The Impact of Takeovers on the Acquiring Firms in the Pharmaceutical Market

▪ *Raciborski Michal*

Abstract

The pharmaceutical market plays a crucial role in the global economy. The level of competitiveness among companies in this sector is very high. To retain their position or even speed up the growth, market players continuously use takeovers as one of the major tools embedded in their strategies. Nevertheless, despite this fact, the concentration level on this market has stayed relatively stable for the last two decades. Furthermore, it is also confirmed in the literature that such transactions usually tend to deteriorate value for the buyers and their shareholders. Based on the sample of 127 deals taking place between 1998 and 2011, this study uses a quantitative analysis to evaluate the impact of takeovers on acquirers. It covers event and accounting studies. Depending on the time window used in this study, the results show either lack of statistically significant effect of acquisition on buyers or that such impact is negative. These conclusions are in line with the existing literature findings.

Keywords: acquisitions, pharmaceutical companies, event studies, accounting studies
JEL Classification: G34, I11

1. INTRODUCTION

The pharmaceutical market is one of the most important sectors of the economy. Acquisitions of companies are one of the major strategies adopted by the firms operating on this market in order to trigger or continue their growth and remain competitive. However, despite ongoing consolidation processes, the level of concentration has remained fairly unchanged since around two decades. Moreover, in the literature prevails the opinion that takeovers do not contribute to creating value for buyers and their shareholders. Therefore, the purpose of this study was to investigate the impact of takeovers on the acquiring companies from economic perspective. The analysis was based on the sample of 127 transactions taking place between 1998 and 2011. The data was generated from the internationally recognized database MergerMarket. The impact of the takeover was measured through event and accounting studies. For each method, five time windows were selected based on the existing literature. This study was restricted to quantitative data availability and did not cover qualitative research, e.g. case studies or surveys. This could be a potential contribution to future researchers to complement the analysis conducted herein. This paper is organized in the following manner. It commences with presentation of empirical evidence of acquisitions in the pharmaceutical market. Then, it provides rationale for selecting specific methodology together with available relevant literature. Subsequently, it presents the results of the analysis, followed by discussion of these outcomes. This paper is concluded with the summary of major findings of the study.

2. ACQUISITIONS IN THE PHARMACEUTICAL MARKET – LITERATURE REVIEW

The pharmaceutical market is one of the key sectors of the global economy. Its origins can be already dated back to the fourth decade of twentieth century. Number of pharmaceutical laboratories, primarily in Europe and the US, was founded at that point of time. For decades, pharmaceutical companies operated in very liberal environment that ensured the long-term patent protection and considerable freedom of action. However, due to an increasing pressure on cost reduction in the healthcare starting in the seventies and eighties, a sharp increase in market regulation was observed. The period covered by patent protection began to reduce gradually. Such phenomenon is progressing until today. Innovative medicines are faster and more commonly replaced by their cheaper alternatives - generic drugs. However, the overall development of the pharmaceutical market had led to a level where on the global basis, its value was estimated at more than $950 billion in 2011. To realize the scale of its growth, it must be mentioned that the market had increased by about ten times as compared to its level in 1981. Moreover, it is estimated that it should reach approximately $1,200 billion in revenue in 2016.

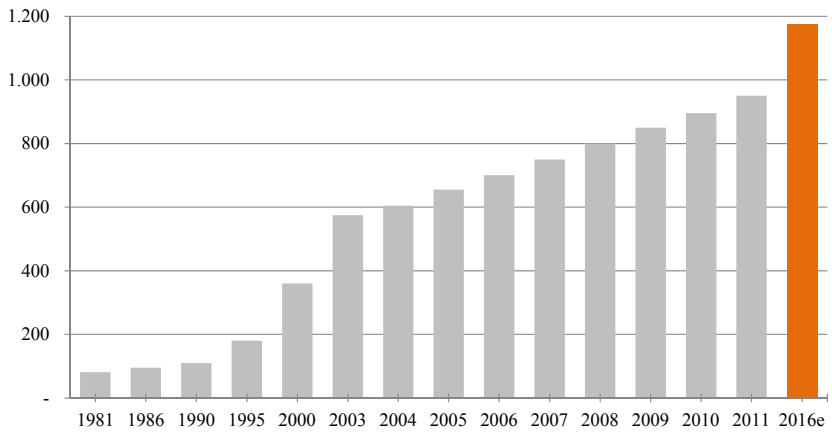

Fig. 1 - Sales growth of pharmaceuticals from 1981 to 2016 (in $B) Source: IMS Institute for Healthcare Informatics (2012), Deutsche Bank (2012)

The pharmaceutical market is characterized by a relatively high level of profitability as compared to other sectors of the economy. Companies operating in this space explain this situation by the fact that in many cases, the costs of medications in the selected therapeutic areas may generate over proportionate cost reductions related to avoided or decreased length of the hospitalization of the patient at more advanced stages of the disease progression. For example, in 2011, a study conducted by the organization Health Affairs in the US estimated that the use of drugs in compliance with their indications for people with diabetes or hypertension can result in savings for the health system ranging between $3 - $10 for every $1 spent on medications (PhRMA). However, the attractiveness of the market is also linked to its increasing competitiveness and the rising pressure from various regulatory agencies and other market participants, consequently

price pressure. Pharmaceutical companies are particularly exposed to risks associated with expiring patent protection for its products.

