# Value of the Acquiring Company and the Success of M&A Transaction in the Automotive Sector

Jakub Marszałek[1], Bogna Kaźmierska-Jóźwiak[2], Ewelina Niedzielska[3]

*Abstract:*

*Purpose: The aim of this paper is to analyze the relationship between the value of the acquiring company and the success of the M&A transaction. The success of the transaction is measured in terms of stock returns in mid-term. We use the sample consisting of 764 M&A transactions conducted globally in the automotive sector by listed companies over the period 2000-2018. The M&A transactions were identified using Thomson Reuters Eikon database.*

*Design/Methodology/Approach: We compared a number of indicators relating to the market valuation of a company pursuing an acquisition or merger at the time of finalizing the deal with a profitability indicator. The success or the failure of the transaction we measure in terms of stock returns in mid-term. Using the significance of differences test, the Mann-Whitney test, a comparative analysis was conducted between the company's valuation at the time of the merger or acquisition transaction and its valuation one year later.*

*Findings: The study findings show that about 50% of the transactions conducted in the automotive industry over the period 2000-2018 were successful for the acquiring company. The analysis of the value ratios for the sample shows that only the values of four ratios: P/S, EV/S, EV/EBITDA, EV/CFO, differ significantly between the companies in which M&A have been successful and those in which the effect has been defined as a failure.*

*Practical Implications: The results obtained may prove useful to investors associated with companies making or planning to make an acquisition of another entity. In addition, the conclusions may provide guidance to managers who are considering a merger or acquisition.*

*Originality/Value: Our study contributes to the existing literature in several ways. First the study examines the M&A transactions in under-researched sector – the automotive sector undertaken globally. Second, we use the data of the global conducted transactions. Third, we evaluate the post-merger value of the acquiring companies using different ratios.*

*Keywords: Mergers and Acquisitions, M&A, automotive industry, value, value ratios.*

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*[1]Associate Professor, Department of Corporate Finance Management, University of Lodz, Poland, jakub.marszalek@uni.lodz.pl;*
*[2]Associate Professor, Department of Corporate Finance Management, University of Lodz, Poland, bogna.kazmierska@uni.lodz.pl;*
*[3]Assistant Professor, Department of Corporate Finance Management, University of Lodz, Poland, ewelina.niedzielska@uni.lodz.pl;*

## 1. Introduction

Mergers and Acquisitions (M&A) are a very common investment strategy for companies looking to increase corporate growth or reinforce their competitive advantage over competitors. The primary goal of M&A transactions is to raise the shareholder wealth of acquiring companies by achieving synergy and efficiency effects (Touch and O'Sullivan, 2007; Vaara and Tienari, 2002). The benefits of corporate consolidation processes are not fully comparable or measurable. Determining whether a transaction succeeds or fails is not easy. Transaction effectiveness analysis can have both a quantitative and a qualitative dimension.

The study can look at the financial effects of the transaction as well as the strategic or organisational effects. From the shareholders' point of view, the rationale for carrying out a corporate merger transaction is the expectation that the value of the capital-combined and often organisationally integrated companies will be greater than if they had operated independently.

It should be noted that there is a significant variety in both the definition of the performance of M&As and its measurement. Approaches differ along a number of dimensions, including time horizon (e.g., a few days before and after the acquisition announcement) and organizational level of analysis (e.g., improvement of firm performance or competitive position) to process or transaction level (e.g., quality of post-closing execution) (Zollo and Meier, 2008).

Meglio and Risberg (2011) note that both financial and non-financial contexts are used in M&A research. Financial domain consists of market performance and accounting performance measures. Market performance measures indicate two different dimensions, the market value of the company (measured by i.a., cumulative abnormal returns - CAR, cumulative average abnormal returns - CAAR) and measures that take the systematic risk (Jensen's Alpha or Beta coefficient) into account. Market performance measures are available for only publicly traded firms.

