICT companies as well as its relation to the short-term stock performance around the merger announcement in the period from 2000 to 2011. The research was inspired by the working paper "Who wins the digitalized economy? Analysis of cross-Atlantic acquisitions" by Ikäheimo et al (2016). In the article, the researchers study the market reaction on the acquisition announcements in telecom sector and compare the obtained results between European, North American, and cross-Atlantic transactions. They claim that the market expectations on the European deals are lower than on the North American ones due to cross-country differences of regulation of the ICT sector in the EU, which does not let the companies scale their operations. Therefore, the current thesis aims at complementing the abovementioned article by testing whether the European mergers are less successful in terms of the long-term operational performance and whether the market assesses the future changes in the operational efficiency correctly.

Information and Communication Technologies sector (ICT) is defined by OECD (2002) as "a combination of manufacturing and service industries that capture, transmit and display data and information electronically". Despite dramatic changes in technology since 2002, the definition of ICT, also often referred as telecom industry, is still valid among practitioners. ICT experienced a rapid growth in the beginning of the 21st century; according to OECD Information Technology Outlook (2010), the compound annual growth rate of the industry from 2000 to 2009 was 5,7% globally. The same source indicates that out of 250 top ICT firms, 82 are located in the USA and Canada, and 51 are situated in Europe. Though Asia is becoming more and more important in the telecom industry, traditional regions, such as North America and Europe, still keep their positions as major players in the market. Apart from being a driver of change in the economy and people's lifestyle, ICT is a large contributor in the GDP: the average annual growth of ICT investments' contribution in GDP from 2000 to 2009 was 0,45% in the USA and 0,51% in the UK as opposed to 0,25% and 0,33% for non-ICT investments respectively (OECD 2012). The mentioned aspects made

telecom an attractive industry to study, especially due to the fact that successful development of ICT is the factor facilitating growth and bringing transformation to the other industries.

ICT is an active industry in mergers and acquisitions market: as reported by Institute of Mergers, Acquisitions and Alliances (2016), telecom is on the fifth place according to the value of transactions completed since 1985 (8,4% of the total value) following financials, energy and power, materials, and industrials. The combined value of transactions in the industry from 2000 to 2011 was 3 trillion USD globally. In addition, telecommunications represent 5,5% of the total deals announced from 2000 to 2016 according to transaction value, and the two largest mergers that occurred in the USA were between ICT companies (America Online acquiring Time Warner and Verizon Communications acquiring Verizon Wireless). The great activity in the M&A raises the question whether the acquisitions brought value to the industry. The topic of mergers and their effects on the companies' stock returns and performance is widely discussed among academics and practitioners; however, ICT is not sufficiently studied in this respect.

In the working paper presented on the 13th Workshop of Corporate Governance in Milan in 2016, Ikäheimo et al (2016) raise an important problem of the ICT sector in the EU: the differences in regulation between the member states. They claim that multiplicity of regulation does not let the companies scale up their operations because the products should be tailored for distribution in different countries. Indeed, the operational environment for ICT firms in Europe seems to be hard for reaching the economies of scale due to, for instance, cross-border data flows restrictions (Miller and Atkinson 2014). This topic draws a great deal of attention, and a number of attempts, such as E-Privacy Directive, Enforcement Directive, Data Retention Directive, etc. have been made in order to align the legislation and build a pan-European framework (European Policy Centre 2010). However, the common view still is that the US environment is more favourable for telecom sector. Ikäheimo et al (2016) verify this hypothesis by estimating the stock price returns of the companies around the merger announcement; the findings indicate that the market reacts more positively on North American and cross-Atlantic transactions rather than European acquisitions. The obtained results are attributed to the scalability of products in the US and Canadian market.

Nevertheless, the stock returns do not provide a full picture of the mergers' success. Therefore, the current paper focuses on long-term operational performance of the ICT firms following the acquisitions in the period from 2000 to 2011. The objective is to find out whether acquisitions are more beneficial for the performance of the North American companies and whether the market correctly reacts on the merger announcements and reflects the future changes in the operational efficiency in the stock price.

Therefore, the hypotheses of the current research are:

H1: Operational performance of North American companies improves more after the merger than the performance of European companies

H2: Stock performance around the merger announcement is positively correlated with improvements in post-merger operational performance of the companies

The methodology used to test the hypotheses is party based on the approach described by Healy et al (1992), though it enhances the latter with several new variables based on the newer studies (see e.g. Goergen and Renneboog, 2004; Campa and Hernando, 2004; Martynova and Renneboog, 2009; Cole and Vu, 2006). Operational performance of the companies is measured as industry-adjusted pretax operational cash flow returns on the market value of assets, where EBITDA serves as the proxy for the cash flows. The results are compared between the premerger period (years -5 to -1 before the acquisition) and the post-merger period (years 1 to 5 after the acquisition), and the abnormal cash flow return on assets is found from regressing the latter on the former returns. Year 0 is excluded from the analysis because it would make the data incomparable due to one-time acquisition costs as well as differences in the method of financing and merger accounting. Comparing the results between North America and Europe by adding the dummy variable for the company location allows testing Hypothesis 1. The equity performance is measured as total stock return including dividends from five days before the merger announcement to five days after the merger announcement and from five days before the merger announcement to the acquisition completion. The company returns are adjusted with the market returns in the US and Europe. The final step is regressing the stock price returns on the operational improvements after the

mergers to see if the market reflects the benefits of the transactions correctly and thus test Hypothesis 2.

The rapid growth of the ICT sector does not only make the industry attractive for studying, but also poses a limitation for the research. Since telecom companies are active players in the M&A market, it is difficult to find the companies that engaged into acquisitions only once from 2000 to 2011. Therefore, it is possible that the operational performance of the sample firms in the years surrounding the mergers is affected by other acquisitions, which results in the data not being pure. However, the companies participated in mergers in different years with respect to the acquisitions studied in the current paper. In addition, a sufficient sample size and using median values to avoid large outliers should neutralize the effects of the other transactions.

The thesis contributes to the existing literature on the topic in several ways. Firstly, it complements the current research on the benefits of mergers and acquisitions by studying it in the light of a relevant and rapidly developing industry, which recently started drawing attention of both academics and practitioners. Secondly, it enhances the existing studies of the telecom industry by adding a long-term perspective and examining the real gains from the acquisitions measured in operational performance. The existing research on the ICT sector is limited due to the industry being relatively new and peculiar as it also serves as a transformational platform for other businesses. Thirdly, it contributes to the event studies on stock returns around the merger announcements by verifying that the market reflects the future efficiency improvements. Lastly, the thesis compares the operational performance of North American and European companies, which, to the knowledge of the author, has not been done in the telecom industry yet. The thesis could be interesting for both academics and practitioners as it provides a view on M&As in one specific industry and helps ICT businesses in decision making regarding their process expansion. In addition, it could be relevant for investors and financial professionals evaluating enterprises for including in the portfolio.

The paper proceeds as follows. Chapter 2, Literature review, describes the existing research on the ICT sector and its trends as well the impact of mergers and acquisitions on the companies. Chapter 3, Data and Methods, introduces the sample used for the research and elaborates on the methodology utilized to test the hypotheses set. Chapter 4, Findings, demonstrates the results obtained and states whether the hypotheses are accepted. Chapter 5, Discussion, explains the findings and analyzes the potential reasons behind the results. Finally, the last chapter presents the conclusions of the paper and possibilities for the further research.

2 LITERATURE REVIEW

This chapter describes academic literature and practitioners reports on mergers and acquisitions. It starts with the overall benefits of mergers from the perspective of stock returns and operational performance. Thereafter, factors determining success or failure of the transactions from the viewpoint of researchers are discussed. Since the focus of the thesis is on the differences between European and North American acquisitions, a number of articles covering the peculiarities of the deals on these continents are reviewed. The chapter concludes with the characteristics of the ICT sector and the contribution of this thesis to the existing literature on it.

2.1 Benefits of mergers and acquisitions

2.1.1 Studies focusing on stock performance

Benefits of mergers and acquisitions have been a widely discussed topic in the academic literature for decades. The most common view on it is that the target gains more from the acquisition than the bidder, while the combined benefit remains controversial. Naturally, the results depend on the methodology used in the study. A great deal of articles written on the topic utilize event study methodology in order to test whether acquisitions create value for shareholders. Event study methods imply measuring stock returns, typically around the

merger announcement date or on the effective date of the merger; the abnormal returns caused by the transaction are obtained by adjusting the company stock performance with the expected return using capital asset pricing model (CAPM) or with the market returns (Bruner 2002). Extensive literature on this subject finds that target companies receive positive and statistically significant returns from the acquisitions (see e.g. Schwert, 1996; Eckbo and Thorburn, 2000; Leeth and Borg, 2000; Goergen and Renneboog, 2004; Campa and Hernando, 2004). For instance, Campa and Hernando (2004) claim that the short-term wealth effect of the merger is 9% for the target companies in a one-month window centered on the announcement date. These results are obtained using a sample of European transactions in 1998-2000. Schwert (1996) finds an even higher return for the targets during the merger wave of 1920s: 26,3% using a time window from 42 days before the merger announcement to 126 days after it. Overall, scientists are virtually unanimous claiming that target firms get superior returns related to the acquisitions. Historical time period studied influences the returns; however, the positive conclusions with respect to target performance hold in various decades.

Benefits of acquisitions for the acquirer side are a more controversial topic. The views on the value created from the transactions are polar: some researchers (see e.g. Kaplan and Weisbach, 1992; Mitchell and Stafford, 2000; Walker, 2000) find statistically significant negative returns around the merger announcement, some claim that the returns are positive (see e.g. Eckbo and Thorburn, 2000; Leeth and Borg, 2000; Goergen and Renneboog, 2004), while a number of researchers find no significant effect on the stock performance of the bidder (see e.g. Lyroudi et al, 1999; Mulherin and Boone, 2000; Campa and Hernando, 2004). While stock returns less than 1% do not seem to be economically significant, it is important to notice that they are generated in a time window of several days, which implies considerable annualized returns. Low or negative returns for the acquirer are often related to the premium paid to the target, which is documented by e.g. Bradley et al (1988), who prove that the number of bidders is negatively correlated with the acquirer returns, while it increases the gains for the target. If longer time frames are considered, the negative performance of the acquirer becomes more visible. As an example, Agrawal et al (1992) examine a five-year period following the mergers and claim that the bidders suffer 10% loss over that time. They state that the results are not caused by the slow stock price reversion or

market reaction adjustment on the transaction announcement, neither they are dependent on the potential errors in beta estimations. Therefore, the value destruction is caused by the market persistently considering the acquisitions to be negative for the companies' future performance. Overall, it can be concluded that economic benefits of the mergers for the acquirers are dubious and not substantial enough from the point of view of a number of finance researchers.

The fact that acquisitions frequently cause the value transfer from the acquirer to the target raises the question of economic benefits for the combined company. An important consideration in this case is that the bidders are typically much larger than the targets, which implies that a small loss for the former might not offset significant gains for the latter. In order to control for this factor, researchers often aggregate returns using a weighted average of them, where the weights are relative asset sizes, equity sizes, revenues, or other relevant items (Bruner 2002). Opinions on the value creation for the combined firm are not as controversial in the academic literature as the returns for the acquirers. In general, researches find statistically significant positive returns for the combined firm, though the exact values depend on the methods used and the peculiarities of the sample studied. For instance, Healy et al (1992) find a 9,1% return for the sample of 50 largest mergers in the US, while Kaplan and Weisbach conclude that the returns for the combined companies are 3,7% in mergers and tender offers. Both studies use a 10-day window around the transaction announcement (i.e. from day -5 to day +5) and refer to roughly the same historical time period: the former article uses the mergers registered from 1979 to mid-1984, while the latter one includes transactions from 1971 to 1982. In more recent studies, Mulherin and Boone (2000) report a statistically significant positive 3,6% aggregated return for the time window (-1, +1) centered on the merger announcement, and Goergen and Renneboog (2004) find 4% combined returns from day -1 to the date of the announcement. Overall, the studies prove that the mergers create positive value for the combined firm, even if the benefits for the bidder are not so obvious.