Above mentioned characteristics force the companies in this sector to keep searching for new solutions which would allow them optimize and continue their growth. One of the most popular strategies adopted by firms in this market are takeovers. These activities are undertaken by enterprises ranging from small and medium-sized companies to large multinational corporations. They can be defined as a transaction of purchase and sale of the target company where it is possible to designate a dominant entity (the purchaser), who buys a certain number of shares (or assets) that allow to have control over the acquired company (Buk 2006).

Between 1998 and 2011, there were in excess of 1,200 takeovers reported in the pharmaceutical market. Their accumulated value was approaching $1 billion (MergerMarket). In chronological order, the popularity of these activities kept increasing steadily, but some cyclicality was also observed. In the record year 2009, there were more than 100 acquisitions with a cumulative value exceeding $140 billion reported. Another peak was accounted in 2000. In the meantime, a number of acquisitions took place, but they were of less spectacular character.

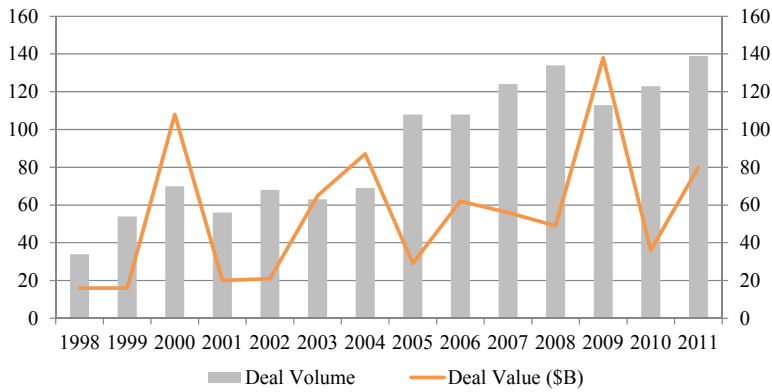

Fig. 2 - Accumulated value and volume of acquisitions in the pharmaceutical market from 1998 to 2011 (in $B and number of transactions). Source: Deutsche Bank Industry Report (2012)

However, despite continuous consolidation activities, the level of concentration on the pharmaceutical market remains still at a relatively low level. Ten largest entities held about 40% share of the global market in 2011. This level increased from around 23% in 1981. However, since 1990 it has not grown significantly. It oscillated throughout this period in a range between 35% to 40%. For CR4 index (Concentration Ratio of 4 largest pharmaceutical companies globally), the market showed also significant stability in the twenty first century remaining at around 20 - 22% levels, after years of growth in the twentieth century (~ 12% in 1981 and less than 17% in 1990) (Fig. 3). Pfizer, the world's leading pharmaceutical company, held only about 6.2% share in 2011. Other companies accounted for approximately 5% or below this value (PMLiVE). As a matter of fact,

we could speak of significant concentrations only in relation to specific therapeutic segments (such as oncology and gastroenterology), where the individual entities could possess over 20% portion of the market or at the level of a particular country. However, globally the likelihood of exceeding the 10% threshold by one entity remains relatively limited.

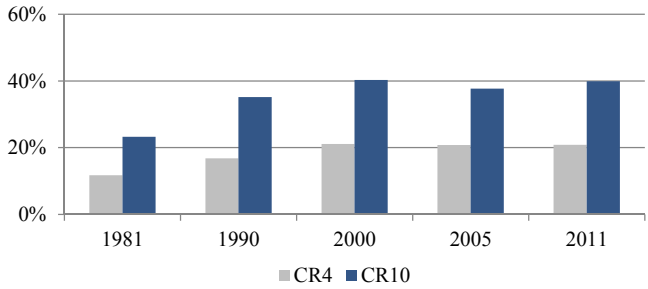

Fig. 3 - Level of concentration in the global pharmaceutical market between 1981 to 2011. Source: PharmTech (2012), Deutsche Bank (2012), Contract Pharma (2006)