As Meglio and Risberg (2011) suggest, accounting measures are typically expressed as ratios and are based on financial data from the companies' accounting records. Three separate dimensions may be reflected in accounting measures. The first dimension is profit, which can be calculated using net income, return on assets (ROA), or return on sales (ROS). Growth is the second factor, and it can be quantified, for instance, by sales growth. Liquidity and leverage, which make up the third dimension, are monitored, for instance, by cash flow.

This study focuses on the topic of financial performance of mergers and acquisitions. The aim of this paper is to analyze the relationship between the value of the acquiring company and the success of the M&A transaction. The success of the transaction is measured in terms of stock returns in mid-term. We use the sample consisting of 764 M&A transactions conducted globally in the automotive sector by

listed companies over the period 2000-2018. The M&A transactions were identified using Thomson Reuters Eikon database.

We formulate following hypothesis: successful M&A transaction are associated with higher ratios describing value of the acquiring companies in the automotive industry than the failed transactions. Our study contributes to the existing literature in several ways. First the study examines the M&A transactions in under-researched sector – the automotive sector. Second, we use the data of the global conducted transactions. Third, we evaluate the causal effect of M&A on firm value using different ratios.

The rest of the paper is organized as follows. Section 1 presents the theoretical basis for this research. Section 2 presents data and the research methodology, the results of the study are presented in section 3, while the last section presents conclusions.

## 2. Literature Review

A major driving force behind mergers and acquisitions is to increase corporate growth or shareholder value. M&A's performance has attracted the scholars all over the world. As Reneboog and Vansteenkiste (2019) suggest, despite the abundance of empirical evidence on the wealth effects of M&A, is not easy to conclude as to whether the transactions create or destroy corporate value. Due to the inconclusive results, a question, whether the M&A transactions create value, is still open and valid.

Literature presents different approaches to the problem of measuring M&A performance. The approaches can be categorized based on different dimensions. Taking into the consideration the time horizon, we can distinguish short- to medium-term and long-term measures. The use of short-term vs long-term windows (of an accounting and financial character) in event studies has been a topic of discussion for a long time (Zollo and Meier, 2008). At best, the evidence is still circumstantial. For instance, Healy *et al.* (1992) discovered a significant correlation between long-term post-acquisition increases in operating cash flows and short-window anomalous stock returns.

The ability to separate the M&A's effect from other factors affecting the firm in the years after the deal is a difficulty with both accounting measurements and stock returns used to gauge long-term success (Reneboog and Vansteenkiste, 2019). While the choice of model for calculating expected returns becomes more crucial as the length of the event window increases, the specification of benchmark returns only causes small variations in the context of short-run event studies.

Small errors in building a benchmark expected return model can have significant repercussions on the importance and amplitude of the results since they can lead to huge errors in the abnormal long-run returns (Kothari and Warner, 2007; Bessembinder and Zhang, 2013).

Cumulative abnormal returns (CARs), which are the sum of the abnormal returns (AR) over an event window, are a straightforward and well-liked cross-sectional method for quantifying both, short-term and long-term abnormal returns following the M&A. To determine the abnormal returns (AR) the standard event study methodology of Brown and Warner (1985) is used. The abnormal return is the difference between the ex-ante expected return ($E(R_{i,t})$) and the ex-post realized return ($R_{i,t}$).

A different, widely used approach is the buy-and-hold abnormal returns (BHARs), which aggregates abnormal returns geometrically rather than arithmetically across the event period and permits compounding, in contrast to the CARs. Early long-term event studies largely relied on BHARs since they were founded on the notion that real investors keep assets for a predetermined amount of time rather than generating anomalous returns on a daily basis (Barber and Lyon, 1997). After the biases in the BHAR approach are taken into account, further research, such as those by Fama (1998), Mitchell and Stafford (2000), and Dutta and Jog (2009), demonstrate that BHARs are frequently inconsequential.