2.1.2 Studies focusing on operational and financial performance

Since stock performance around the merger announcement does not disclose the whole picture about the transaction success, some researchers prefer to study operational or financial performance after the acquisitions to see the real gains from it. The studies usually focus on such indicators as liquidity, profitability, growth rates, returns on assets, etc. several years after the acquisition (Bruner 2002). The results of these researches are not less controversial than the ones focusing on stock returns. Interestingly, the number of studies finding significant positive performance approximately equals the number of those finding significant negative performance, as well as the number of researches reporting no value creation or destruction. For instance, in the early studies, Ravenscraft and Scherer (1989) find that the acquirer companies which are highly profitable in the premerger period lose their profitability following the acquisitions. They explain their findings by the bidder's loss of control over the operations as a result of the transactions. Therefore, difficulties related to managing a larger and more diversified company are presented as the main reason for value destruction. In contrary, Healy et al (1992) find significant positive efficiency improvements after acquisitions completed from 1979 to mid-1984. They claim that operational performance, measured as operational cash flow returns on assets, increases after the mergers and link it to the improvements in the asset turnover rather than cash flow margins. They report that combined companies generate more revenues on the unit of assets, which contradicts the results of the research by Ravenscraft and Scherer (1989). Interestingly, Healy et al continue their research and publish an article in 1997 stating that in terms of operational cash flows, combined companies meet but do not exceed the premium paid for the target. Hence, the transactions are merely value conserving, implying a zero NPV project. In the newer studies, Ghosh (2001) finds the cash flows significantly increase following the mergers where the method of payment is cash and decline for stock-financed acquisitions. In case of financial performance, Rashid and Naeem (2017) study the sample of transactions from 1995 to 2012 and find that mergers do not have any significant effect on the profitability, leverage ratios, or liquidity of the companies. In addition, they claim that acquisitions negatively affect the quick ratio of the firms. Therefore, it can be concluded that operational and financial performance of the firms remains a controversial topic in the academic literature. This thesis contributes to the research on the subject by combining stock

performance and operational performance methodology, enhancing the sample with the comparison between Europe and North America, and focusing on a relevant and not widely covered in literature industry.

2.1.3 Factors determining acquisitions success

The fact that a large number of acquisitions destroy value for the shareholders or do not bring any abnormal returns brings up the topic of the factors determining the success of mergers. By "success", I imply value creation in terms of either stock returns or operational performance after the transaction, or both. With respect to the reasons for the future improved or deteriorated performance, researches focus on several aspects: (1) diversifying versus focusing mergers; (2) acquiring a highly valued versus a low valued company; (3) paying with cash versus stock; (4) managers having a large versus small ownership of the company. Undoubtedly, there are more elements that could potentially influence the post-merger performance, but the abovementioned aspects are most commonly mentioned.

Diversification is often claimed to be the factor that destroys value for the shareholders and decreases the future operational performance of the company. Intuitively, it is reasonable since acquiring highly unrelated firms might make realizing synergies more difficult. In addition, it is commonly stated that industrial or geographical diversification of the company should not be beneficial for its equity holders for they can diversify their own portfolio without engaging in such risky projects as acquisitions. There is a number of supporters for this argument among researchers and practitioners. For instance, Berger and Ofek (1995) find that the average decrease in value caused by diversification is between 13% and 15%, with the degree of business relatedness being positively correlated with the future returns. These findings are supported by a later study by DeLong (2003), who examines the factors potentially affecting the long-term performance of the companies and reports that the firms that stream their revenue flows after acquisitions perform superiorly. Santos et al (2008) study a sample of cross-border mergers and find that international diversification is not detrimental for the performance while industrial diversification destroys value. They claim

that unrelated mergers results in a 24% discount following the merger after controlling for the potential valuation errors of the target. Cole and Vu (2006) take a different approach and investigate the returns of unsuccessful merger bids, i.e. the ones that did not lead to the merger completion. They find that the announcement returns of the acquirer are not reversed after diversifying bids, while they are partially reversed after focusing bids. They argue that it supports the synergistic view on focusing acquisitions and agency problems theory of diversifying mergers. Alhenawi and Krishnaswami (2015) are in favor of the previous scientific research and state that Tobin's Q and excess value is considerably higher after acquisitions of related companies than of unrelated firms. The researchers obtain these results on the sample of mergers completed between 1998 and 2007 and base their conclusions on the five-year post-merger period. However, the literature on corporate diversification is not unanimous. For instance, Schoar (2002) claims that in manufacturing industries, conglomerates have a higher productivity than stand-alone firms, and the trade discount of diversified companies partly stems from higher wages they pay. Moreover, she reports that conglomerates even improve their productivity after the mergers, though there is a temporary immediate effect of value transfer to the target companies. In addition, Doukas and Kan (2006) find that international diversification increases the value for bondholders while decreases returns for shareholders. Therefore, they argue that there is no detrimental effect on the performance caused by the acquisition, rather a value transfer. Overall, the vast majority of the articles on the subject are in favor of focusing transactions as opposed to diversifying ones. The present thesis does not include industry diversifying factor in the scope of the research since it focuses solely on the companies from telecom sector, which by definition implies related industries. International diversification is partly an influential aspect as European acquisitions in the sample are frequently cross-border, which poses an additional cultural and regulatory burden on the merging companies. The effects of international diversification will be discussed in more detailed in the following section of this chapter.

Target valuation is also a widely discussed factor of merger success in the literature. It could influence the post-merger performance in two ways: (1) a high premium paid to the target might offset the potential efficiency improvements after the merger; and (2) if the target is a distressed company, the acquirer has an opportunity to improve its performance, hence

creating a substantial value for itself and the target. The studies measuring the premium paid to the target often focus on the number of bidders, fairly claiming that a high competition for the target might cause the winner to overpay, which is commonly referred to as "the winner's curse" or "lemons problem". For instance, Bradley et al (1988) prove that the number of bidders is negatively correlated with the acquirer returns, which in turn affects the total gains for the combined company. James and Wier (1987) draw similar conclusions when studying a sample of players in banking industry. The results of these researchers are rather intuitive, as a higher price paid should indeed make it more difficult to compensate for the costs by realizing synergies. As for overall target valuation and possible distressed state, the general opinion is that acquiring poorly managed and thus lower valued companies is beneficial for the future performance. For instance, Lang et al (1989) discover that combined, acquirer, and target returns are higher when the Tobin's Q of the target is low, while the acquirer's ratio is high. The results of the study are proved by Servaes (1991), who also verifies that they hold when controlled for other performance factors, such as the relative sizes of the acquirer and the target, the method of payment, the number of bidders, etc. The findings suggest that the combined performance of the companies is higher when the poorly managed firms are acquired by the well managed firms if Tobin's Q is considered a measure of managerial skill. Goergen and Renneboog (2004) report similar effects of the high market-to-book ratio of the target: high valuation of the target increases the premium paid, but causes a negative reaction in the bidder returns. If the companies are distressed, the viewpoints of the researchers are controversial. Clark and Ofek (1994) find that financial distress of the target positively correlates with the future performance, even though the bidders do not manage to completely restructure them. DeLong (2003) claims that in the banking industry, reducing bankruptcy costs with the merger facilitates a long-lasting performance enhancement. In contrary, Kruse et al (2007) find no proof to the abovementioned results: in their study, financial distress has no significant effect on the performance following the acquisition. Overall, a relatively low valuation of the target company is considered to be beneficial for the value creation in case of a merger. Even if financial distress, as an extreme case, remains controversial, acquisition of a poorly managed firm by a well-managed firm seems to be a positive factor for the future performance. The present thesis takes it into account by adding price-to-book ratios of the target and the acquirer as control variables into the regressions to see if the results hold also in the new sample.

The method of payment is a commonly studied factor influencing the success of the mergers as well. Typically, the studies oppose mergers financed with cash to mergers financed with stock. The reasoning behind it is that acquirers which prefer paying with stock usually do it when their company's equity is overvalued. From this perspective, such mergers should be beneficial for the bidder, since it utilizes the potential of overvaluation, and harmful for the targets, since their shareholders do not receive an adequate payment. However, engaging into acquisitions with the primary purpose of utilizing overvalued stock may cause the bidders to merge with not the most suitable targets, which would lead to a value destruction. Martynova and Renneboog (2009) find that in European acquisitions, financing the transaction with equity is followed by decreased returns for both the acquirer and the target. With respect to the acquirer returns separately, Loughran and Vijh (1997) find that in all-stock transactions, bidders have abnormal returns of -24,2% in the five-year post-merger period, while the cash bidders earn 18,5% over the same time. These results, undoubtedly, affect the overall performance of the combined companies after the transaction. In addition, Cole and Vu (2006) find that during a three-day window around the merger announcement, bidders proposing an equity-financed transaction earn a cumulative abnormal return of -4,24%, while the ones offering cash as a payment earn statistically significant positive returns. If the payment method is mixed, no significant returns are received. However, value destruction by overvalued firms is not an indisputable argument. Savor and Lu (2009) find that overvalued bidders that failed to complete the acquisition significantly underperform the ones who acquired a target. The result suggests that engaging into a merger when the stock is overvalued creates value for the bidders, though the performance of such companies is worse than of correctly valued firms that finance mergers with cash. Even though these results support the claim that utilizing overpriced equity generates value, it does not reject the results of the previous studies claiming that the method of payment influences the post-merger performance. Overall, the general view on the method of payment is that cash-financed deals create more value for the merged companies than stock-financed acquisitions. The present thesis considers this factor by adding dummy variables for the methods of payment in order to see the effects of them on the stock returns around the merger announcement and post-merger operational performance.

The final aspect of acquisitions' success to be discussed in this chapter is management ownership of the company prior to engaging into mergers. The logic of the argument is that if the managers have more at stake, they are more cautious when initiating the merger process and selecting the target. Academics have various opinions on this subject. For instance, You et al. (1986) find that the bidder companies in which the manager has a low stake have a more negative announcement returns than the ones where the manager has a more substantial ownership. A more recent view on the topic refers to behavioral finance and implies that managers which have a large ownership in their own companies tend to be overconfident, which in turn leads to value destructing behavior with respect to mergers. For instance, Malmendier and Tate (2008) research the case of overconfident CEOs using a large investment in the company they are managing and the press portrayal as the proxy for overconfidence. They find that such CEOs are more likely to engage in merger activity (65% higher probability than for non-overconfident managers) and the market reaction on their acquisitions is considerably more negative (-0,9% as opposed to -0,12% in the case of non-overconfident CEOs). In addition, Billett and Qian (2008) argue that CEOs' net purchase of stock is lower prior to their first acquisition in comparison to their subsequent acquisitions. However, the market reaction on the subsequent mergers is considerably lower. Therefore, the factor of management ownership remains controversial in academic literature. While CEOs with high ownership stock in their companies have more at stake and are supposed to be more careful, such ownership portion might also signal of their overconfidence, which does not lead to value creating behavior.