The pharmaceutical market has a number of characteristics making its level of concentration unchangeably stable despite the ongoing consolidation processes. It is a very competitive area with progressive globalization, still quite fragmented tough. Importantly, it is estimated that a significant part of the growth in sales of pharmaceutical companies will come from emerging countries (IMS Institute for Healthcare Informatics, 2012) In 2011, only about 28% of global sales were generated from these areas, but it is forecasted that over 50% of the growth will come from these countries, in particular from BRIC (Deutsche Bank Industry Report, 2012). Furthermore, research and development activities are one of the most important roles of the companies operating in the pharmaceutical market. The development of new innovative drugs is very time and capital intense. Moreover, the risk of failure exceeds significantly the probability of success. To illustrate the risks associated with these activities, in the US on average out of about five to ten thousand molecules that are included in the analysis in the early stages of research, only about five will be admitted to Phase III of the clinical trials, and only one will be effectively approved for sale by the US Food and Drug Administration Agency (FDA) (Christian Kanzelmeyer, 2012). Another important element influencing a potential success of the drug is the period of its patent protection. Until 1994, it amounted to an average of 17 years from the moment of granting the patent (Higgins & Rodriguez, 2006). Today, this time is significantly shorter. It may range from nine to fourteen years (Higgins & Rodriguez, 2006) with an average of twelve years (Danzon and al., 2007).

3. METHODOLOGY

As mentioned above, there is a strong trend towards consolidation on the pharmaceutical space. However, it does not contribute significantly to increase in the level of concentration in this market. Therefore, the research objective of the study described in this paper was to analyse the

impact of acquisitions for buyers in the pharmaceutical market from the economic perspective. There are several main scientific methods of assessing the effectiveness of takeovers. These include mainly event studies, accounting studies, surveys or case studies. This analysis focused on the first two methods which are most commonly applied in the literature. Each of them has its own distinct characteristics including both, drawbacks and advantages.

Event studies verify the change in the share price of the company involved in transaction (it can be a buyer, seller or combined entity) within a defined period of time. The change should reflect the expectations of shareholders associated with the transaction. In the analysis, fluctuation of the share price is compared to the reference point, which is usually return of the shares calculated on the basis of the Capital Asset Pricing Model (CAPM) or return of one of the leading stock exchange indices on the related market. Based on their relations, Cumulative Abnormal Return (CAR) is calculated. The moment of the reference is the public announcement of the planned deal or the leakage of information on such topic (if it happens prior to the public announcement). An effective moment of signing the final sell purchase agreement is not considered crucial, since major part of the acquisition effect (whether positive or negative) should already be "digested" by the market. It is the most popular form of analysis used in the literature (Bruner, 2002). Being direct value measure from the point of view of shareholders is an important advantage of this method. It takes also into account their future expectations. Its limitation is the fact that there is no guarantee that these expectations will effectively materialize. In fact, this element is an area of future risk. Event studies assume the principle of perfect information and the efficiency of capital markets. Importantly, they are limited only to companies listed on the stock exchange, where it is possible to determine changes in their share price. It is not applicable in cases of private entities. Furthermore, in the long-term perspective, particularly in case of large entities engaged simultaneously in number of various undertakings, it may lead to the overlapping effect of a greater number of events impacting the change in the share price. Therefore, this method is primarily used for analysis of relatively short-term changes in cumulative abnormal returns. Event studies are very popular in the literature. Despite a very differentiated approach to analysis (because of time horizon, geography, sample size and other elements), an overwhelming number of authors indicate the negative impact of takeovers on the buyers (Firth, 1980; Lang et al., 1991; Walker, 2000; Savor & Lu, 2009; Alexandridis et al., 2013) or indicate results that cannot be unequivocally interpreted (Smith & Kim, 1994; Sudarsan & Mahate, 2003). On the other hand, there is also a limited number of publications, especially in more recent literature (Song & Walkiling, 2006; Martynova & Rennebog, 2011; Craninckx & Huyghebaert, 2014) which indicates a positive cumulative abnormal return on acquisitions.

On the contrary, accounting studies allow to verify if a transaction effectively contributed to a value creation for the acquirer in the specific areas of the company's financial performance. The basic element of this study is to determine the key dependent variables, often characteristic for the companies from the specific sector. The analysis can use such financial data or ratios of the company as revenue, income (net / gross), debt level, costs structure and earnings per share and others (Bruner, 2002). Particularly common indicators are the return on assets (ROA) and return on equity (ROE) and these were selected to form the analysis within accounting studies in this paper. Importantly, this method addresses some imperfections of event studies.