Accounting-based performance metrics that examine post-merger performance focus on, among others on the accounting ratios (Meeks, 1977; Ravenscraft and Scherer, 1987; Rahmann and Limmack, 2004; Kumar, 2009; Sinha *et al.,* 2010), cash flows (Healy, Palepu and Ruback, 1992; Linn and Switzer, 2001; Rahmann and Limmack, 2004; Tuch and O'Sullivan, 2007; Powell and Stark, 2005), revenue growth rate, cost level in relation to the performance of companies not involved in M&A transactions (Ghosh, 2001). These metrics reflect the value-added by the M&A transaction, therefore might be a more immediate indicator of synergistic benefits or losses (Fu, Lin and Officer, 2013).

The M&A's value creation for the shareholders of the target company is often confirmed in the literature (Jensen and Ruback, 1983; Mulherin and Boone, 2000; Martynova and Renneboog, 2011; Netter, Stegemoller and Wintoki, 2011; Alexandridis *et al.,* 2017), while the results for the shareholders of the acquiring company are mixed (Mateev, 2017). As Touch and O`Sullivan (2007) suggest, the short-term event period used to evaluate the performance of bidders varies significantly between research, with some including performance comparisons up to four months before the transaction announcement.

Despite the event window selected, the aggregate results indicate little returns for the shareholders of the acquiring company. Studies conducted in the UK and the US show either no discernible difference between acquirer returns or noticeably negative acquirer returns surrounding the bid announcement (Lang *et al.,* 1991; Walker, 2000). Based on a sample of large international acquisitions made by UK companies between 1985 and 1994, Gregory and Mc Corriston (2005) suggest that

regardless of the acquisition's location, short-run returns are insignificantly different from zero.

They draw the conclusion that M&A transactions do not, at the very least, improve the performance of the acquiring (or combined) firm. The average returns accrued over the three days around the announcement day are moderately negative (0.52%), but statistically significant, according to an analysis done by Hackbarth and Morellec (2008). According to Bruner (2002), the announcement day of a merger or acquisition has no discernible impact on the stock prices of corporations that are bidding.

However, some evidence from other countries tends to be more encouraging than those reported for the UK and US - for instance, Campa and Hernando (2004) show insignificant benefits from a sample of Continental European transactions, Ben-Amar and Andre (2006) present positive returns from a sample of listed Canadian acquirers.

A lot of research has also been done on acquirers' long-term post-acquisition performance. Early studies that suggested M&A transactions may have a negative effect on shareholders' long-term value were a major driving force for much of this (Malatesta, 1983; Asquith, 1983). Some research suggests that long-term returns are either negligible or insignificant. Insignificant or negative long-term acquirer market and accounting returns are found by King *et al.* (2004), with returns beginning to decline 22 days following the announcement of the deal. They draw the conclusion that M&A transactions do not, at the very least, improve the performance of the acquiring (or combined) firm.

Based on a sample of UK transactions, Conn *et al.* (2005) claim that the acquirers lose about 20% over three years. Gregory and McCorriston (2005) argue that even while long-term returns are, on average, not considerably different from zero, they vary greatly by region. Particularly, companies underperform after US acquisitions, show negligible returns after EU acquisitions, and exhibit considerable positive returns after acquisitions elsewhere.

The results, however, are also dependent on the payment method (Friedman, 2006; Bouwman *et al.,* 2009; Zaremba, Szyszka, Płotnicki and Grobelny, 2018). Studies, mostly focusing on the UK and US, shows that while cash-only transactions are at least not value-destructive, acquirers who use stock to finance acquisitions suffer significant losses (Travlos, 1987; Asquith *et al.,* 1990; Walker, 2000; Draper and Paudyal, 2006).

Renneboog and Vansteenkiste (2019) suggest at least three reasons why long-term returns for the acquirers are negative. The most frequently used reason is that because M&A news only causes a gradual adjustment in the market, the long-term return accurately reflects the underlying transaction value that was not reflected in

the announcement returns. It means that the projected synergies are initially exaggerated and only gradually corrected. Additionally, the EPS myopia hypothesis, contends that managers are more willing to overpay for a transaction if it can boost EPS in the short term. A negative long-term post-acquisition stock correction will occur if the market first overvalues such companies.

