Analysis of the Behavior Mergermarket in the Conditions
the Financial Crisis

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1. Introduction

Company transformations have become an organic part of their development driven by the effort to achieve higher success in business. The determining factor of company transformations was the development of the external and internal environment, which occurs in the context of the current significant market globalization. In the conditions of an economic boom, the national product grows markedly faster than the long-term growth rate, the employment rate and production rise and the level of aggregate demand for goods and services is very high.

For companies this means an opportunity for an expansion, an increase in production and also investments and profits. The intensity of entrepreneurial activities and the number of company transformations grow. On the other hand, when the growth slows down, the level of GDP drops as well as the employment rate and company incomes and profits. Logically, in this period (period of economic recession) we would expect a reduction in entrepreneurial activities and thus also company transformations as a consequence of the decreasing entrepreneurial trust, decrease in expenses on capital investments, lower demand for import, slump of financial markets and heavy price discounting [18]. However, the link between activities in the area of company transformations and the economic cycle is not so clear; undervalued financial markets represent an opportunity for interesting investments and an expansion of entrepreneurial activities.

The subject of our interest is company transformations which involve their bonding and control takeover. These are acquisitions and mergers, which according to Alkn and Overy [1] represent over 49 % (when measured by the number of deals) or 58 % (when measured by the volume of deals) of all company transformations implemented globally in 2007–2010. The second important category of transformations is divestments [9], when companies sell off their controlling interest (> 30 %) in one or more of their fields of activity in one or more of their businesses.

According to reports of the Bank of America, the problems in the financing of entrepreneurial and private activities are brought about by turbulences in financial markets [2]. In February 2007, credit risk was overvalued and the unprecedented capital losses caused by a sharp drop in the value of structured credit products based on mortgage bonds launched the financial crisis in the USA, which brought a fall in company profits. During that year, many mortgage companies and US investment banks closed their business. The panic in the financial markets forced investor to invest in commodities in order to maintain their value. Financial speculations in commodity futures after the fall of financial derivatives markets contributed to the rise in global prices of food and oil. In comparison with the previous bank crisis 2001 – 2003, which took place during the last decade. At the next stage of the study, the research methodology will concentrate on the assessment of the economic efficiency of implemented mergers.

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there has been an economic growth, measured by GDP and GDI indicators. The International Monetary Fund (IMF) estimates that large US and European banks lost over a trillion USD of toxic assets and bad loans from January 2007 till September 2009. Due to their losses, banks in the USA were reduced by 60 % whereas banks in the eurozone by 40 % only.

Analyses of causes of financial crises indicate creations of price bubbles as a consequence of excessive risk taken by investors and provision of unsecured credits [16] for these trades. Ineffective liquidity and failure of debtors leads to a drop in asset prices, fall of market and transition of problems from the financial sector to real economy [7]. Some partial studies confirm the links between the waves of mergers and acquisitions and the behaviour of financial markets [10] but the effect of a financial crisis on transformation activities of companies has not yet been clearly proved. Therefore, the aim of this paper is to establish, theoretically and empirically, the effect of a financial crisis on the merger activity of companies in the conditions of a specific European economy.

2. Historical development of mergers and acquisitions

Activities in the areas of mergers and acquisitions do not occur evenly, they fluctuate in dependence on the level of the economic environment, the development of financial markets and especially on the ideas of bidders and target businesses concerning the price of a takeover. Some authors in this respect use the term merger and acquisition waves – these waves come at a certain level of development of an economy. E.g. Levy and Sarat [13] talk about 3 waves, Bobenic-Hintosova [4] mention 4 waves, Bruner [6] divides the fourth wave into two: a) and b), Martynova and Rennebook [14] differentiate 5 waves, Lipton [13] identifies 6 waves of mergers and acquisitions. There are also differences in the temporal distribution of these waves as presented by the above mentioned authors. According to Lipton, the waves are as follows and they represent a considerable deviation from the gradually growing trend of global mergers and acquisitions:

Wave 1: 1893 – 1904

The first wave was characterized by horizontal combinations of companies, in which companies in the same fields of business merged. Their purpose was to reach a higher share in the market and the effort to monopolize the fields (raw material extraction, metallurgy, engineering, transport, car production and telecommunication). The wave started to drop when antitrust regulations became effective.