It examines through financial indicators the performance of the company to define the areas where the value was built or destroyed by acquisition. Additionally, the data used for analysis is usually audited which increases its credibility. This is particularly valid when compared to often subjective reaction of investors resulting in changes in the share price typical for event studies. On the other hand, the results of the accounting studies should be considered carefully. The main disadvantage of this approach is the fact that in particular large companies, operate usually in a dynamic environment, where over even short or medium term around the transaction window, there might be other independent events occurring. It might lead to changes in the financial performance which are not (directly) related to the transaction. Other elements limiting this method are potential changes in the accounting principles applied by companies, or even changes in the countries of their legal registration. Additionally, accounting studies focus on historical data and do not include future projections. They do not take into account elements such as the impact of inflation or deflation and the value of intangible assets either. Accounting studies are less widespread in the literature compared to event studies. However, they are very complementary and their results are far more mixed. It may be caused by many available ways to measure financial efficiency (choice of specific indicators) as well as the definition of reference points (selection of an appropriate control group), etc. Some authors indicate the adverse impact of acquisitions (Meeks, 1977; Dickerson et al, 1997; Martynova & Rennebog, 2008; Betrand & Betschinger, 2011). However, opposite to the event studies, this method has also a significant number of publications indicating a positive effect of takeovers (Healy et al., 1992; Healy et al., 1997; Ghosh, 2001; Rahman & Limmack, 2004).

As mentioned above, the research objective of this study was to analyse the impact of acquisitions on buyers in the pharmaceutical market from the economic perspective. Furthermore, taking into account the value added and complementarity of event and accounting studies, both of these methods were used. Therefore, two hypotheses were assumed to assure the completeness of the study and meeting the research objective:

H1: The takeovers have an impact on acquirers from the short-term investment decisions' perspective (event studies).

H2: The takeovers have an impact on acquirers from the financial / accounting perspective (accounting studies).

Furthermore, if (once) confirmed, the positive or negative direction of takeovers' impact was to be measured.

A final group of 127 transactions undertaken by pharmaceutical companies between 1998 and 2011 was used for the purpose of analysis. An initial data set of 703 takeovers conducted globally by pharmaceutical buyers with the value exceeding €100 million was generated using the MergerMarket database. The sample was further filtered by removing from it not listed acquirers, whose profiles were clearly irrelated to pharmaceutical industry (e.g., financial investors) and leaving in the sample only a significant size of transactions that could be perceived as having transformational character. In order to meet the latter criterion, the transaction had to exceed €500 million in value and 1% of buyer's enterprise value or in case of transactions, in a range between €100 million and €500 million enterprise value of the target to the buyers shall exceed 20%. Finally,

the prerequisite for the entering sample was the data availability of share price, return on assets (ROA) and return on equity (ROE) for each transaction. This has led to the final group of transactions amounting to 127 that undergo further analysis.

Thereafter, the reference index was assigned to each event. In case of the share price, it was the main stock exchange index of the buyer's dominant country. For return on assets and return on equity, these were average ROA and ROE values for ten largest global pharmaceutical companies in a specific year. Five time windows were selected for each of these three variables (CAR, ROA, ROE) based on the existing literature. It was evaluated whether the acquisition influences the buyer and if yes, what the direction of such effect is.

4. RESULTS

Descriptive statistics of cumulative abnormal return for specified time frames presented in Figure 4 indicate that both the median and the average for the respective windows are primarily negative. Only within the time span between 20 days before and 20 days after the date of the announcement of the deal, the median exceeded 0. Generally, it ranged between -0.84% (the period from 20 days prior to 20 days after the announcement of the event) to 0.08% (20 days prior to the day of announcement of transaction). In turn, the mean values had a lower amplitude and deviated between -0.51% (the day before to day of the event announcement) to -0.01% (for 2 time intervals: 1 and 5 days before and 1 and 5 days after the event). The largest amplitude between the median and the average was observed in the broadest time window from 20 days before to 20 days after the announcement of transaction and amounted to 0.78%. Depending on the time horizon, the median and the mean differed significantly from each other. It is also to note that for intervals where the upper limit was the day of the deal announcement mean was significantly more negative than the median.

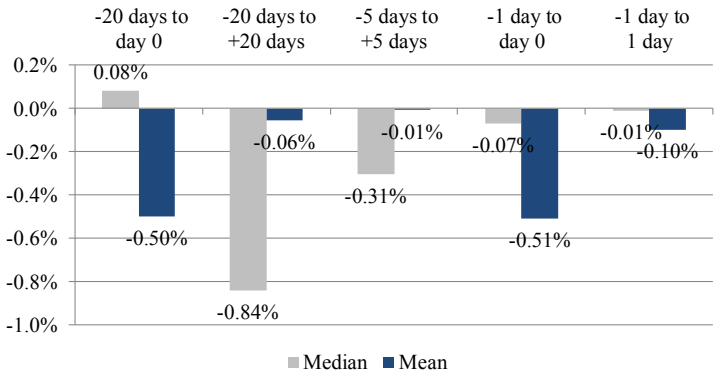

Fig. 4 -Values of the median and the mean (%) for the sample of cumulative abnormal returns in selected time windows (measured in days). Source: Own elaboration