The studies suggest that acquirer's pre-acquisition performance (Campa and Kedia, 2002), method of payment (Sudarsanam and Mahate, 2003) and size (Moeller *et al.,* 2004) are determinants of M&A success. However, there is no suggestion that the target's corporation status (public vs. private; Fuller *et al.,* 2002) or the proportion of the target's equity to the acquirer's equity (Asquith *et al.,* 1983) has a considerable impact on valuation.

Mergers and acquisitions can improve the efficiency and productivity of entire industries and affect the competitiveness of specific companies (Hitt *et al.,* 2001). Companies in the automotive industry have been doing mergers and acquisitions for decades in order to obtain a competitive edge, establish market dominance, and grow their business internationally (Caiazza and Nueno, 2014). Due the fact that industry specificity is relevant in the M&A's efficiency, productivity and value creation, the analyses often focus on specific industries, i.a., the automotive industry.

Mentz and Schiereck (2008) examine a sample of 201 M&A transactions in the automotive supplier industry undertaken over the period 1981 and 2004. The results present a significant positive short-term abnormal return to acquiring companies in the short term. The findings diverges from the prior studies. The authors explain that this conclusion is the result of the capital markets' perception of industry-specific synergy potential: for the automotive supplier industry - M&A transactions appear to be an effective strategy for achieving synergies and efficiency gains.

Mentz and Schiereck (2008) examined also the influence of the cross-border aspect on the share price reactions (based on 100 cross-border horizontal mergers and acquisitions that were undertaken in an automotive supply industry). They confirm a significant wealth creation for acquiring firms. The authors emphasize the cross-border characteristic of the transactions, that is important in a significant wealth gain, however they suggest that M&As in general improve wealth in the automotive supply sector.

Laabs and Schiereck (2010) examined the effect of M&A transaction volume and acquirer's bidding experience on long-term post-acquisition performance using 230 takeover announcements in the US automotive industry between 1981 and 2007. Particularly, the size of M&A transactions, which is calculated as the total deal volume in US dollars, has been used as a measure of the level of productivity. According to the study's findings, small deals produce positive long-term averages, medium-sized deals lead to relatively mediocre results, and large deals are associated with negative returns.

### 3. Data and Research Methodology

Our sample consist of large sample of firm-level financial data of M&A transactions conducted over the period 2000-2008 globally in the automotive sector, collected from Thomson Reuters Eikon database. We included in the sample transaction from the period 2000-2018 that met the following criteria:

- the transaction was announced by listed companies from the automotive sector,
- the acquirer company purchased more than 50% of the shares in the target company,
- the acquiring company was qualified in the Eikon Thomson Reuters database as the automotive companies, either in the "Automotive & Auto Parts" and "Automobiles & Components".

Finally the sample comprises 764 transactions conducted globally. For each transaction, we focused on the acquirer firm's financial fundamentals data for a time period of 2000-2018. The structure of transactions by home country of the acquirer is shown in Table 1.

**Table 1.** *The structure of transactions by home country of the acquirer company*

| Acquirer home country | N | % |
|---|---|---|
| United States | 222 | 29.1 |
| China (Mainland) | 81 | 10.6 |
| Japan | 81 | 10.6 |
| Canada | 46 | 6.0 |
| France | 44 | 5.8 |
| India | 34 | 4.5 |
| South Korea | 33 | 4.3 |
| Germany | 30 | 3.9 |
| United Kingdom | 28 | 3.7 |
| Sweden | 21 | 2.7 |
| Malaysia | 20 | 2.6 |
| Australia | 19 | 2.5 |
| Italy | 13 | 1.7 |
| Spain | 13 | 1.7 |
| Brazil | 10 | 1.3 |
| Netherlands | 10 | 1.3 |
| Russia | 9 | 1.2 |
| Finland | 8 | 1.0 |
| Norway | 6 | 0.8 |
| Austria | 5 | 0.7 |
| Thailand | 5 | 0.7 |
| Hong Kong | 3 | 0.4 |
| Indonesia | 3 | 0.4 |
| Singapore | 3 | 0.4 |