Wave 2: 1919 – 1929

In the second wave vertical combinations took hold, through which a bidder expands the company backwards, back to the sources of raw material, or forwards, towards the consumer. Due to the tightening of antitrust regulations, the interest shifted towards oligopolies. The wave coincided with the boom in US stock market prices and ended with the Wall Street Crash and the following economic recession.


This period is characterized by the creation of conglomerates, which are formed by companies with activities in non-related fields. Entering new business fields was supported by the stronger US economy and bullish trends (bull market). The end of the wave was affected by the decline of conglomerates and the non-existent contributions expected from the diversification.


In the fourth wave, the decline of conglomerates continued and most of the implemented acquisitions had a character of a hostile takeover bid. Companies were purchased through financing by debt – leveraged buy-out – which brought about an increase in trades in markets with junk bonds. The target businesses used newly developed tactics to defend against the hostile takeovers. This wave penetrated the European market as late as at the end of 1980s in the form of cross-border horizontal mergers and acquisitions. Also speculators in stock markets profited from the business combinations as they were able to profit even if the mergers were finally not successful.

Wave 5: 1993 - 2000

In the 1990s managers' and owners' conviction predominated that expansion of a company will strengthen its competitiveness and stability. Companies started to consider possible advantages of company combinations and stock markets and mergers expanded again. Strengthening of operations and obtaining new technologies was mainly manifested in industrial fields, telecommunications, media, and entertainment sectors. Growth was also manifested in international acquisitions and mergers. The fifth wave ended when the internet bubble burst and big business financial scandals came.

Wave 6: 2003 - 2006

The impulse for the sixth and for now last wave was globalization, support from governments of some countries (e.g. France, Italy and Russia) to create strong national or global champions, the rise in commodity
prices, availability of low-interest financing, hedge funds and other stockholders’ activities. The huge growth of private capital funds was accompanied by an increase in purchases initiated by managers. The burst of real estate bubble in the USA and the beginning of the global mortgage and credit crisis can be considered the end of this wave.

In each wave of mergers and acquisitions we can find sensible motives for company combinations which correspond to the degree of the development of society. As regards economic motives, investors or the management believe that two or more businesses together will be of more value than separately. Implementation of these combinations is supported by generally valid economic laws, such as economies of scale in relation to horizontal mergers, economies of vertical integration, non-used tax shields, removal of bw production efficiency, diversification, lower financial costs, etc. We may think, together with other authors [6] that at the top of the economic cycle businesses have free cash funds and acquisitions and mergers represent good investment opportunities for them. A transformation can bring a higher economic potential as regards competitiveness than repeated investments in company internal changes, construction of new plants, implementation of new technologies, etc. The growth of world economy promotes efforts towards concentration of capital and application of acquisitions and mergers in a global scale. Looking at the opposite stage of the economic cycle, in the period of economic problems and low capital prices in financial markets activities in the area of mergers and acquisitions should increase, not slow down. The economic motive is probably somehow related to growing markets, when purchase is more intensive. Generally however, no clear and strong correlation between the progress of the economic cycles and activities in the area of mergers and acquisitions has been found [5].

The development of business combinations (number and volume of transactions) in the last period is presented in Figures 1 and 2.