Descriptive statistics for changes in ROA in the framework of the accounting study showed existance of several time windows characterized by positive values. However, the median for all analyzed periods was always negative. On the other hand, the mean in three out of five cases was positive in value. Except from the interval from the year of transaction to the year afterwards, it exceeded always the median. This could imply that the acquisitions had predominantly a negative effect on buyers. However, there is a group of events that overstated the mean value in the sample. The median of ROA ranged from -0.82% (the period from a year before to a year after the deal) to -0.06% (a year of transaction up to three years after the event). The amplitute for mean values was greater. They oscillated between -0.69% (a year before to a year after the event) to 0.82% (three years before and three years after the transaction). The largest difference between the mean and the median occurred between the third year before and the third year after the event (1%). This implies that several individual deals generated positive changes in ROA in a situation where the majority of transactions brought negative effects. This may indicate that in the long term, it shall be possible to differentiate "good" from "bad" (the latter more frequently occuring) takeovers.

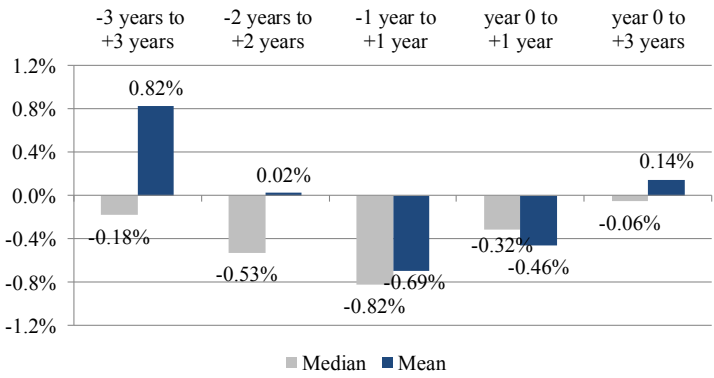

Fig. 5 - Values of the median and the mean (%) for the sample of changes in return on assets in selected time windows (measured in years). Source: Own elaboration

Descriptive statistics for changes in ROE within the frame of the accounting study showed the existence of more time windows characterized by positive changes of this indicator around the moment of transaction (Figure 5) than in the event study and accounting study for ROE changes. In this sample, there are periods of time where the median has values higher than zero, which indicates that majority of transactions generated a positive change in this ratio. However, in each of five investigated time windows, the median was always inferior to the mean. This leads to similar as previously stated conclusions that there are individual cases in the sample that overstate the overall impact of transactions from return's on equity standpoint. Furthermore, both mean and median were positive only in the intervals from the year of transaction to the year or three years afterwards. On the contrary, for periods starting before the year of transactions, they were always negative in value. This may indicate that the acquisition contributes to positive changes of ROE in certain cases. Companies with declining return on equity might

decide to acquire and this activity shall allow them to improve their performance in the years following the takeover. The median of ROE ranged from -5.14% (the interval between two years prior to transaction up to two years after this event) to 0.56% (the year of transaction to the year afterwards). In turn, mean values had a slightly broader amplitude ranging from -4.10% (the year before to the year after the deal) to 3.15% (the year of transaction until the year after). The largest difference between the mean and the median was reported for the time window between the year of transaction and three years afterwards and amounted to 2.59%. In this case, a group of companies which generated a significantly higher positive change in return on assets compared to other companies in the sample is well visible.

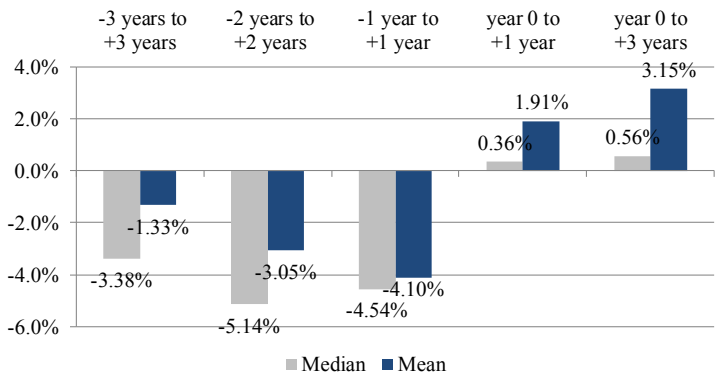

Fig. 6 - Values of the median and the mean (%) for the sample of changes in return on equity in selected time intervals (measured in years). Source: Own elaboration

In next step, the results of presented above descriptive statistics in the sample were verified for their statistical significance. In order to define options for further testing, Kolmogorov – Smirnov test was initially performed. It demonstrated the absence of normal distribution in every investigated time window for cumulative abnormal return values, return on assets and return on equity. Therefore, it was not possible to use the student t-test. Non-parametric tests are used in such cases as an alternative. Therefore, in this analysis, the Wilcoxon test for one sample was performed for each time window. It takes into account median as a measure of transactions impact on acquirers. The null hypothesis assumed herein stated that median is equal to zero. This implies that negative and positive events shall be evenly distributed in the sample. It is equivalent to assumption that the acquisitions do not have any impact on buyers. Rejecting this hypothesis would imply statistically significant positive or negative effect of takeovers on the acquirers.