| Turkey | 3 | 0.4 |
|---|---|---|
| Denmark | 2 | 0.3 |
| Mexico | 2 | 0.3 |
| Taiwan | 2 | 0.3 |
| Belgium | 1 | 0.1 |
| Bulgaria | 1 | 0.1 |
| New Zealand | 1 | 0.1 |
| Pakistan | 1 | 0.1 |
| Poland | 1 | 0.1 |
| Tunisia | 1 | 0.1 |
| Ukraine | 1 | 0.1 |
| Vietnam | 1 | 0.1 |
| **Total** | **746** | **100** |

*Source: Own elaboration.*

A total of 222 M&A (29.1%) were undertaken by US investors in the automotive industry over the period 2000-2018. A significant proportion of M&A (29%) involved investments undertaken in the United States (26.35). The second most active country in undertaking mergers and acquisitions was China (81 transactions – 10.6%). The country was slightly more likely to be the target than the acquirer, with 73 of the 81 mergers involving domestic investment. The third active country was Japan, with 81 mergers, of which 50 were domestic (Table 1). Then as active acquiring countries we can mention Canada (46 transactions - 6.0%), France (44 – 5.8%), India (34 – 4.5%) and South Korea (33–4.3%). The share of M&A transactions carried out by other countries was less than 5%.

The majority of M&A conducted in the automotive industry over the period 2000-2018 involved domestic cases. In particular, companies from Malaysia (n = 30), as well as from Indonesia (n = 3), Denmark (2), Taiwan (2) and Bulgaria, Pakistan, Poland, Tunisia, Ukraine and Vietnam (one merger each) were domestic. Australian (18 out of 19), Chinese (73 out of 81), Russian (7 out of 9), Turkish (2 out of 3) companies also conducted out the vast majority of mergers in their home country.

The starting point of the consolidation was defined as either the date of the public announcement of the intention to M&A or the date on which the acquisition offer was accepted. In order to eliminate the undesirable phenomenon of abnormal rate of returns as a side effect of the public announcement, the study was carried out at two intervals: on the seventh day prior to the announcement of the planned M&A (n-7) and on the last balance sheet day of the year, which was 365 days after the announcement of the transaction.

Stock market indices were then selected as a benchmark for the change in the companies' share prices. The authors decided to compare the share prices of the acquiring company with the index of the stock exchange on which it is listed. Due the fact that not all stock markets (e.g., Austria, Belgium, the Czech Republic,

Indonesia, etc.) publish an index of the automotive industry, only one main stock market index for each market was classified for the analysis.

In the next step, the change in the share price of the acquiring company was compared with the change in the value of the stock market index, keeping the observation dates the same. The value of the profitability of consolidation (VPC) was determined according to the following formula:

$$VPC = \frac{RIC365 - RIC7}{RIC7} - \frac{IDX365 - IDX7}{IDX7} \tag{1}$$

where:
$RIC_{i,365}$ — the share price of the the i-company for day +365 after the transaction,
$RIC_{i,-7}$ — the share price of the the i-company for day (-7) before the transaction,
$IDX_{i,365}$ — the index price of the the i-company for day +365 after the transaction,
$IDX_{i,-7}$ — the index price of the the i-company for day (-7) before the transaction.

A positive VPC value indicates a successful consolidation. Otherwise, the transaction was classified as unsuccessful. This approach made it possible not only to assess the outcome of a merger or acquisition, but also to determine its intensity. The results obtained in this way are of comparative value to the existing literature in the area of mergers and acquisitions.