3. Methods

The research focuses on economic causes and consequences of mergers. It is based on the conditions in the territory of the Czech Republic determined by the national and European regulations of the trade and financial law. As regards the temporal range, it involves the last 10 years, from 2001 till 2010, in which two financial crises took place. In contrast to the studies conducted so far, we cannot use global statistics such as Mergerstat for two reasons:

1. The available databases do contain the data on individual European economies but they do not differentiate between acquisitions and mergers.
2. They do not contain detailed data on mergers which are necessary for a deeper analysis of their causes. For these reasons, it was necessary to create our own database first, which would include all mergers implemented in the monitored period in the Czech Republic (both domestic and cross-border). The basic dataset included all company transformations from which one continuing company (successor) remained and one or more of the participating entities ceased to exist (company acquired). Four types of mergers are distinguished:

- merger type 1: a merger during which one or more companies are absorbed by an existing (successor) company which takes over their equity,
- merger type 2: a merger during which two or more companies cease to exist without liquidation and their equity is transferred to a newly established successor company,
- merger type 3: division of a company by combination, during which one of the divided companies combines with another existing company,
- merger type 4: division of a company by demerger, during which a demerged company combines with another existing company.

The source of the data was Trade Bulletin [21], which contains all information made public by companies in the range stipulated by law. The obtained information had to be verified with respect to the really implemented mergers (entered in the trade register) and redundant data and only then they were inserted in the basic dataset. The structure of the data obtained from the collection of documents in the trade register [20] included:

- identification numbers of companies which took part in the merger,
- the date of the decisive day of the merger and the date when the merger became legally effective,
- the type of the merger,
- names and headquarters of participating companies,
- the field of economic activity of the successor company,
- majority owner, distinguishing a domestic or a foreign one,
- other economic data necessary for the assessment of the economic situation of the company after the merger.

To assess the activity in the field of mergers, the number of really implemented mergers and their intensity in the form of the total value of assets of the successor company are monitored. To reveal the development trend, the relative incremental (marginal) indices of interannual changes are calculated using equation (1) and compared with the changes of the real GDP of the economy in the monitored years. The dependence between the calculated indices is measured by Pearson’s coefficient of correlation.

\[
\Delta_j = 100 \cdot \frac{(X_{t+1} - X_t)}{X_t} \quad (1)
\]

where:
- \(\Delta\) - interannual change of the quantity in %
- \(j\) - the sign of the quantity
- \(X\) - absolute value of the examined quantity
- \(t\) - period (a year) for which the quantity is reported

\[
r_{xy} = \frac{\sum_{i=1}^{n} (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n} (x_i - \bar{x})^2 \sum_{i=1}^{n} (y_i - \bar{y})^2}} \quad (2)
\]

where:
- \(r_{xy}\) - selective correlation coefficient (Pearson)
- \(X, Y\) - random quantities
- \(i\) - number of random quantities

The delay between the decisive day and the date when a merger becomes effective indicates the complicated nature of negotiations, preparations of the merger project (contract) and the approval procedure. It shows to what extent the external (legal regulations, counselling) and internal (participating company management and owners’ knowledge) conditions are suitable for company transformations. The internal and external conditions of the implemented merger are probably also determining for the type of merger the bidder and the target business choose to take.

The names and the headquarters of the participating companies allow us to assess in what environment the merger takes place and thus also the direction of the combination based on the character of the region. The field of economic activity is a foundation for the assessment of the way of company combination (horizontal, vertical, conglomerate). Judging by the majority owner (stockholder, partner) we can deduce the method the combination will employ. In contrast to acquisitions, this combination is implemented based on agreement of all participating companies and if there is a strong majority or one owner the takeover will take form of a combination of interests (pooling). In the opposite case, the companies will probably agree on the method of purchase with an exchange of bonds [22].

To be able to identify the effect of the financial crisis on company activities in the field of mergers, we will try to confirm or deny the following hypotheses:

1. Mergers in the Czech Republic do not follow the global trends of mergers and acquisitions (see Figure
1) because hostile takeovers are excluded. No mass wave of bankruptcies has occurred and investors had difficulty finding interesting but weakened companies for good prices.

2. The unstable economic environment, the fall of financial markets and lack of capital after bank loans were stopped lead to a dramatic fall in merger activities. Neither the purchases of cheap assets in junk markets were able to balance the investors’ distrust in the prospective character of potential targets which seek salvation by a stronger partner.