The results of the Wilcoxon test presented in Table 1 below show that only three of the fifteen models have asymptomatic significance on the level inferior to 0.05, which is considered statistically significant. In case of the event study for cumulative abnormal return, there was no time window that proved to be statistically significant. Therefore, there was no basis to reject the null hypothesis of median equal to zero, which would confirm the impact of the acquisitions on buyers. The results of the Wilcoxon test for the accounting studies had confirmed one time window in case of return on assets where the null hypothesis could have been rejected. For the

period between the year before and the year post transaction, the median of -0.8% was statistically significant. It indicates that for more than a half of the study population, a decrease in ROA was noted within the analysed period. The results of the Wilcoxon test for return on equity indicated two time windows where the null hypothesis could have been rejected. The results for the periods of two years before to two years afterwards and from a year before until a year after transaction were statistically significant. In both situations, the median change was negative. In the first case, its value declined by 5.1% and in the latter, the decrease was slightly lower at 4.5%. For the remaining periods, the results did not prove to be statistically significant, thus, there was no basis for rejecting the null hypothesis (median equals to zero).

Tab. 1 - Results of the Wilcoxon test for one sample for the sample of 127 acquisitions between 1998 and 2011 within selected time windows for the cumulative abnormal returns and changes in return on assets and return on equity. Source: Own elaboration

	Time Window	N	Median	Significance
Event Studies	- 20 to 0 day	127	-0,008	0,876
	- 20 to +20 day	127	-0,003	0,381
	- 5 to +5 day	127	-0,001	0,196
	-1 to 0 day	127	0,000	0,639
	-1 to +1 day	127	0,001	0,694
Accouting Studies (ROA)	-3 to +3 year	127	-0,002	0,918
	-2 to +2 year	127	-0,005	0,178
	-1 to +1 year	*127*	*-0,008*	*0,036*
	0 to +1 year	127	-0,003	0,07
	0 to +3 year	127	-0,001	0,788
Accouting Studies (ROE)	-3 to +3 year	127	-0,034	0,319
	-2 to +2 year	*127*	*-0,051*	*0,013*
	-1 to +1 year	*127*	*-0,045*	*0,001*
	0 to +1 year	127	0,004	0,347
	0 to +3 year	127	0,006	0,851

5. DISCUSSION

This study contributes importantly to the existing literature on the topic of acquisitions in the pharmaceutical industry, being one of the most comprehensive and industry-focused analysis of this type.

First of all, looking from the perspective of event studies, the results of the study are in line with outcomes of number of other authors (Firth 1980; Lang et al., 1991; Walker 2000; Savor & Lu. 2009; Alexandridis et al., 2013) who indicate a negative impact of takeovers on purchasers. However, once verifying for the statistical significance, the results of this analysis become inconclusive. There was not time interval that would be statistically significant. This implies that the

Hypothesis 1 stated in the second chapter has no foundations to be accepted within the analysed data sample. There is no proof that takeovers have an impact on acquirers from the short-term investment decisions' perspective.

The results of the accounting studies created also important value added to the literature. In line with the general perception, their results are far more diversified than in case of the event studies. Descriptive statistics, similarly to some group of authors (e.g., Healy et al., 1992; Healy et al., 1997; Ghosh, 2001; Rahman et al., 2004) indicates several time windows with positive mean and median for both changes in ROA as well as ROA. However, there is still prevalence of periods that indicate negative changes in these two variables, which is also in line with majority of other authors' findings that focused on this topic (e.g., Meeks, 1977; Dickerson et al., 1997; Martynova & Rennebog, 2008; Betrand & Betschinger, 2011). Nevertheless, once tested for statistics significance, all time windows for both ROA and ROE that resulted in positive changes, were not proven to be statistically significant. This is in the contrary to the time windows characterized by negative changes in these two variables where in two cases the Wilcoxon test's level was inferior to 0.05. Therefore, in these cases, the hypothesis two stating that the takeovers have an impact on acquirers from the financial / accounting perspective is confirmed and the direction is proven to be negative. The acquisition showed to deteriorate value for buyers in particular time windows.

Importantly, neither event studies, nor accounting studies conducted in this analysis proved that acquisitions are a value-added tool contributing to an increase in concentration level among major pharmaceutical companies and their strive for growth and remaining competitive.