Overall, the most common factors influencing the success of the mergers are diversification, target valuation, method of payment, and management ownership. While the effects of diversification, valuation of target companies, and the method of financing are defined by the researches rather certainly, the influence of manager ownership in the company remains controversial. Undoubtedly, these are not the only determinants of performance; researchers also argue about the character of the bid (hostile versus friendly), sources of synergies, the level of regulation in the industry, and other factors. This chapter focuses only on the most common ones to give an overall overview of the M&A activity. In addition, the character of bid is irrelevant for the present thesis since the selected sample has only one hostile bid against 50 friendly bids. Therefore, studying the effects of this variable is impossible. The

level of regulation in the telecom sector is relatively high, which is discussed in the following sections of this chapter. Nevertheless, the effect of it is not studied separately since the industry is not compared to the overall acquisitions market. Therefore, the thesis complements the existing research on the factors of merger success by studying the impacts of the method of payment, the valuation of target and acquirer, and international diversification.

2.2 Peculiarities of European and North American acquisitions

While the overall benefits of mergers and acquisitions are widely covered in academic literature, the differences between North American and European mergers do not draw as much attention. The vast majority of the studies focuses on particular industries that have some distinctive characteristics on these continents and thus are attractive for researching. One problem to address when studying European and American acquisitions is cross-cultural differences. Even though European countries are united in the EU and have a free flow of goods and labor force nowadays, the member states still keep their unique cultural characteristics. This fact might create obstacles for future successful performance of merged companies, while it can also be a source of learning. Stahl and Voigt (2008) research whether cross-cultural differences prevent integration success or add value to the merged companies. They create an extensive model to test whether cultural differences affect synergy realization, short-term stock performance on the transaction announcement, long-term stock performance after the merger, and whether cross-cultural differences are more influential than organizational culture differences. They conclude that cultural differences negatively affect synergy realization, while they have no significant impact on the short-term stock price returns. As for the long-term performance, the effect is negative and statistically significant, but not substantial enough to be economically meaningful. The researchers also report that organizational differences are less important for synergy realization than cultural differences. Therefore, cross-border acquisitions may face an additional risk for the future performance. Another aspect that may be influential on the merger success is the degree of investor protection. Even though the researchers agree that shareholder rights and protection are a determinant of the stock returns, the exact effect remains controversial. Thus, Moeller

and Schlingemann (2005) report that in a sample of acquisitions involving a US bidder, there is a positive correlation between the bidder returns and the degree of investor protection in the target country. In addition, Danbolt and Maciver (2012) find that target companies gain more when they are acquired by the firms registered in the countries with a better investor protection. It can be concluded that targeting a low protection economy can be harmful for the bidders, but beneficial for the targets. However, Hagendorff et al (2008) examine a sample of companies in the banking sector and find that the degree of investor protection in the target country is negatively correlated with the acquirer returns. Hence, the lower the shareholder protection regime in the target economy, the more the bidder gains. They explain the results by the fact that the acquirer equity holders need a higher expected return on a more risky investment that they are engaging in. Therefore, there is no unanimous view among finance researchers on how the investor protection influences stock price returns and future performance of the merging companies. The present thesis does not include the degree of shareholder protection into the analysis.

In general, empirical studies on the cross-border acquisitions provide mixed results. For instance, Moeller and Schlingemann (2005) examine a sample of the US companies acquiring domestically and abroad. They find that cross-border acquisitions generate significantly lower returns for the acquirers than domestic mergers as well as are detrimental for the operating performance. On the contrary, Goergen and Renneboog (2004) study European acquisitions and argue that cross-border acquisitions are more beneficial than domestic ones in terms of returns. Moreover, Danbolt and Maciver (2012) report that cross-border transactions where one side is registered in the UK are beneficial for both the target and the bidder with the cross-border positive effect of 10,1 and 1,5 percentage points on them respectively. Therefore, they argue that mergers abroad create value for both sides and are an opportunity rather than a threat for the shareholders. In a more detailed study, Campa and Hernando (2004) find that cross-border acquisitions lower the returns in regulated industries in Europe. This negative effect on returns is primarily caused by the lower returns of the target companies. Therefore, the results of the studies are somewhat controversial, though it can be concluded that the negative effects in cross-border transactions are partly caused by the differences in regulations between the countries. The foregoing discussion is very important for the present thesis as it aims at comparing European and North American

transactions, where cross-cultural differences are of essence. In addition, ICT sector is a relatively highly regulated industry, which will be discussed in the following chapter. In order to study the impact of cross-border transactions, a dummy variable for cross-border acquisitions is added to the regressions on the European sample.

2.3 ICT sector in Europe and North America

ICT sector is an industry that started drawing attention of the researchers and practitioners relatively recently. The most widely discussed issue in it is aligning regulation between countries and creating a single digital market. According to European Policy Centre (2010), European digital market still consists of 27 separate markets, partly due to policy differences. It can be illustrated by several examples: (1) cross-border online services in the EU represent only 5% of the Digital Market; (2) only 7% of small and medium enterprises in the industry sell cross-border; (3) small online companies that would like to sell their products abroad face on average €9000 extra expenditures for adapting to the national laws; and finally (4) 57% of the companies claim that they would start or increase their selling abroad if the same laws regarding e-commerce were applied in all the countries of the EU (European Commission, 2015). These differences in e-regulation are claimed to be the reason why the telecom industry in Europe is lagging behind the American one. One of the most prominent examples of the national policies variety is the "data nationalism" laws. The purpose of this regulation is to create more protection for the users of online services; however, a great number of practitioners claim that the rules do not increase the data storage safety, while they pose a significant operational risk for the companies that are merging or expanding their operations abroad (Miller and Atkinson, 2014). The other commonly mentioned factors that could impede acquisition activity and international sales process are small-company preferences in Europe, data and land regulation, and managerial differences (Miller and Atkinson, 2014). The latter could be also classified as a cross-cultural difference, since leadership traditions in the country affect organizational culture. The concerns raised by practitioners are supported by academic studies on the subject: Campa and Hernando (2004) find that in heavily regulated industries, the acquisition announcement effect on returns is more negative than in less-regulated businesses in Europe. Therefore, the differences in

national policies may considerably decrease the benefits of mergers between companies. The current research by Ikäheimo et al (2016) supports this hypothesis by providing evidence that European companies gain significantly smaller returns around the merger announcement than their US peers; the effect is also seen in cross-Atlantic acquisitions since such mergers open access to the large and homogenous American market. However, to my knowledge, there is no research that studies long-term operational performance of telecom companies after mergers and compares it between Europe and North America. Therefore, the present thesis aims at contributing to the existing academic and practitioner literature on the subject. It adds a long-term perspective to the studies about telecom industry and tests whether the correlation between the real economic gains from the mergers and the short-term market reaction is positive.

3 DATA AND METHODS

In this chapter, the sample and methodology used for the research are described. The section introduces the bases for selecting the companies for the study and the sources of data. In addition, it elaborates on the variables used as well as the tests and robustness checks performed.

3.1 Sample

The sample for the present thesis consists of mergers and acquisitions that occurred in 28 EU member states, the USA, and Canada between 2000 and 2010. The time frame is explained by the fact that the study is focused on the performance of the companies five years after the acquisitions; since data for 2017 could not be available, the latest values are collected from 2016. The deals registered between the companies in the current EU member states in the years prior to joining the European Union are excluded. In order to limit the focus to the ICT sector, the deals are filtered by the SIC code of the firms as defined by OECD (2002). In addition, the industries related to telecom according to the official SIC code website are added to the sample (http://siccode.com). The full list of SIC codes used in

this paper can be found in Appendix 1. Asset sales, spinoffs, and purchases of minority stakes are excluded from the sample; therefore, the research focuses solely on acquisitions of a majority interest or 100% acquisitions. The lists of North American and European transactions used in the study can be found in Appendices 2 and 3.

The sample includes the transactions in which the enterprise value of the target company at the time of the acquisition was higher than 500 million USD. Selecting the largest deals for the research has several considerable advantages. First of all, the economic benefits of the acquisition are more significant and easier to detect if the company's size is large. Secondly, the firms studied in the current paper are major market players and thus draw a great deal of attention from the investors. It implies that it is more probable that the market reaction on the merger would be noticeable and supposedly better reflecting the true value of the merger if the market is efficient. Thirdly, the performance of well-established corporations is presumed to be less affected by external factors as contrasted to small high-growth firms. Lastly, the largest telecom companies are less likely to be private, which leads to greater availability of the data for the study.

Due to a number of companies not disclosing their financial statements or not being listed on the stock exchange at the time of the acquisition, the final sample consists of 51 deals. Out of this number, 24 mergers occurred within the European Union, and 24 took place in the USA or Canada. In some years, the number of observations is smaller since the data is not available for certain time periods. The initial information about all the deals registered between 2000 and 2011 is retrieved from the merge and corporate transaction database of Security Data Company (SDC). Financial statements of the companies, their stock performance, historical prices of indices (S&P500, S&P350 Europe, STOXX Europe 600 Telecom, and S&P 500 Telecommunication services) as well as the mean industry values for EBITDA and market value of assets are obtained from Bloomberg Terminal database.

3.2 Methodology

The methodology of this thesis is partly based on the article by Healy et al (1992), in which the authors studied post-merger operational performance of the US companies. However, the present paper also adds several control variables used in the more recent studies on the operational and stock performance (see e.g. Goergen and Renneboog, 2004; Campa and Hernando, 2004; Martynova and Renneboog, 2009; Cole and Vu, 2006). In addition, it researches the short-term stock performance of the companies in the days surrounding the transaction, which makes the analysis deeper and more complete. Finally, the short-term market reaction on the acquisition is compared to the operational improvements of the companies following the transaction.

3.2.1 Operational performance measurement

In order to test Hypothesis 1, pretax operating cash flow returns on market value of assets are used to estimate the operational performance of the firms after the acquisitions. Healy et al (1992) define pre-tax operational cash flows as revenues less cost of goods sold less sales and administrative expenses plus goodwill and depreciation. Since not all the companies report these items separately in their financial statements, EBITDA is used as a proxy for the cash flows in the present paper. Similarly to the described operational cash flow variable, EBITDA is unaffected by the method of financing the transaction or method of accounting for the merger (purchase or pooling accounting) for it is not influenced by goodwill and depreciation changes, tax, and interest payments. EBITDA is deflated by the market value of assets, which is calculated as market value of common equity plus book value of preferred equity and hybrid capital plus book value of net debt. Market value of assets is a more suitable measure for the current research as opposed to book value of assets since it can be compared across companies and across time and is not affected by historical estimates. In line with Healy et al (1992) methodology, the value of common equity is estimated as of the beginning of the fiscal period in order to control for the effects of the company size changes during the year.

The changes in common equity at the merger announcement are excluded from market value of assets calculations. It is explained by the fact that in efficient markets, the future improvements in operating performance are reflected in the stock price moves after the merger announcement. If the cash flows after the merger increased due to the improved performance, the market would expect it and reflect it in the stock price on the transaction announcement; hence, the cash flow return on assets ratio would stay at its premerger levels. Therefore, the equity changes should be deducted in order to see the effects of the acquisition. The equity changes for the target and acquirer are measured from five days before the transaction announcement to the date of the merger. If the target was delisted from the stock exchange prior to the date when the deal became effective, the change in equity value is measured until the date of delisting.

The study compares the operational cash flow returns on assets five years before the merger and five years after it. In order to avoid the effects of one-time acquisition costs as well as the method of accounting for the merger, the year of the transaction is excluded from the study. Since the timing of consolidating the financial reports is different for purchase and pooling methods of accounting (under purchase accounting, the financial statements are consolidated from the date of the merger, while under pooling accounting, the consolidation is from the beginning of the merger year), including the merger year would make the data incomparable across firms. In addition, the cash flows would be affected by the inventory write-ups and acquisition costs. Therefore, the years -5 to -1 before the merger are used for benchmarking, while the years 1 to 5 show how the performance changed after the transaction. In the years -5 to -1, EBITDA and market value of assets of the acquirer and the target are aggregated in order to get the premerger figures for combined firms. After the transaction, the actual values for the merged company are used for the analysis.