In the next step, seven indicators characterizing the market value of the acquiring company in the year prior to the acquisition were selected based on the literature (Healy *et al.,* 1992; Wu and Yeung, 2007; Bianconi and Tan, 2019; Mazzariol and Thomas, 2016; Shaffer and Lee, 2022). We use different enterprise value ratios (Table 2) - the ratio of enterprise value over earnings (before interest, taxes, depreciation and amortization) - EV/EBITDA, the ratio of enterprise value over cash flow from operating activities – EV/CFO, the ratio of enterprise value over sales – EV/S. We also use other value metrics, such as Cash Flows (CF), the market-to-book ratio, the price-to sale ratio (P/S), the price to cash flow ratio (P/CF). The indicator values were obtained from the Eikon Thomson Reuters database.

*Table 2. Financial ratios used in the study*

| Indicator | Formula |
|---|---|
| Cash flow (CF) | $net\ profit + depreciation - CAPEX - changes\ in\ working\ capital$ |
| MV/BV | $\dfrac{capitalization}{equity} = \dfrac{share\ price}{\dfrac{book\ value}{number\ of\ shares}}$ |
| Share price to Sales (P/S) | $\dfrac{share\ price}{\dfrac{total\ revenues}{number\ of\ shares}}$ |

| Share price to Cash flow (P/CF) | $\dfrac{share\ price}{\dfrac{gross\ profit + depreciation}{number\ of\ shares}}$ |
|---|---|
| Enterprise value to Sales (EV/S) | $\dfrac{EV\ (capitalization + liabilities - cash)}{net\ revenues}$ |
| Enterprise value to EITDA (EV/EBITDA) | $\dfrac{EV\ (capitalization + liabilities - cash)}{EBITDA}$ |
| Enterprise value to CFO (EV/CFO) | $\dfrac{EV\ (capitalization + liabilities - cash)}{cash\ flows\ from\ operating\ activities}$ |

***Source:*** *Own elaboration.*

Comparing mean and median values, as well as skewness and kurtosis coefficients, it was found that most of the variables (PVC and financial ratios) were characterized by the occurrence of outliers, which resulted in significant distribution's deviations of the variables from the normal distribution. In comparison with the results of the Shapiro-Wilk test, it was decided to use non-parametric methods to compare the population from the point of view of the financial indicators - the Mann-Whitney test, which requires at least an ordinal level of measurement of the dependent variable. It is used to compare two independent populations. The null hypothesis is of the form:

$H_0$: $F_1 = F_2$
$H_1$: ~ $H_0$,

where F1 and F2 are the distributions of the probability of the dependent variable in the populations being compared.

If there are no tied ranks in the sample, the test statistic:

$$Z = \frac{U - \frac{1}{2} \cdot n_1 \cdot n_2}{\sqrt{\frac{1}{12} \cdot n_1 \cdot n_2 \cdot (n_1 + n_2 + 1)}}, \tag{2}$$

where: $U = n_1 \cdot n_2 + \frac{n_1 \cdot (n_1 + 1)}{2} - R_1$.

If there are tied ranks in the sample, the test statistic is:

$$Z = \frac{U - \frac{1}{2} \cdot n_1 \cdot n_2}{\sqrt{\frac{n_1 \cdot n_2}{n \cdot (n-1)} \cdot \left[ \frac{n^3 - n}{12} - \sum \frac{t_i^3 - t_i}{12} \right]}}, \tag{3}$$

where: $n = n_1 + n_2$, t – number of observations associated with a given rank.

In both cases, the Z-statistic has an approximately normal distribution with parameters 0 and 1. Since the null hypothesis states that two independent samples come from a population with the same distribution, differences between populations are considered statistically significant if the probability in the Mann-Whitney test is below the significance level. The Mann-Whitney test was used to compare individual financial ratios between companies where the merger was successful against those where it was unsuccessful.