3. In the period of a financial crisis there will be more mergers under control of a majority owner because of the obtained advantage in the form of economies of scale, strengthening of credibility and economic power and also the lower expenses on the merger implementation.

4. In the period of a financial crisis there will be a faster growth in the rate of mergers in the economic fields which use modern technologies as these guarantee faster return of investments in comparison to traditional fields.

The research methodology will be later expanded by the assessment of economic efficiency of implemented mergers, which we will be able to establish after the basic statistical dataset includes the relevant economic data. Due to the low number of entities traded in the Czech public market, it will not be possible to measure the effect of mergers on the value of acquirer by acquiring cumulative abnormal returns (CARs) and to compare the results with the results of earlier published studies on the effect of acquisitions on the value of a company (see for example: Bayazitova and Kahl and Valkanov, [3]; Rosen, [17]; Kling and Weitzel, [11]; Fritsch and Gleisner and Hholzhäuser, [8]; Teply and Starova and Cernohorsky, [19].

4. Results

The first result of our research is the creation of the basic statistical dataset which contains all mergers implemented in the Czech Republic in 2001–2010 (see Table 1). From the originally larger number of merging companies filtered from the trade bulletin we eliminated those company transformations that did not meet the definition of a merger (e.g. acquisitions) and we only left the companies whose merger was confirmed by an appropriate court and entered in the trade register (line 2 of the table). These implemented mergers are further structured by type of merger.

Table 1. The number of mergers in the Czech Republic in 2001–2010

<table>
<thead>
<tr>
<th>Merger</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>from trade bulletin</td>
<td>238</td>
<td>511</td>
<td>676</td>
<td>682</td>
<td>611</td>
<td>835</td>
<td>1231</td>
<td>1757</td>
<td>3624</td>
<td>3938</td>
</tr>
<tr>
<td>implemented</td>
<td>68</td>
<td>138</td>
<td>191</td>
<td>183</td>
<td>80</td>
<td>290</td>
<td>290</td>
<td>402</td>
<td>369</td>
<td>433</td>
</tr>
<tr>
<td>out of that:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>merger type 1</td>
<td>68</td>
<td>136</td>
<td>188</td>
<td>181</td>
<td>73</td>
<td>253</td>
<td>182</td>
<td>323</td>
<td>297</td>
<td>355</td>
</tr>
<tr>
<td>merger type 2</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>20</td>
<td>23</td>
<td>30</td>
<td>28</td>
<td>15</td>
</tr>
<tr>
<td>merger type 3</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>merger type 4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>12</td>
<td>84</td>
<td>47</td>
<td>39</td>
<td>60</td>
</tr>
</tbody>
</table>

Source: authors’ database

To be able to compare whether merger activities of Czech entities follow the global trends of company transformations, we established incremental indices for mergers and acquisitions using Figure 1 and for really implemented mergers presented in Table 1. The result is shown in Figure 3. The value of Pearson’s correlation coefficient between the two curves is

\[ r_{xy} = 0.245797964 \]

Figure 3. The comparison of development trends in quarterly changes of the number of global and Czech mergers

Source: Allen and Overy, authors

The activity of company management and its owners in the field of mergers is expressed by the number of really implemented mergers in individual quarters of the monitored period. To compare the financial crisis effect the values of the real GDP in stable prices in the monitored period are used. The development trend measured by relative proportions (p) of both quantities in the individual quarters is presented in Figure 4.

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The dependence between the temporal series of relative proportions is measured by statistic quantities summarized in Table 2.

Table 2. The relationship between quarterly proportions of number of mergers and the real GDP in 2001–2010

<table>
<thead>
<tr>
<th>Relative proportions</th>
<th>$P_{\text{MAX}}$</th>
<th>$P_{\text{MIN}}$</th>
<th>$P_{\text{AVERAGE}}$</th>
<th>Standard deviation</th>
<th>Correlation coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of deals</td>
<td>7.53</td>
<td>0.08</td>
<td>2.49</td>
<td>1.92</td>
<td>0.6769</td>
</tr>
<tr>
<td>GDP</td>
<td>2.92</td>
<td>1.98</td>
<td>2.50</td>
<td>0.29</td>
<td></td>
</tr>
</tbody>
</table>

Source: Czech Statistical Office, authors

To confirm or deny hypothesis 3 we explored the ownership structure of merging companies. The result of the dataset analysis is presented in Table 3 and Figure 5.