In order to control for the market moves during the time period studied, the company values are industry adjusted. The adjustment is based on the methodology proposed by Healy et al (1992). It implies that the median values for the cash flow returns on assets of the telecom industry are subtracted from the company values. Since the companies from the sample are from different continents, the median values are collected separately for European and North

American telecom sectors. Therefore, European companies' and North American companies' returns are adjusted with the median cash flow returns of the European and North American telecom industries respectively. Median values are more appropriate to use in this case since in ICT industry, several large outliers may move the average values considerable. As the sample size for the study is not large and is prone to data skew, it is better to use median values in order to avoid the effects of the outliers. The data is retrieved from Bloomberg Terminal database. The adjustment allows controlling for contemporaneous external events affecting the industry as a whole and makes the results comparable across time.

3.2.2 Stock performance measurement

Operational performance results are accompanied with the stock price returns around the merger announcement and during the whole merger period. It is done in order to see if the market correctly reflects the future changes in the operational performance in the stock price. Short-term equity returns around the merger announcement are measured from five days prior to transaction announcement to five days after it. The longer time considered is the whole merger period, which implies the time from five days prior to the acquisition announcement to the date when the merger became effective. The variable used in the research is the total stock returns in the time frames mentioned, including dividends. The returns are adjusted for the market moves by deducting the market returns from the company returns, which allows capturing only the abnormal stock performance. The returns of the North American companies are adjusted with the S&P500 index, while the performance of the European companies is adjusted with the S&P350 European index. The data is found in Bloomberg Terminal database.

Since the stock returns are calculated before the effective date of the mergers, the returns of the target and acquirer are aggregated. The combined returns are calculated as the weighted average of the returns of the target and acquirer, where the weights are the equity values of the respective companies prior to the merger announcement. The stock performance is

studied separately and thereafter regressed on the improvements in the operational performance in order to estimate the correlation between the efficiency changes after the mergers and the market reaction on the announcement of the transaction. In addition, control variables, such as the relative size of the target's size to the acquirer's size, price-to-book ratio of the target and the acquirer, method of payment, and dummy variables for American deals (in the total sample) and cross-border deals (in the European sample) are added. These new variables enhance the original methodology of Healy et al (1992) by implementing the newer methods (see e.g. Goergen and Renneboog, 2004; Campa and Hernando, 2004; Martynova and Renneboog, 2009; Cole and Vu, 2006). The character of the bid is disregarded in this study since only one bid out of 51 is hostile, while the others are friendly, which does not allow researching the impact of this variable. The regressions are explained in chapter Findings together with the results they provide.

4 FINDINGS

The following chapter presents the findings from the data described above. It explains the regressions used and the robustness checks performed. The results are firstly presented for the operational performance and thereafter for the stock performance of the companies. The chapter concludes with comparing the stock price returns on the acquisition announcement with the operational improvements and demonstrates the differences in the market reaction on the North American and European transactions.

4.1 Operational performance of the total sample group

As described in the methodology chapter above, the post-merger operational performance is measured as pretax operational cash flow return on market value of assets, where EBITDA serves as the proxy for pretax operating cash flows. Table 1 shows the median returns for the sample firms both in Europe and in North America. Column 1, Firm median, indicates non-adjusted median returns on assets for the companies in years -5 to -1 and 1 to 5. Column 2 presents the industry-adjusted returns, i.e. the company returns less the median values for

the cash flow returns on assets of the telecom industry. Since the companies from the sample are from different continents, the median values are collected separately for European and North American telecom sectors. Therefore, European companies' and North American companies' returns are adjusted with the median cash flow returns of the European and North American telecom industries respectively. The total figure for the median premerger performance is obtained the following way: the median value for the years -5 to -1 is calculated for every firm in the sample, after which the median of those companies' returns is obtained. The median post-merger performance is calculated the same way.

		Industry adjusted		
Year relative to the merger	Firm median	Median	% Positive	Number of observations
-5	12,4%	-5,1%	29%	42
-4	12,1%	-6,2%	33%	42
-3	14,5%	-8,5%	29%	45
-2	15,9%	-5,2%	33%	50
-1	14,1%	-7,1%	39%	51
Median premerger performance	13,6%	-7,8%	40%	45
1	15,2%	0,9%	55%	51
2	15,9%	-0,9%	45%	51
3	17,7%	2,9%	59%	51
4	16,8%	2,1%	65%	51
5	16,4%	0,9%	51%	51
Median post-merger performance	16,5%	1,4%	60%	51

Table 1. Median operating cash flow return on market value of assets of 51 combined acquirer and target European and North American companies in the years surrounding the mergers completed in 2000-2011

Based on Table 1, the companies in the sample demonstrated an improved performance following acquisitions. The median premerger operational cash flow returns on assets are negative in each of the five years studied. In the post-merger period, the returns are positive

in all the years except for year 2. The percentage of positive industry-adjusted returns is considerably higher after the mergers as well, 60% ex-post value in comparison to the 40% ex-ante one.

In order to test whether there is a change in the operational performance of the companies following the merger, the following cross-sectional regression is used:

$$(1)\ IACR_{post,i} = \alpha + \beta_1\, IACR_{pre,i} + \beta_2\, Value_i + \beta_3\, American_i + \beta_4\, Target\ size_i + \\ + \beta_5\, Target\ P/B_i + \beta_6\, Acquirer\ P/B_i + \beta_7\, Stock_i + \beta_8\, Mixed_i + \varepsilon_i\,,$$

where $IACR_{post,i}$ is the median pretax operational cash flow return on assets of the company *i* in the years 1 to 5, $IACRpre_{,i}$ is the median premerger return for the same company, $Value_i$ is the value of the transaction, $American_i$ is a dummy variable representing that the transaction occurred between the companies located in North America, $Target\ size_i$ is the relative size of the target's market value of assets to the acquirer' assets, $Target\ P/B_i$ is the price-to-book ratio of the target, $Acquirer\ P/B_i$ is the price-to-book ratio of the acquirer, $Stock_i$ is a dummy variable meaning that the transaction was financed by stock, and $Mixed_i$ is a dummy variable for the mixed method of payment. The dummy variables include only Stock and Mixed since paying with cash is the most frequently used method, which is hence utilized as the base case to avoid multicollinearity. Even though the methodology chapter explains why the selected measure of operational performance is not directly affected by the method of payment, there might be indirect effects regarding the choice of the method, such as e.g. overvaluation of the acquirer's stock, leading to inferior performance. The variables $IACR_{post,i}$ and $IACRpre_{,i}$ are the ones used by Healy et al (1992) in their research, while the control variables are the ones used in newer finance studies (see e.g. Goergen and Renneboog, 2004; Campa and Hernando, 2004; Martynova and Renneboog, 2009; Cole and Vu, 2006). The measure of the abnormal industry-adjusted return is α, while coefficients β measure the effects of the abovementioned variables on the post-merger return.

The result of regression (1), which includes the total sample of 51 European and North American acquisitions, is the following (t-values are presented in parentheses):

$$IACR_{post,i} = \underset{(-0,24)}{-0,4\%} + \underset{(0,35)}{0,02}\, IACR_{pre,i} + \underset{(0,69)}{0,00001}\, Value_i + \underset{(0,28)}{0,01}\, American_i +$$

$$+ \underset{(2,08)}{0,05}\, Target\ size_i + \underset{(0,28)}{0,0001}\, Target\ P/B_i - \underset{(-0,23)}{0,00001}\, Acquirer\ P/B_i - \underset{(-0,6)}{0,02}\, Stock_i -$$

$$\underset{(-2,26)}{-0,05}\, Mixed_i$$

R-squared = 0,20, F-statistic = 1,33

It implies that premerger returns have a slight positive effect on the post-merger cash flow returns on assets of the companies, while the abnormal decrease in performance is -0,4% The fact that the transaction occurred between the companies located in the US or Canada affects the post-merger returns positively, though insignificantly, which does not allow accepting Hypothesis 1. The value of the transaction and the price-to-book ratios of the target and the acquirer have a very low effect on the post-merger performance. As expected from the studies of the method of payment effects, financing the transaction with stock or both cash and stock negatively correlates with the future performance. However, only the variables Target size and Mixed are statistically significant on 5% level, and overall the regression has a relatively low explanatory value since R squared is 0,2, and F-statistic is 1,33 with 0,26 significance. Therefore, the probability that the results are obtained solely by chance is 26%, which is rather high. Therefore, no reliable conclusions may be drawn based on the regression on the total sample of the companies. The following section presents the results of the returns comparisons and regressions including North American companies only.

4.2 Operational performance of North American companies

Since the study focuses on comparing the operational performance of North American and European companies, it was decided to check the pretax operational cash flow returns on assets of the US and Canadian companies separately from the European ones. The results are presented in Table 2.

Year relative to the merger	Firm median	Industry adjusted		Number of observations
		Median	% Positive	
-5	14,8%	4,6%	56%	21
-4	13,9%	-1,9%	44%	22
-3	14,8%	-8,7%	26%	24
-2	16,9%	-7,2%	26%	26
-1	15,4%	-7,1%	33%	27
Median premerger performance	14,6%	-4,8%	40%	24
1	16,0%	-0,9%	48%	27
2	16,1%	-4,9%	37%	27
3	17,9%	0,7%	52%	26
4	16,8%	1,3%	56%	26
5	17,4%	1,3%	56%	25
Median post-merger performance	16,5%	-0,1%	40%	26

Table 2. Median operating cash flow return on market value of assets of 27 combined acquirer and target North American companies in the years surrounding the mergers completed in 2000-2011

In comparison with the figures obtained from the total sample, the performance improvements following the mergers are not so considerable. The non-adjusted median returns on assets increased from 14,6% to 16,5% after the acquisitions, while the industry-adjusted returns rose from -4,8% to -0,1%. The return on assets in year -5 is an outlier since it is high (4,6%); the returns in the following premerger years are negative. In the post-

merger period, the industry returns are higher than company returns in years 1 and 2, after which the sample companies outperform the industry. The overall percentages of positive industry-adjusted returns prior to and following the acquisitions are the same.

The abnormal industry-adjusted returns are estimated with the regression that is similar to regression (1), excluding the variable American. Therefore, regression (2) is the following:

$$(2)\ IACR_{post,i} = \alpha + \beta_1 IACR_{pre,i} + \beta_2 Value_i + \beta_3 Target\ size_i + \beta_4 Target\ P/B_i + \\ + \beta_5 Acquirer\ P/B_i + \beta_6 Stock_i + \beta_7 Mixed_i + \varepsilon_i$$

The regression is based on the methodology used by Healy et al (1992) as well as newer methods used in financial studies (see e.g. Goergen and Renneboog, 2004; Campa and Hernando, 2004; Martynova and Renneboog, 2009; Cole and Vu, 2006). The results of regression (2), which includes the sample of 27 acquisitions between North American firms, is presented below (t-values are in parentheses):

$$IACR_{post,i} = 3\% + \underset{(0,78)}{0,005}\ IACR_{pre,i} + \underset{(0,08)}{0,000002}\ Value_i + \underset{(0,22)}{0,02}\ Target\ size_i - \\ - \underset{(-1,25)}{0,004}\ Target\ P/B_i - \underset{(-0,16)}{0,003}\ Acquirer\ P/B_i - \underset{(-0,68)}{0,03}\ Stock_i - \underset{(-2,46)}{0,08}\ Mixed_i$$

R-squared = 0,38, F-statistic = 1,63

According to the values obtained, the abnormal industry-adjusted return is positive, which implies that the performance of the companies strengthens after the acquisitions. In addition, there is a positive, though insignificant correlation between the premerger and post-merger returns on assets. In line with the results of the total sample, the value of transaction as well as the price-to-book ratios of the targets and acquirers have a very slight and statistically insignificant effect on the post-merger performance. In addition, the target size is positively

correlated with the post-merger returns, while paying with stock or using a mixed method of payment is less favourable than paying with cash. The effects of the method of payment are in line with the results of the previous studies (see e.g. Martynova and Renneboog, 2009; Cole and Vu, 2006). However, only the coefficient of the Mixed payment is statistically significant. The regression based on the North American transactions has a higher explanatory value than the one based on the total sample. R squared is 0,38 and F-statistic is 1,63 with 0,19 significance. Therefore, the regression on the American acquisitions is more significant than regression (1) based on all the companies in the sample, though it still does not allow drawing strong conclusions on the research question. The following section presents the findings with respect to European acquisitions.