There are also some other interesting observations coming from the analysis. Especially in case of accounting studies, the mean was usually higher in value than the median in particular time windows. This might imply that there is a group of transactions that had over proportionately positive (or less negative in some cases) impact on the overall results of the study. It may be possible to differentiate between "good" and "bad" takeovers (the latter more frequently occuring though). Therefore, it could be interesting to verify the characteristics of "good" deal sample to better understand what drives the value for the company and its shareholders in contrary to the deals that have a deteriorating effect. Furthermore, it could be observed that in time windows starting around the time of transaction (e.g., year of the transaction) and forward looking (e.g., until one or three year thereafter), the analysed variables tended to generate more positive results as compared to the time frames more past looking (e.g., from three years before the transaction). This might potentially imply that in the time before transaction, the company performance was lowering down and the transaction was or could be a tool for restructuring the acquirer or at least a try to improve its performance. Such further investigation was not part of this study but could be an interesting future add on to the analysis.

6. CONCLUSIONS

To summarize, the pharmaceutical market is one of the most important sectors of the economy. It is characterized by a considerable complexity. On one hand, acquisitions are very popular strategy adopted by its companies used to keep up growing and remain competitive. However,

these activities do not visibly contribute to an increase in the concentration level in this market. It has remained relatively stable for the last two decades.

Therefore, the research objective of the study described in this paper was to analyse the impact of acquisitions on buyers in the pharmaceutical market from the economic perspective. For this purpose, two hypotheses were assumed. They stated that the takeovers have an impact on acquirers from the short term investment decisions' perspective (event studies) and on the financial / accounting performance (accounting studies). A cumulative abnormal return founded the basis for the investigation in case of event studies. Changes in return on assets and return on equity were analysed as a part of the accounting studies. Furthermore, the target was also to verify the direction (positive or negative) of such impact. Based on the literature, five time windows for each of three variables (CAR, ROA, ROE) were selected. In total, fifteen models were created. This approach allowed to verify both short and long-term impact of the takeovers on the acquiring firms.

The results of descriptive statistics carried out on a sample of 127 transactions taking place between 1998 and 2011 showed a prevailing negative effect of acquisitions on the buyers in all investigated areas. Both the median and the mean were primarily negative in value, independently of the type of the analysis. In addition, the median had in most cases inferior value to the mean. This indicates a limited amount of transactions generating a positive effect for acquirers, which, however, covered for the predominantly negative results. However, during further analysis, none of the selected time windows for cumulative abnormal returns proved to be statistically significant. Thus, it was not possible to confirm that acquisitions have an effective impact on shareholders' value, consequently, the Hypothesis 1 was rejected. On the contrary, the results of the accounting studies confirmed that it is possible to identify time periods where the impact of transaction is statistically significant for the pharmaceutical acquirers' financial performance. In case of changes in return on assets, one out of five time windows was statistically significant. For return on equity, two out of five. This confirmed the Hypothesis 2 assumed in this study. For all statistically significant results, the acquisitions proved to generate a negative effect for the acquiring companies which is, consistent with majority of publications in this area. To sum up, the results of this study may indicate that acquisitions are not or show lack of evidence to be an optimal strategy to increase the concentration level of the pharmaceutical market.

This study represents an important contribution to literature to the topic of acquisitions in pharmaceutical industry. However, since it focused on a quantitative data analysis, the study could be further complemented by case studies or surveys to confirm the results. Furthermore, the analysis indicated couple of areas that could be further investigated. This could be the analysis of specific companies' motives for undertaking transactions which could allow better understanding why some of them contribute to creating value for the acquirers, while others do not.

References

1. Alexandridis G., Fuller K., Terhaar L., Travlos N. (2013), Deal size, acquisition premia and shareholder gains, *Journal of Corporate Finance* 20, p. 1 – 13. http://dx.doi.org/10.1016/j.jcorpfin.2012.10.006

2. Bertrand O., Betschinger M. (2011), Performance of domestic and cross-border acquisitions: empirical evidence from Russian acquirers, European Bank for Reconstruction and Development, Working Paper No. 129

3. Bruner R. (2002), Does M&A Pay? A Survey of Evidence for the Decision-Maker. *Journal of Applied Finance*, Spring / Summer, p. 48 - 68. http://dx.doi.org/10.2469/dig.v33.n1.1205

4. Buk H. (2006) *Nowoczesne zarządzanie finansami. Planowanie i kontrola*. C.H.BECK Publishing House, Warsaw. p. 1 – 434

5. Craninckx K., Huyghebaert N. (2015), Large shareholders and value creation through corporate acquisitions in Europe. The identity of the controlling shareholder matters. *European Management Journal,* Vol. 33, p. 116 – 131. http://dx.doi.org/10.1016/j.emj.2014.09.001

6. Danzon P.,Epstein A.,Nicholson S. (2007), Mergers and Acquisitions in the Pharmaceutical and Biotech Industries, Managerial and Decision Economics. *Wiley InterScience*, Vol. 28, p. 307 – 328. http://dx.doi.org/10.1002/mde.1343