## 4. Results and Discussion

Due to the study results, nearly half (49%) of the M&As initiated were successful obtaining a positive value of the VPC ratio. The value of the VPC ratio ranged from -1.05% to 3.21%. For half of the transactions the ratio was at least -0.01, for 75% a minimum of -0.24 and for 25% no less than 0.30. Both the variation in results as well as the skewness of the distribution and kurtosis are high.

Analyzing the values of the acquiring companies' valuation indices in the observed consolidation period (Table 3), it should be emphasized that all of the studied indices are characterized by significant differentiation, as well as skewness of distribution. Usually, the asymmetry of the distribution is right-handed, indicating the presence of companies with unusually high values of valuation indicators. The exception is income from free cash flow, where we observe a strong leftward skewness, indicating the presence of companies with unusually low indicator values.

**Table 3.** *Valuation ratios of the target companies - descriptive statistics*

| Variable | n | Median | Q1 | Q3 | Mean | SD | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|---|
| CF | 669 | 3.38 | -2.61 | 7.39 | -2.46 | 44.60 | -9.00 | 112.13 |
| MV/BV | 572 | 2.41 | 1.33 | 5.02 | 5.90 | 27.20 | 20.36 | 454.70 |
| P/S | 677 | 0.68 | 0.32 | 1.26 | 1.88 | 7.26 | 9.97 | 111.10 |
| P/CF | 644 | 7.87 | 4.39 | 13.63 | 13.03 | 22.77 | 10.81 | 170.27 |
| EV/S | 696 | 0.79 | 0.51 | 1.41 | 2.01 | 9.75 | 15.88 | 297.88 |
| EBITDA (EV/EBITDA) | 653 | 7.66 | 5.37 | 11.43 | 11.32 | 20.80 | 12.26 | 192.93 |
| EV/CFO | 606 | 10.79 | 7.00 | 18.60 | 22.45 | 45.96 | 7.15 | 66.65 |

*Source: Own elaboration.*

For each of the indicators, the kurtosis is positive and very high, indicating that the distributions are characterized by significant slenderness relative to a normal distribution. This implies that the assessment of the level of the variables in question for the companies under study should be based on the median, and the models constructed require a transformation of the variables to negate the effect of the outlier.

The value of free cash flow (CF) reached, on average, a value below the optimum level - Me = 3.38. This is due to the fact that for one-third of the companies this indicator took on a negative value, for 25% even lower than -2.6. It can be concluded that for the M&A transaction conducted in automotive industry, the share price provides a good value for the free cash flow generated, but this applies for about half of the transactions, while in a third, due to the increase in receivables and inventories, the free cash flow income is negative.

The market value to book value (MV/BV) varies widely. For half of the companies, its value reached on average about 2.4. A ratio above 1.3 was recorded for 75% of the companies and above 2 for 58%, for 8% it is above 10 and for 3% it is above 30. The highest level of valuation was recorded in companies located in Australia and the United States. In contrast, the lowest value occurred in the transaction involving the Korean company Hankook Tire Co Ltd and the Australian company ARB Corp Ltd.

The P/S ratio tells how much the investor has to pay for a dollar of sales revenue generated by a company. For half of the automotive companies that completed M&A transactions, the value of this ratio did not exceed 0.68, for half of the most unusual companies it ranged between 0.32 and 1.26, and for 5% it was above 5. A ratio above 1 was achieved by 32% of companies, for 2.5% it exceeded 10. Maximum values exceeding 70 were recorded for Ballard Power Systems Inc, Rhino Outdoor International Inc and Advanced Engine Components Ltd.

The market price of shares relative to cash flow per share (P/CF) reached an average of about 8 (Me = 7.87). The results of the ratio varied strongly and ranged between 4.4 and 13.6. The highest value exceeded 42 (above the 5th percentile), and for 8% of the companies it reached 100. The maximum value - above 1000 - was observed for entities from China, Australia and the USA.