4.3 Operational performance of European companies

In contrast with the total sample and North American companies, European firms demonstrate a superior performance after the mergers. Median pretax operating cash flow returns on assets are presented in Table 3. The improvement in non-adjusted returns is moderate: the median returns increase from 12,3% to 16,1% following the acquisition. The industry-adjusted returns grow much more considerably, from -16,9% in the premerger period to 2,0% after the transaction. In addition, the returns of the companies are lower than the median returns of the telecom sector in years -5 to -1, while in years 1 to 4 the sample firms tend to outperform the industry. The percentage of positive observations substantially increases after the transactions as well, from the median of 20% before the merger to 60% in the years following the deal.

In order to measure the abnormal post-merger industry-adjusted return, regression (3) is used, which is similar to regression (2) described in the previous section of this chapter, but adds a dummy variable Cross-Border implying an acquisition between the companies in two different countries in Europe. Therefore, regression (3) is:

$$(3)\ IACR_{post,i} = \alpha + \beta_1\, IACR_{pre,i} + \beta_2\, Value_i + \beta_3\, Target\ size_i + \beta_4\, Target\ P/B_i + \\ + \beta_5\, Acquirer\ P/B_i + \beta_6\, Stock_i + \beta_7\, Mixed_i + \beta_8\, Cross\text{-}Border_i + \varepsilon_i$$

Year relative to the merger	Firm median	Industry adjusted		Number of observations
		Median	% Positive	
-5	6,8%	-59,8%	0%	15
-4	10,4%	-25,9%	21%	15
-3	13,9%	-6,6%	33%	18
-2	15,1%	-0,8%	42%	23
-1	13,7%	-8,1%	46%	24
Median premerger performance	12,3%	-16,9%	20%	18
1	15,0%	1,8%	63%	24
2	15,6%	1,3%	54%	24
3	17,7%	6,0%[7]	67%	24
4	16,7%	2,9%	75%	24
5	15,7%	-0,6%	46%	24
Median post-merger performance	16,1%	2,0%	60%	24

Table 3. Median operating cash flow return on market value of assets of 24 combined acquirer and target European companies in the years surrounding the mergers completed in 2000-2011

The coefficients obtained are presented below (t-values are in parenthesis):

$$IACR_{post,i} = \underset{(-0,41)}{-1\%} + \underset{(0,97)}{0,08}\, IACR_{pre,i} + \underset{(0,93)}{0,000001}\, Value_i + \underset{(0,85)}{0,04}\, Target\ size_i +$$

$$+ \underset{(0,19)}{0,00001}\, Target\ P/B_i + \underset{(0,15)}{0,00001}\, Acquirer\ P/B_i + \underset{(0,49)}{0,02}\, Stock_i - \underset{(-0,39)}{0,02}\, Mixed_i -$$

$$- \underset{(-0,27)}{0,01}\, Cross\text{-}Border_i$$

R-squared = 0,20, F-statistic = 0,46

According to the results, the abnormal return following the acquisitions between European companies is -1%. The correlation between the returns in years -5 to -1 and 1 to 5 is positive

0,08, which is stronger than for American companies. Similarly to the previous results, the value of the transaction and price-to-book ratios do not have a significant effect on the post-merger performance. In addition, the relative target size to the acquirer is positively correlated with the returns after the acquisition, while the mixed method of payment has a negative effect. Interestingly, in the European sample, paying with stock positively influences the post-merger performance, which is different from the North American sample. However, none of the coefficients obtained is statistically significant, which makes it difficult to draw reliable conclusions based on the values. Even though the direction of the variables is consistent with Hypothesis set in the Introduction chapter, it is impossible to accept it due to the low statistical significance of the corresponding coefficient. The following chapter will present the robustness checks to the abovementioned regressions and demonstrate that the obtained values are correct at least in direction.

4.4 Robustness checks for operational performance

4.4.1 Industry definitions

Pretax operational cash flow returns on assets in this study are adjusted with the median industry returns in order to control for external contemporaneous events in the telecom sector. However, the industry median values could be dependent on the industry definitions and could be biased if the sample size is not enough. Therefore, the results are verified based on the median values of the whole market in the same time period. In line with the previous methodology, the returns for the North American and European companies are adjusted with the median values of the North American and European market respectively. The data on the market values is retrieved from Bloomberg Terminal database.

The results of this sensitivity analysis are similar for the total sample, North American, and European transactions. The market median returns on assets are higher than the company returns: the market-adjusted returns are negative in all the years in every sample studied. When all the 51 companies are considered, the median premerger return on assets is -12,1%,

and the post-merger one is -6,4%. Running regression (1) on the total sample using market-adjusted returns instead of industry-adjusted returns provides very similar results in terms of the coefficients values, but much stronger in terms of significance. The result of regression are the following (t-values are presented in parentheses):

$$MACR_{post,i} = \underset{(-3,53)}{-6\%} + \underset{(2,4)}{0,02}\ MACR_{pre,i} + \underset{(0,72)}{0,00004}\ Value_i + \underset{(1,25)}{0,02}\ American_i +$$

$$+ \underset{(1,51)}{0,18}\ Target\ size_i + \underset{(0,12)}{0,03}\ Target\ P/B_i - \underset{(-0,70)}{0,00002}\ Acquirer\ P/B_i - \underset{(-0,67)}{0,01} Stock_i +$$

$$+ \underset{(0,32)}{0,01}\ Mixed_i$$

R-squared = 0,25, F-statistic = 1,73

Here, MACR implies market-adjusted returns, while all the other variables remain unchanged from regression (1). All the coefficients are the same in direction as the ones based on the industry-adjusted returns except for the coefficient for Mixed method of payment, which is insignificant in both cases. In addition, most coefficients are very similar in value. Furthermore, the intercept is statistically significant on the 1% level, while the correlation between the premerger and post-merger performance is significant on the 5% level. The overall quality of the regression is higher as well with the significance of F-statistic being 0,12. Therefore, the test verifies that the values obtained from the industry-adjusted returns are robust. However, the coefficient for the variable “American” remains not statistically significant (p-value = 0,22), which means that Hypothesis 1 cannot be accepted.

For the sample consisting of solely North American companies, the premerger median operational cash flow return on asset is -8,3%, while the post-merger one is -4%. The result of regression (2) based on the market-adjusted returns is the following:

$$MACR_{post,i} = -0{,}4\% + 0{,}13\ MACR_{pre,i} + 0{,}000001\ Value_i - 0{,}03\ Target\ size_i -$$
$$(-0{,}21)\quad (3{,}71)\qquad\qquad (1{,}37)\qquad\qquad (-1{,}43)$$

$$- 0{,}002\ Target\ P/B_i - 0{,}01\ Acquirer\ P/B_i + 0{,}01\ Stock_i + 0{,}005\ Mixed_i$$
$$(-0{,}99)\qquad\qquad (-0{,}75)\qquad\qquad (0{,}26)\qquad\qquad (0{,}32)$$

R-squared = 0,49, F-statistic = 2,60

The result of regression (2) run on the market-adjusted returns is similar to the one based on the industry-adjusted data. Nevertheless, there are some interesting differences. The abnormal return after the merger turned negative after checking the market-adjusted values; the same happened to the coefficient of the relative size of the target to the acquirer. It is surprising that the coefficients for the stock and mixed methods of payment are positive, which implies that paying with cash is worse for the future operational performance of the companies than financing otherwise. However, it is important to note that these coefficients are not statistically significant and thus do not allow drawing reliable conclusions. The only significant coefficient is the correlation between the premerger and post-merger operational cash flows, which holds at the 1% level. Overall, the F-statistic of the regression has a 0,05 significance, which is a good result, but the low absolute values of the corresponding t-tests do not allow comparing the abnormal returns of the North American companies with the European ones reliably.

For the European transactions, premerger median EBITDA returns on assets are -10,03%, and the post-merger returns are -6,97%. These values suggest that the performance of the companies improves after the acquisition. If a closer look is taken on the drivers of the differences, the results of regression (3) based on the market-adjusted returns are the following:

$$MACR_{post,i} = -7{,}8\% - 0{,}39\ MACR_{pre,i} + 0{,}000001\ Value_i + 0{,}02\ Target\ size_i +$$
$$(-2{,}19)\quad (-1{,}45)\qquad\qquad (0{,}59)\qquad\qquad (0{,}51)$$

$$+ 0{,}0004\ Target\ P/B_i - 0{,}0002\ Acquirer\ P/B_i - 0{,}06\ Stock_i - 0{,}04\ Mixed_i -$$
$$(0{,}97)\qquad\qquad (-0{,}79)\qquad\qquad (-1{,}87)\qquad (-0{,}94)$$

$$- 0{,}05\ Cross\text{-}Border_i$$
$$(-1{,}78)$$

R-squared = 0,41, F-statistic = 1,30

The results of the regression above are similar to the ones of the regression based on the industry-adjusted returns, though with a number of nuances. The correlation between premerger and post-merger performance is negative, though not statistically significant. In addition, the correlation between the post-merger returns and the acquirer price-to-book ratio turns negative, which is unexpected, but also statistically insignificant, thus not allowing drawing reliable conclusions regarding the effects. In line with the previous studies claiming that payment with cash is associated with a superior performance versus stock, the coefficients for stock and mixed methods of payment are negative. Moreover, the impact of the cross-border acquisition as opposed to the domestic one is negative, which is significant at the 10% level and consistent with the findings by other researchers (see e.g. Moeller and Schlingemann, 2005). The most important finding here is the negative and statistically significant on the 5% level decrease in operational performance following the mergers between European companies represented by α. The value is considerably lower than the abnormal return of the North American companies. However, even though the values are directionally in line with Hypothesis 1 stating that post-merger operational performance of American companies are higher than the one of the European companies and the coefficient of the abnormal return for the European sample is statistically significant, the lack of significance in the North American sample does not allow accepting Hypothesis 1.

4.4.2 Fluctuations in the equity values

Measuring the operational performance with EBITDA returns on the market value of assets implies the risk that the results are biased due to fluctuations in the equity values. If the

market expects the merger to be detrimental for the company performance, it reflects the sentiments in the stock price, and vice versa. Deducting the equity changes from five days before the merger announcement until the acquisition completion day from the total value of assets as described in the methodology chapter controls for short-term market reactions. However, if the negative expectations regarding the company efficiency in comparison with its industry persist, this adjustment is not sufficient. Therefore, it is decided to verify the results by comparing the annual stock returns of the sample companies and the telecom sector. The equity performance is measured for the years -5 to -1 and 1 to 5. Median industry changes in common equity are deducted from the firm medians in order to get industry-adjusted values. Using the differences in the common equity values is more suitable than simply taking the telecom index returns because the idiosyncratic company cash flow returns on assets are also calculated with the common equity changes and not solely the stock price growth. The results are presented in Table 4.