7. Dickerson A., Gibson H., Tsakalotos E. (1997), The Impact of Acquisitions on Company Performance: Evidence from a Large Panel of UK Firms. *Oxford Economic Papers, New Series,* Vol. 49, No. 3, p. 344 – 361. http://dx.doi.org/10.1093/oxfordjournals.oep.a028613

8. Firth M. (1980), Takeovers, Shareholder Returns, and the Theory of the Firm. *The Quarterly Journal of Economics*, Vol. 94, No. 2, p. 235 – 260. http://dx.doi.org/10.2307/1884539

9. Ghosh A. (2001), Does operating performance really improve following corporate acquisitions? *Journal of Corporate Finance* 7, p. 151 -178. http://dx.doi.org/10.1016/S0929-1199(01)00018-9

10. Healy P., Palepu K., Ruback R. (1997), Which Takeovers Are Profitable? Strategic or Financial? *Sloan Management Review,* p. 45 -57

11. Healy P., Palepu K., Ruback R. (1992), Does corporate performance improve after mergers. *Journal of Financial Economics*, Vol. 31, Issue 2, p. 135–175. http://dx.doi.org/10.1016/0304-405X(92)90002-F

12. Higgins M., Rodriguez D. (2006), The outsourcing of R&D through acquisitions in the pharmaceutical industry. *Journal of Financial Economics,* Vol. 80, Issue 2, May, p. 351–383. http://dx.doi.org/10.1016/j.jfineco.2005.04.004

13. IMS Institute for Healthcare Informatics (2012), The Global Use of Medicines: Outlook Through 2016, IMS

14. Kanzelmeyer C. (2012), Business development in a challenging pharma environment, hameln group. PLCD Seminar, p. 1 – 90

15. Lai J., Race T., Clark M., Parkes R., Blum H. (2012), Pharmaceuticals for Beginners 2012. *Deutsche Bank Makets Research, Industry Update*, p. 1 – 329

16. Lang L., Stulz R., Walking R. (1991), A test of the free cash flow hypothesis. *Journal of Financial Economics*, Vol. 29, Issue 2, p. 315 – 335. http://dx.doi.org/10.1016/0304-405X(91)90005-5

17. Martynova M., Rennebog L. (2008), A Century of Corporate Takeovers: What Have We Learned and Where Do We Stand? *Journal of Banking & Finance*, Vol. 32, Issue 10, p. 2148–2177. http://dx.doi.org/10.1016/j.jbankfin.2007.12.038

18. Martynova M., Rennebog L. (2011), The Performance of the European Market for Corporate Control: Evidence from the Fifth Takeover Wave. *European Financial Management,* Vol. 17, No. 2, p. 208–259. http://dx.doi.org/10.1111/j.1468-036X.2009.00497.x

19. Meeks G. (1977), *Disappointing Marriage: A Study of the Gains from Merger*,.Cambridge University Press, p. 1 – 109

20. MergerMarket, (2015), www.mergermarket.com, Access March 2015

21. PMLiVE, (2016), Top 25 pharma companies by global sales, www.pmlive.com

22. PhRMA (2015), Cost & Value of Medicines, www.phrma.org

23. Rahman R., Limmack R. (2004), Corporate acquisitions and the operating perfor-mance of Malaysian companies, Working version, p. 1 – 39

24. Savor P., Lu Q. (2009), Do Stock Mergers Create Value for Acquirers? *The Journal of Finance*, Vol. 64, No. 3, p. 1061-1097 http://dx.doi.org/10.1111/j.1540-6261.2009.01459.x

25. Smith R., Kim J. (1994), The Combined Effects of Free Cash Flow and Financial Slack on Bidder and Target Stock Returns. *The Journal of Business*, Vol. 67, No. 2, p. 281 – 310. http://dx.doi.org/10.1086/296633

26. Song M., Walkiling R. (2006), Anticipation, Acquisitions and Bidder Returns, working version, p. 1 – 49

27. Sudarsanam S., Mahate A (2003), Glamour acquirers, method of payment and post-acquisition performance : the UK evidence. *Journal of Business Finance & Accounting,* 30 (1) & (2), 0306-686X, p. 299 – 341. http://dx.doi.org/10.1111/1468-5957.00494

28. Walker M. (2000), Corporate Takeover, Strategic Objectives, and Acquiring-Firm Shareholder Wealth. *Financial Management*, Vol. 29, No. 1, p. 53-66. http://dx.doi.org/10.2469/dig.v31.n2.855

Contact information

Michal Raciborski, mgr, MSc, Dipl. Grande Ecole, Dipl.-Kaufmann
Poznan University of Economics
Department of Management, Faculty of Microeconomics
Aleja Niepodległości 10, 60-101 Poznan, Poland
michal.raciborski@gmail.com