The value of the enterprise value to cash flow from operations (EV/CFO) ratio for half of the companies was at least 10.79. This means that they would need more than 10 years to buy back their businesses with the cash they generate during this time. About ¼ of all companies should take no less than 18.6 years to do so, and 75% no less than 7 years. For 5% of the companies, it would be at least 75 years. Table 4 presents the value of the ratios for successful and unsuccessful transactions.

The study results show that only the values of four ratios: P/S, EV/S, EV/EBITDA, EV/CFO, differ significantly between the companies in which M&A have been successful and those in which the effect has been defined as a failure. The optimal level of the ratios can be observed for both groups of transactions – successful and failed. A similar conclusion applies to the companies achieving the least desirable values of the ratios. Therefore, the results do not support the hypothesis formulated in the paper and we are not able to conclude that the success of a transaction is connected with individual financial ratios (used in the study).

**Table 4.** *The ratio values comparison - successful vs unsuccessful transactions*

| Ratio | Failure | | Success | | p |
|---|---|---|---|---|---|
| | n | Me | n | Me | |
| **Valuation** | | | | | |
| P/S | 355 | 0,72 | 322 | 0,58 | 0,007*** |
| EV/S | 359 | 0,89 | 337 | 0,72 | 0,001*** |
| EV/EBITDA | 331 | 8,10 | 322 | 7,29 | 0,015** |
| EV/CFO | 310 | 11,90 | 296 | 9,69 | 0,001*** |

*Note: n – sample size, Me – median, * α = 0,10, ** α = 0,05, *** α = 0,01*
*Source: Own elaboration.*

On the other hand, the presented results confirm that the success of a transaction is the result of many components, so it is important to take into account their interplay through the use of regression models, which will be the next stage of the ongoing research.

## 5. Conclusions

The study focuses on a sample of 764 globally conducted M&A transaction in the automotive industry over the period 2000-2018. The findings show that the home countries of the most active acquiring companies are the United States of America, China and Japan. We have noticed that many of the transactions were of the domestic character.

Analyzing the relationship between the value of the acquiring company and the success of the consolidation we use seven rations describing the value of an enterprise. The success or the failure of the transaction we measure in terms of stock returns in mid-term. The study findings show that about 50% of the transactions conducted in the automotive industry were successful for the acquiring company.

The analysis of the value ratios for the sample shows that only the values of four ratios: P/S, EV/S, EV/EBITDA, EV/CFO, differ significantly between the companies in which M&A have been successful and those in which the effect has been defined as a failure. Taking into the consideration the findings, we cannot conclude that higher valuation of acquiring company at the time of the transaction is accompanied with the with a positive stock return for an acquirer higher likelihood of consolidation. The results of statistically significant differences seem to be insignificant in view of the fact that not all differences are statistically significant.

Within the former, however, is worth noting a pattern - acquiring companies generally had lower valuations when M&A transaction was successful. This fact can be explained by the so-called base effect. The low valuation of the acquiring company, in the case of a successful transaction, made it possible to achieve a higher rate of return. On the other hand, a high valuation of the acquiring company, even in

the conditions of a successful consolidation, made it much more difficult to further increase the company's value. This may explain the low percentage of successful mergers with a high value of the acquiring company.

On the other hand, this may prove that transaction does not necessarily lead to an increase in a company's stock market valuation, and the base effect alone does not affect the assessment of such a relationship. In an analysis of the literature to date, the distinctiveness of opinion in this regard is clear. The cost of consolidation may be too high to build additional value for the merged entities. It is still important to remember that the mere prospect of consolidation costs can negatively affect the acquiring company's valuation at the time of the transaction. As a result, obtaining an additional rate of return will be easier.

The above study seems to partially solve the problem of the legitimacy of acquisition mergers in the context of valuing the consolidating company. Further research, complementing the existing body of work in this area, should be focused on the valuation aspects related to the location of the transaction. For instance, studies on the issues discussed in this paper could cover the analyses taking into the account the classification of the home countries of the acquiring companies into emerging and developed.

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