Year relative to the merger	Total sample	North America	Europe
-5	-21,0%	-18,7%	-24,5%
-4	-21,3%	-13,6%	-33,9%
-3	-17,6%	-9,5%	-34,8%
-2	-10,6%	-10,7%	8,2%
-1	-6,6%	-0,5%	-21,6%
1	-13,2%	-14,6%	-19,8%
2	-19,1%	-13,0%	-31,0%
3	-0,3%	-5,1%	-1,3%
4	-13,2%	-10,6%	-10,2%
5	-13,1%	-0,9%	-34,0%

Table 4. Median industry-adjusted common equity growth rates of 51 combined acquirer and target North American and European companies in the years surrounding the mergers completed in 2000-2011

According to Table 4, there is no consistency in the stock return patterns before or after the mergers. The vast majority of the industry-adjusted returns are negative, which indicates that the shares of the sample companies performed worse than the telecom sector in the given years. This result is reasonable since the merger transactions in the selected sample are among the largest ones registered from 2000 to 2011. Therefore, the stock returns of such well-established firms are typically lower than the returns of young growing companies. ICT

sector experienced a rapid growth in the years studied, implying that a great number of small fast-growing businesses entered the field during that time period. The industry median common equity values may be affected by the stock returns of those businesses, which explains why the industry common equity grew faster than the equity of the sample firms. From Table 4, it is clear that the common equity of the sample firms does not persistently underperform or outperform after the acquisitions in comparison to the premerger period, which implies that the cash flow returns on market value of assets are not biased upwards or downwards in the previously conducted regressions. Therefore, the results of the operational performance studies are robust with respect to equity fluctuations.

In order to verify if the common equity values growth data is reliable, the stock returns of the sample companies in the years surrounding the mergers are also adjusted with the telecom indices growth in the corresponding time period. The returns of the European companies are adjusted with the STOXX Europe 600 Telecom index, while the stock returns of the North American companies are adjusted with the S&P500 Telecommunication Services index. Thus, the median index returns are deducted from the median company stock price returns; thereafter, median values of industry-adjusted stock returns are obtained for each year. The results are presented in Table 5.

Year relative to the merger	Total sample	North America	Europe
-5	3,5%	6,1%	3,4%
-4	8,4%	4,1%	-4,9%
-3	-3,3%	-3,0%	-7,7%
-2	4,2%	0,9%	5,8%
-1	5,9%	6,4%	5,4%
1	2,7%	5,1%	-5,0%
2	2,2%	2,6%	-2,5%
3	9,0%	1,9%	4,6%
4	-0,9%	-2,4%	3,2%
5	-4,3%	6,5%	2,9%

Table 5. Median industry-adjusted stock returns of 51 combined acquirer and target North American and European companies in the years surrounding the mergers completed in 2000-2011

According to Table 5, there is no visible change in the post-merger returns as opposed to the premerger stock performance. In addition, the sample companies do not persistently underperform or outperform the indices unlike the median common equity changes in the industry since the firms included into the indices are of similar size as the sample ones. This result supports the previous statement that the median common equity values of the whole telecommunication industry are affected by small high-growth enterprises. The values in the table allow claiming that the operational performance results are not obtained due to significant changes in the companies' equity valuation after the mergers. Therefore, they are robust and hold after controlling for the equity fluctuations.

4.5 Stock performance

As described in the methodology chapter, the short-term stock performance of the companies is measured from five days prior to the merger announcement to five days after it in order to see if the market reaction on the acquisitions is positive. The longer time period considered is from five days prior to the merger announcement until the merger completion; the latter time frame is consistent with the methods used by Healy et al (1992). The stock performance of the sample companies is adjusted with the market returns. In line with the previous tests, the equity returns of North American and European companies are adjusted with North American and European market (S&P500 and S&P350 Europe indices) respectively. The results are presented in Table 6; Panel A demonstrates the stock performance of the whole sample, while Panels B and C focus on the North American and European transactions separately.

The results demonstrated in Table 6 are consistent with the vast research regarding mergers and acquisition claiming that targets on average gain more from the merger than the acquirers. The effect is more noticeable in the longer time frame, i.e. during the time from the merger announcement until its completion presented in the section "Merger period". In addition, the market reacts more positively on the acquisitions completed in the USA and Canada rather than Europe: the average stock return in the merger period is 2,5% in North America as opposed to -6,8% in Europe. The result is in line with the findings presented in

the working paper by Ikäheimo et al (2016), who claim that European telecom acquisitions generate less equity returns around the merger announcement. In the current sample, the difference is not so clear in the short term; nevertheless, it becomes considerable in the longer period. The obtained results suggest that the market reaction is positively correlated to the operational efficiency improvements described in the previous sections of this chapter. However, verifying this statement and testing Hypothesis 2 requires a more thorough research presented in the next section.

Panel A: Total sample

	Merger announcement			Merger period		
	Target	Acquirer	Combined	Target	Acquirer	Combined
Average	14,0%	-2,2%	-0,2%	14,2%	-5,0%	-1,8%
First quartile	1,8%	-5,0%	-3,0%	-1,5%	-13,8%	-12,0%
Median	9,3%	-1,3%	0,8%	13,8%	-0,6%	1,3%
Third quartile	19,2%	1,6%	2,6%	30,9%	4,9%	11,2%

Panel B: North American acquisitions

	Merger announcement			Merger period		
	Target	Acquirer	Combined	Target	Acquirer	Combined
Average	20,8%	-2,8%	-0,4%	24,4%	-1,3%	2,5%
First quartile	5,1%	-5,2%	-2,5%	4,8%	-7,6%	-6,7%
Median	13,7%	-1,4%	-0,2%	23,1%	0,2%	2,5%
Third quartile	27,0%	1,2%	2,5%	37,3%	4,3%	12,8%

Panel C: European acquisitions

	Merger announcement			Merger period		
	Target	Acquirer	Combined	Target	Acquirer	Combined
Average	6,1%	-1,6%	0,1%	2,2%	-9,5%	-6,8%
First quartile	1,7%	-4,1%	-3,5%	-7,3%	-27,9%	-19,7%
Median	5,8%	-0,1%	1,1%	3,5%	-4,5%	-4,5%
Third quartile	14,1%	1,9%	2,5%	13,8%	4,7%	8,9%

Table 6. Market-adjusted stock returns for target, acquirer, and combined companies around the merger announcement and during the merger period for acquisitions completed from 2000 to 2011

4.6 Relation between operational performance and stock performance

Comparing the short-term stock performance with the post-merger operational performance provides a new angle to the article by Healy et al (1992), who only considered the cash flow returns after the acquisition and the equity returns in period until the merger completion. In addition, it enhances the historical study with opposing North American and European results. Moreover, the current paper completes the working paper by Ikäheimo et al (2016), who focused on the stock price performance in a three-day window around the merger announcement but did not research the operational improvements after the transactions in the telecom industry. In order to see if the stock price returns correctly reflect the direction of the future cash flow returns on assets, the following regression on the total sample is conducted:

$$(4)\ MASR_i = \alpha + \beta_1 OI_i + \beta_2 Value_i + \beta_3 American_i + \beta_4 Target\ size_i + \\ + \beta_5 Target\ P/B_i + \beta_6 Acquirer\ P/B_i + \beta_7 Stock_i + \beta_8 Mixed_i + \varepsilon_i ,$$

where $MASR_i$ is market-adjusted stock return of the combined company *i*, α is the intercept, OI_i is the operational improvement after the merger for the company *i*, $Value_i$ is the value of the transaction, $American_i$ is a dummy variable representing that the transaction occurred between the companies located in North America, Target $size_i$ is the relative size of the target's market value of assets to the acquirer' assets, Target P/B_i is the price-to-book ratio of the target, Acquirer P/B_i is the price-to-book ratio of the acquirer, $Stock_i$ is a dummy variable meaning that the transaction was financed by stock, and $Mixed_i$ is a dummy variable for the mixed method of payment. The dummy variables include only Stock and Mixed since paying with the cash is the most frequently used method, which is hence utilized as the base case to avoid multicollinearity. Since the stock performance is considered before the merger, the stock returns of the target and acquirer are aggregated; the return of the combined company is a weighted average of the returns of the target and acquirer where the weights are the equity values of the companies prior to the merger announcement. Operational improvement is the difference between the company median cash flow returns on assets in the years 1 to 5 and -5 to -1. The median cash flow returns in the premerger period are the

same as the ones described in the previous regressions. Therefore, the operational cash flow returns of the companies are firstly measured for the years -5 to -1 and weighted with the respective market values of assets in the year -1 in order to find the combined values. Thereafter, the median of the returns for the years -5 to -1 is obtained for each combined company.

Running regression (4) on the total sample on the short-term stock returns around the merger announcement provides the following results (t-values are presented in parenthesis):

$$MASR_i = \underset{(-0,2)}{-0,3\%} + \underset{(1,676)}{0,21}\, OI_i + \underset{(0,25)}{0,000001}\, Value_i + \underset{(0,04)}{0,001} American_i + \underset{(1,19)}{0,02}\, Target\ size_i +$$

$$+ \underset{(2,54)}{0,001}\, Target\ P/B_i - \underset{(-0,53)}{0,0001}\, Acquirer\ P/B_i - \underset{(-2,23)}{0,05}\, Stock_i - \underset{(-0,49)}{0,01} Mixed_i$$

R-squared = 0,28, F-statistic = 2,00

According to the obtained values, the operational improvement of the companies after mergers is positively correlated with the short-term market reaction on the merger announcement, while the coefficient is significant at the 10% level. The level of significance is not low; however, given the small size of the sample, it is satisfactory. Therefore, Hypothesis 2 can be accepted. The abnormal market reaction on the merger announcement after controlling for the certain acquisition characteristics is negative, though not statistically significant. Value of the transaction, price-to-book ratios of the target and acquirer are not influential on the stock price performance. In line with the previous studies on the market return dependence on the method of payment (see e.g. Martynova and Renneboog, 2009; Cole and Vu, 2006), financing the transaction with stock or both stock and cash has a negative effect on the stock returns as opposed to the cash payment. The overall quality of the regression is rather high, with R-squared being 0,28, and F-statistic having a 0,07 significance. However, an important variable American is highly insignificant in this regression, which does not allow drawing any conclusions with respect to the differences in the stock returns between American and European mergers.

When European and North American transactions are studied separately, the obtained values directionally prove that the market reaction is less negative on the North American transactions as opposed to the European acquisitions. However, the coefficients are not statistically significant, so the results should be treated with caution. Thus, the results of regression (5), which is the same as regression (4) excluding the variable American, done on the North American mergers is the following (t-values are presented in parenthesis):

(5) $MASR_i$ = 1,6% - 0,15 OI_i - 0,000001 $Value_i$ – 0,05 Target $size_i$+
(0,42) (-1,39) (-0,14) (0,31)

+ 0,001 Target P/B_i + 0,004 Acquirer P/B_i + 0,03 $Stock_i$ – 0,06 $Mixed_i$
(0,79) (0,22) (0,7) (-1,67)

R-squared = 0,25, F-statistic = 0,91

According to the obtained values, the abnormal short-term stock price return is positive, though not statistically significant. Surprisingly, the correlation between the premerger and post-merger performance is negative and the effect of stock financing of the transaction is positive. However, none of the coefficients in the regression above is statistically significant, which makes it impossible to draw reliable conclusions based on it. As for the European sample, running the same regression with an addition of variable Cross-border (further referred to as regression (6)) provides the following results:

(6) $MASR_i$ = 1% + 0,09 OI_i - 0,000001 $Value_i$ + 0,04 Target $size_i$+
(0,54) (1,69) (-1,14) (1,49)

- 0,0004 Target P/B_i + 0,0004 Acquirer P/B_i - 0,02 $Stock_i$ – 0,003 $Mixed_i$ –
(-1,89) (1,72) (-0,88) (-0,10)

- 0,03 $Cross\text{-}Border_i$
(-1,06)

R-squared = 0,42, F-statistic = 1,29

All the coefficients in this regressions are directionally what they are expected to be based on the previous researches and hypotheses set, though only the operational improvement and the price-to-book ratio of the target have a statistically significant effect on the stock returns at the 10% level. Payment with stock or both stock and cash causes a more negative reaction of the market than payment with cash, which is consistent with the previous studies on the subject (see e.g. Martynova and Renneboog, 2009; Cole and Vu, 2006). In addition, the high valuation of the target has a negative impact on the stock price return, while the high valuation of the acquirer influences it positively; this finding is in line with the other researches on this topic too (see e.g. Goergen and Renneboog, 2004). Finally, cross-border mergers earn smaller returns around the merger announcement, which supports the findings by e.g. Moeller and Schlingemann (2005). Overall, the results presented in this section allow accepting Hypothesis 2 based both on the total and European sample.

5 DISCUSSION

The results of the data analysis presented in the previous chapter suggest that the market reflects the future operational improvements in the stock returns around the announcement. In addition, it provides evidence that the operational performance of North American companies is superior to the one of European companies, though the coefficient is not statistically significant in the given sample size. While the former statement simply supports the market efficiency theory and demonstrates that the operational performance enhancement is one of the major determinants of the stock price returns on the announcement (the value of the coefficient and its significance are the highest among all the independent variables on the total and European sample), the latter data deserve a more detailed explanation. As mentioned in the Findings chapter, the abnormal cash flow returns on assets coefficient is negative for the European companies and statistically significant on the 5% level, while the corresponding coefficient of the North American sample is slightly higher, but not significant. This fact along with the robustness of the coefficients when verified with market-adjusted values sets strong grounds for claiming that performing the same tests on a larger American sample would facilitate accepting Hypothesis 1. Since the values obtained

are directionally supportive for the hypothesis, it is worth elaborating on the factors that could cause such a performance.

According to the views of a number of practitioners (see e.g. European Policy Centre, 2010; European Commission, 2015; Miller and Atkinson, 2014), telecommunication industry regulation in Europe varies between countries. This fact might be detrimental for the operational performance of the companies since entering the new market requires modifying the business model and comes at a cost. European Commission (2015) estimates the cost of adapting to the national policies for the small and medium companies striving to sell abroad to be €9000. These differences in the rules of international data flow and other aspects limit the potential of acquisitions, especially the cross-border ones. For domestic mergers, the issue of adapting to the policies is raised if the company reaches a sufficient scale to expand abroad, while for cross-border transactions it is a crucial aspect of integration. The fact that heavily regulated industries in Europe receive lower returns on the merger announcements in cross-border transactions than less regulated ones is also proved by academic researches (see e.g. Campa and Hernando, 2004). Therefore, the concerns of practitioners in the field have a reason behind, and differences in European regulation might be a determinant of inferior post-merger operational performance as opposed to North American acquisitions. Even though the effects of cross-border acquisitions in Europe is separated by the corresponding dummy variable in the present research, the abnormal return could also be negatively affected by the regulation problem in case of domestic mergers if the market expects that the transaction will lead to expansion abroad. Furthermore, this thesis considers the country where the company is registered and not where it operates; therefore, mergers between two companies registered in one country but operating internationally in different markets could require adapting to national policies as well. This aspect could be studied in further researches on the subject.

Another factor that could influence the operational benefits of European acquisitions is cultural differences between countries. As mentioned before, despite the free flow of goods and labor force in the European Union, the still have distinctive cultural characteristics. This fact can make it difficult to adapt the products for international distribution. In addition,

traditions in the countries might affect organizational culture and leadership styles. According to Miller and Atkinson (2014), differences in leadership styles are one of the determinants of the market fragmentation in Europe and reasons behind the European telecommunication industry lagging behind the American one. Furthermore, Stahl and Voigt (2008) argue that cultural differences negatively affect synergy realization after acquisitions, and that they are more influential than organizational culture differences in this respect. This statement is reasonable since cross-country cultural peculiarities partly include organizational culture, so their effect should be larger. However, this paper does not study the exact reasons for the European companies' underperformance in comparison to the American ones. Further researches including the variables for cultural distance, regulation differences, and international operations of the companies could be done based on the present thesis.

6 CONCLUSION

The thesis aims at studying the performance of European and North American companies after mergers and identifying the differences between the operational benefits of acquisitions on these continents. In addition, it examines short-term price reaction on the merger announcement and tries to find whether the market reaction is positively correlated to the future improvements in the efficiency of the merged firms. The thesis contributes to the existing literature on the topic in several ways. Firstly, it complements the current research on the benefits of mergers and acquisitions by studying it in the light of a relevant and rapidly developing industry, which recently started drawing attention of both academics and practitioners. Secondly, it enhances the existing studies of the ICT sector by adding a long-term perspective and examining the real gains from the acquisitions measured in operational performance. Thirdly, it contributes to the event studies on stock returns around the merger announcement by verifying that the market reflects the future efficiency improvements. Lastly, the thesis compares the operational performance of North American and European companies, which, to the knowledge of the author, has not been done in the telecom industry yet.

Hypothesis 1 set in the introduction states that the operational performance of North American companies improves more after the mergers than the performance of European companies. The present paper cannot accept this hypothesis based on the main indicator used to measure it: industry-adjusted pretax operational cash flow returns on the market value of assets. Even though directionally the abnormal returns obtained support the hypothesis, it is not possible to accept it due to low statistical significance of the coefficients. However, verifying the robustness of the values by adjusting the company values with the cash flow returns on assets of the total market (North American and European markets for North American and European transactions respectively) provides more significant results. The post-merger abnormal cash flow return coefficient is considerably lower in Europe after controlling for the method of payment, relative size of the target to the acquirer, price-to-book ratios of the bidder and the target, and the cross-border nature of the transaction. In addition, it is statistically significant at the 5% level and holds after a robustness check verifying if the changes in the cash flow returns on assets are caused by substantial moves of the equity values. However, the lack of statistical significance of the abnormal cash flow return of the North American companies does not allow accepting Hypothesis 1. Nevertheless, the similarity of the values obtained from industry adjustment and market adjustment as well as the high statistical significance of the European coefficient sets strong grounds for claiming that in a larger sample, significant results would be obtained. Further research on this topic using a greater number of North American transactions is needed to draw more reliable conclusions on this subject.

Hypothesis 2 set in the introduction argues that stock performance around the merger announcement is positively correlated with improvements in post-merger operational performance of the companies. The hypothesis is tested on the total sample as well as North American and European transactions separately. It is accepted on the 10% level based on the results of the total sample and European mergers, while the corresponding coefficient in the American sample is not statistically significant. Even though the significance level is not too low, the size of the sample (51 total, 27 North American, and 24 European) allows accepting the hypothesis. The obtained result implies that the market reflects the future improvements

in the operational efficiency at the merger announcement. The findings of this thesis complement the research by Ikäheimo et al (2016) who claim that the superior stock performance of the North American companies as opposed to European firms is caused by the American acquisitions being more beneficial for the companies. Further studies involving the underlying reasons for the European telecom firms' underperformance following the mergers may be based on this paper.

One of the limitations of this study that seems to be hard to overcome is the fact that the telecom acquisition market was highly active in 2000-2011, which implies that the vast majority of the companies engaged into mergers more than once during the period of observations. Therefore, the operational performance data is affected by the mergers completed in the years surrounding the sample acquisition. However, a sufficient sample size and using median values to avoid large outliers should neutralize the effects of the other transactions on the research results and make them unbiased.

Overall, the paper shows that the market reflects the future operational improvements after the merger in the stock price around the transaction announcement. The abnormal cash flow returns on assets are lower for the North American companies than for the European ones, though the result is not statistically significant. The thesis leaves room for further studies regarding the underlying factors determining the performance as well as a more detailed analysis of the targets and the acquirers separately. Adding the variables regarding cultural distance, regulation differences, and international operations of the companies could also facilitate gaining statistically significant results on the differences in the operational performance between the continents.

REFERENCES

Agrawal, A., Jaffe J. J., Mandelker, G. N. (1992) 'The Post-Merger Performance of Acquiring Firms: a Re-Examination of an Anomaly'. *The Journal of Finance*, 47: 1605-1621.

Alhenawi, Y., Krishnaswami, S. (2015) 'Long-term impact of merger synergies on performance and value'. *The Quarterly Review of Economics and Finance*, 58: 93-118.

Berger, P. G., Ofek, E. (1995) 'Diversifications's Effect on Firm Value'. *Journal of Financial Economics*, 37: 39-65.

Billett, M. T., Qian, Y. (2008) 'Are Overconfident CEOs Born or Made? Evidence of Self-Attribution Bias from Frequent Acquirers'. *Management Science*, 54: 1037-1051.

Bradley, M., Desai, A., Kim, E. H. (1988) 'Synergistic gains from corporate acquisitions and their division between the stockholders of target and acquiring firms'. *Journal of Financial Economics*, 21: 3-40.

Bruner, R. F. (2002) 'Does M&A Pay? A Survey of Evidence for the Decision-Maker' *Journal of Applied Finance*, 12: 7-27.

Business List – NAICS code 517 – Telecommunications (n.d.) Available from: https://siccode.com/en/codes/naics/517/telecommunications [Accessed on 25 August 2017]

Campa, J. M., Hernando, I. (2004) 'Shareholder Value Creation in European M&As'. *European Financial Management*, 10: 47-81.

Clark, K., Ofek, E. (1994) 'Mergers as a Means of Restructuring Distressed Firms: An Empirical Investigation'. *Journal of Financial and Quantitative Analysis*, 29: 541-565.

Cole, R., Vu, J. D. (2006) *'Do mergers Create or Destroy Value? Evidence from Unsuccessful Mergers'*. Available from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1007043. [Accessed on 16 September 2017].

Danbolt, J., Maciver, G. (2012) 'Cross-Border versus Domestic Acquisitions and the Impact on Shareholder Wealth'. *Journal of Business Finance and Accounting*, 39: 1028-1067.

DeLong, G. (2003) 'Does Long-Term Performance of Mergers Match Market Expectations? Evidence from the US Banking Industry'. *Financial Management*, 32: 5-25.

Doukas, J. A., Kan, O. B. (2006) 'Does global diversification destroy firm value?'. *Journal of International Business Studies*, 37: 352-371.

Eckbo, E., Thorburn, K. (2000) 'Gains to Bidder Firms Revisited: Domestic and Foreign Acquisitions in Canada'. *Journal of Financial and Quantitative Analysis*, 35: 1-25.

European Commission (2015) *'Why We Need a Digital Single Market'*. Available from: https://ec.europa.eu/commission/sites/beta-political/files/dsm-factsheet_en.pdf [Accessed on 16 September 2017].

European Policy Centre (2010) *'The Economic Impact of a European Digital Single Market'*. Available from: http://www.epc.eu/dsm/2/Study_by_Copenhagen.pdf [Accessed on 12 August 2017]

Ghosh, A. (2001) 'Does Operating Performance Really Improve Following Corporate Acquisitions?'. *Journal of Corporate Finance*, 7: 151-178.

Goergen, M., Renneboog, L. (2004) 'Shareholder Wealth Effects of European Domestic and Cross-border Takeover Bids'. *European Financial Management*, 10: 9-45.

Hagendorff, J., Collins, M., Keasey, K. (2008) 'Investor Protection and the Value Effects of Bank Merger Announcements in Europe and the US'. *Journal of Banking and Finance*, 32: 1333-1348.

Healy, P. M., Palepu K. G., Ruback R. S. (1992) 'Does Corporate Performance Improve after Mergers?'. *Journal of Financial Economics*, 31: 135-175.

Healy. P. M., Palepu K. G., Ruback R. S. (1997) 'Which Takeovers Are Profitable: Strategic or Financial?'. *Sloan Management Review*, 38: 45-57.

Ikäheimo, S., Kuoppamäki, P, Mao, Y. (2016) *'Who wins the digitalized economy? Analysis of cross-Atlantic acquisitions'*. In: *13th Workshop on Corporate Governance*; Milan, Italy: 2016.

Institute of Mergers, Acquisitions and Alliances (2016) *Overview: Number of Mergers and Acquisitions by Industry since 1985*. Available from: https://imaa-institute.org/m-and-a-by-industries/ [Accessed on 10 September 2017]

James, C. M., Wier, P. (1987). 'Returns to acquirers and competition in the acquisition market: The case of banking'. *Journal of Political Economy*, 95: 355-370.

Kaplan, S., Weisbach, M. (1992) 'The Success of Acquisitions: Evidence from Divestitures'. *Journal of Finance*, 47: 107-138.

Kruse, T. A., Park, H. Y., Park, K., Suzuki, K. (2007) 'Long-term Performance Following Mergers of Japanese Companies: The Effect of Diversification and Affiliation'. *Pacific-Basin Finance Journal*, 15: 154-172.

Lang, L. H. P., Stulz, R., Walkling R. A. (1989) 'Managerial Performance, Tobin's Q, and the gains from successful tender offers'. *Journal of Financial Economics*, 24: 137-154.

Leeth, J., Borg, J. R. (2000) 'The Impact of Takeovers on Shareholder Wealth during the 1920s Merger Wave'. *Journal of Financial and Quantitative Analysis*, 35: 217-238.

Loughran, T., Vijh, A. M. (1997) 'Do Long-Term Shareholders Benefit from Corporate Acquisitions?'. *Journal of Finance*, 49: 1541-1578.

Lyroudi, K., Lazaridis, J., Subeniotis, D. (1999) 'Impact of International Mergers and Acquisitions on Shareholder's Wealth: A European Perspective'. *Journal of Financial Management and Analysis*, 12: 1-14.

Malmendier, U., Tate, G. (2008) 'Who Makes Acquisitions? CEO Overconfidence and Market Reaction'. *Journal of Financial Economics*, 89: 12-43.

Martynova, M., Renneboog, L. (2009) 'The Performance of the European Market for Corporate Control: Evidence from the Fifth Takeover Wave'. *European Financial Management*, 17: 208-259.

Miller, B., Atkinson R. D. (2014) *'Raising European Productivity Growth through ICT'*. Available from: https://itif.org/publications/2014/06/02/raising-european-productivity-growth-through-ict [Accessed on 10 August 2017]

Mitchell, M. L., Stafford, E. (2000) 'Managerial Decisions and Long-Term Stock Price Performance'. *Journal of Business*, 73: 287-329.

Moeller, S. B., Schlingemann, F. P. (2005) 'Global Diversification and Bidder Gains: A Comparison between Cross-Border and Domestic Acquisitions'. *Journal of Banking & Finance*, 29: 533-564.

Mulherin, J. H., Boone, A. L. (2000) 'Comparing Acquisitions and Divestitures'. *Journal of Corporate Finance*, 6: 117-139.

OECD (2002) *Measuring the Information Economy*. Available from: https://www.oecd.org/sti/ieconomy/1835738.pdf [Accessed on 29 August 2017]

OECD (2010) *Information Technology Outlook*. Available from: http://www.keepeek.com/Digital-Asset-Management/oecd/science-and-technology/oecd-information-technology-outlook-2010_it_outlook-2010-en#page32 [Accessed on 10 September 2017]

OECD (2012) *Contributions of ICT investment to GDP growth, 2000-09*. Available from: http://www.oecd.org/internet/broadband/oecdkeyictindicators.htm [Accessed on 10 September 2017]

Rashid, A., Naeem, N. (2017) 'Effects of mergers on corporate performance: An empirical evaluation using OLS and the empirical Bayesian methods'. *Borsa Istanbul Review*, 17: 10-24.

Ravenscraft, D. J., Scherer, F.M. (1989) 'The Profitability of Mergers'. *International Journal of Industrial Organization*, 7: 101-116.

Santos, M., Errunza, V. R., Miller, D. P. (2008) 'Does corporate international diversification destroy value? Evidence from cross-border mergers and acquisitions'. *Journal of Banking & Finance*, 32: 2716-2724.

Savor, P. G., Lu, Q. (2009) 'Do Stock Mergers Create Value for Acquirers?'. *The Journal of Finance*, 64: 1061-1097.

Schoar, A. (2002) 'Effects of Corporate Diversification on Productivity'. *The Journal of Finance*, 57: 2379-2403.

Schwert, G. W. (1996) 'Markup Pricing in Mergers and Acquisitions'. *Journal of Financial Economics*, 41: 153-162.

Servaes, H. (1991) 'Tobin's Q and the Gains from Takeovers'. *The Journal of Finance*, 46: 409-419.

Stahl, G. K., Voigt, A. (2008) 'Do Cultural Differences Matter in Mergers and Acquisitions? A tentative Model and Examination'. *Organization Science*, 19: 160-176.

Walker, M. (2000) 'Corporate Takeovers, Strategic Objectives, and Acquiring-Firm Shareholder Wealth'. *Financial Management*, 29: 53-66.

You, V., Caves, R., Smith, M., Henry, J. (1986) 'Mergers and Bidders' Wealth: Managerial and Strategic Factors'. *The Economics of Strategic Planning: Essays in Honor of Joel Dean*, 201-221.

APPENDIX 1 LIST OF SIC CODES USED IN THE STUDY

26.1 - 26.4
26.8
46.5
4812
4813
4822
4841
4899
58.2
61.1 - 61.9
62
63.1 – 63.9
7375
95.1

The SIC codes are selected based on the definition of OECD (2002) and the official SIC code website (http://siccode.com).

APPENDIX 2 LIST OF NORTH AMERICAN TRANSACTIONS

Date Announced	Date Effective	Target Name	Target Nation	Acquirer Name	Acquirer Nation
05.03.06	29.12.06	BellSouth Corp	United States	AT&T Inc	United States
22.04.10	01.04.11	Qwest Commun Intl Inc	United States	CenturyLink Inc	United States
31.01.05	18.11.05	AT&T Corp	United States	SBC Communications Inc	United States
23.02.01	30.01.02	UnitedGlobalCom Inc	United States	Liberty Media Corp	United States
27.10.08	01.07.09	Embarq Corp	United States	CenturyTel Inc	United States
14.02.05	06.01.06	MCI Inc	United States	Verizon Communications Inc	United States
15.02.00	01.11.00	Teleglobe Inc	Canada	BCE Inc	Canada
10.01.05	01.08.05	Western Wireless Corp	United States	Alltel Corp	United States
13.09.04	13.10.04	Rogers Wireless Commun Inc	Canada	Rogers Communications Inc	Canada
29.06.07	15.11.07	Dobson Communications Corp	United States	AT&T Inc	United States
21.08.00	12.01.01	Clearnet Communications Inc	Canada	TELUS Corp	Canada
21.11.05	01.02.06	Alamosa Holdings Inc	United States	Sprint Nextel Corp	United States
07.03.06	07.07.06	Aliant Inc	Canada	Bell Canada Inc	Canada
07.11.08	06.11.09	Centennial Communications Corp	United States	AT&T Inc	United States
17.09.07	22.02.08	SunCom Wireless Holdings Inc	United States	T-Mobile USA Inc	United States
01.08.11	01.12.11	PAETEC Holding Corp	United States	Windstream Corp	United States

10.07.05	12.08.05	US Unwired Inc	United States	Sprint Nextel Corp	United States
20.04.06	01.07.06	Ubiquitel Inc	United States	Sprint Nextel Corp	United States
05.06.00	14.09.00	Primark Corp	United States	Thomson Corp	Canada
24.11.09	01.06.10	Iowa Telecom Services Inc	United States	Windstream Corp	United States
07.12.00	02.04.01	Moffat Communications Ltd	Canada	Shaw Communications Inc	Canada
17.09.06	08.03.07	Commonwealth Telephone Entrp	United States	Citizens Communications Co	United States
18.03.04	04.06.04	Allstream Inc	Canada	Manitoba Telecom Services Inc	Canada
19.10.09	04.12.09	iPCS Inc	United States	Sprint Nextel Corp	United States
29.05.07	31.08.07	CT Communications Inc	United States	Windstream Corp	United States
28.07.09	24.11.09	Virgin Mobile USA Inc	United States	Sprint Nextel Corp	United States
01.10.10	08.12.10	ITC Deltacom Inc	United States	EarthLink Inc	United States

APPENDIX 3 LIST OF EUROPEAN TRANSACTIONS

Date Announced	Date Effective	Target Name	Target Nation	Acquiror Name	Acquiror Nation
12.03.03	04.08.03	Telecom Italia SpA	Italy	Ing C Olivetti & Co SpA	Italy
16.03.06	29.07.06	Telefonica Moviles SA	Spain	Telefonica SA	Spain
07.12.04	30.06.05	Telecom Italia Mobile SpA	Italy	Telecom Italia SpA	Italy
01.09.03	07.10.03	Orange SA	France	France Telecom SA	France
30.05.00	22.08.00	Orange PLC	United Kingdom	France Telecom SA	France
31.10.05	19.04.06	O2 PLC	United Kingdom	Telefonica SA	Spain
23.02.04	28.04.04	Wanadoo SA	France	France Telecom SA	France
09.10.04	06.06.06	T-Online International AG	Germany	Deutsche Telekom AG	Germany
20.12.07	24.06.08	Neuf Cegetel SA	France	SFR	France
18.03.00	23.03.00	MobilCom AG	Germany	France Telecom SA	France
03.10.05	03.03.06	Telewest Global Inc	United Kingdom	NTL Inc	United Kingdom
24.03.02	09.12.02	Sonera Oyj	Finland	Telia AB	Sweden

20.11.00	29.06.01	Equant NV	Netherlands	France Telecom SA	France
12.04.05	17.06.05	Cesky Telecom AS	Czech Republic	Telefonica SA	Spain
07.09.00	12.01.01	World Online International NV	Netherlands	Tiscali SpA	Italy
01.12.03	26.01.04	Vodafone-Panafon Hellenic	Greece	Vodafone Group PLC	United Kingdom
11.01.00	10.06.00	Esat Telecom Group PLC	Ireland-Rep	BT Hawthorn Ltd	United Kingdom
13.01.03	28.03.03	Europolitan Vodafone AB	Sweden	Vodafone Group PLC	United Kingdom
13.01.03	21.05.03	Vodafone Telecel-Comunicacoes	Portugal	Vodafone Group PLC	United Kingdom
24.07.00	02.10.00	Societe Europeenne de Commun	Luxembourg	NetCom AB	Sweden
17.07.05	01.11.05	Versatel Telecom International	Netherlands	Tele2 AB	Sweden
28.05.03	25.07.03	Terra Networks SA	Spain	Telefonica SA	Spain
10.02.05	15.07.05	Terra Networks SA	Spain	Telefonica SA	Spain
08.01.01	03.05.01	Liberty Surf Groupe SA	France	Tiscali SpA	Italy