Table 3. The development of ownership structure of companies merging in 2001–2010

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic owner</td>
<td>53</td>
<td>117</td>
<td>138</td>
<td>125</td>
<td>43</td>
<td>182</td>
<td>209</td>
<td>263</td>
<td>219</td>
<td>280</td>
</tr>
<tr>
<td>Foreign owner</td>
<td>15</td>
<td>21</td>
<td>53</td>
<td>58</td>
<td>37</td>
<td>108</td>
<td>81</td>
<td>139</td>
<td>150</td>
<td>153</td>
</tr>
<tr>
<td>Majority owner</td>
<td>21</td>
<td>28</td>
<td>98</td>
<td>83</td>
<td>67</td>
<td>179</td>
<td>132</td>
<td>188</td>
<td>195</td>
<td>288</td>
</tr>
<tr>
<td>out of that: only one owner</td>
<td>17</td>
<td>27</td>
<td>85</td>
<td>56</td>
<td>66</td>
<td>168</td>
<td>125</td>
<td>176</td>
<td>183</td>
<td>264</td>
</tr>
</tbody>
</table>

Source: authors’ database

To assess the field of the transforming companies according to hypothesis 4, we set up Table 4. It contains the percentages of merging companies in the fields of economic activities in 2001–2010.

Table 4. The development of fields of companies which implemented mergers in 2001–2010

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>8.82</td>
<td>3.62</td>
<td>2.62</td>
<td>2.19</td>
<td>2.50</td>
<td>3.79</td>
<td>3.79</td>
<td>2.99</td>
<td>3.25</td>
<td>4.62</td>
</tr>
<tr>
<td>Raw material extraction</td>
<td>0.00</td>
<td>1.45</td>
<td>1.57</td>
<td>1.09</td>
<td>1.25</td>
<td>2.76</td>
<td>0.00</td>
<td>1.24</td>
<td>1.08</td>
<td>0.92</td>
</tr>
</tbody>
</table>
5. Discussion

Historical statistical data confirm the interpretation of merger development in waves. After the last sixth wave, which came after the bank crisis in the USA, a seventh could follow after the financial crisis and economic recession. As follows from Figures 1 and 2, the M&A curve is shifted in time by two quarters in comparison with the progress of the crisis (the minimum appeared as late as in Q1 or rather Q3 2009). Studies of auditing, legal and consulting companies analyse acquisitions together with mergers without any finer distinction. Therefore, the progress of mergers implemented in the Czech Republic does not correspond with global activities in the field of company combinations, as is shown in Figure 3 and by the calculated correlation coefficient $r_{xy} = 0.245797964$. We neither find any correlation with the sixth wave of global M&A, which agrees with our first hypothesis.

The second hypothesis was not confirmed, as is documented by Table 1 and the results of calculations presented in Figure 4. Merger activities of Czech entities maintain a growing trend in the monitored period and manifest high dependence on the development of the GDP $r_{xy} = 0.6769$. At the beginning of the crisis period the rate of mergers slowed down, however, in the middle of the crisis it grew substantially.

Our research clearly shows that the structure of ownership of companies having participated in mergers has changed. In the last ten years the proportion of transformed companies financed by foreign capital increased more than twice at the expense of Czech owners. The curve expressing the proportion of one company owner grew substantially and in 2005 reached over 80% out of the total number of implemented mergers. We cannot confirm the economic effects of these mergers, yet we believe that compared to mergers with more minority owners combinations under one owner represent lower administrative expenses. On the other hand, the purchase can provide the owner with other advantages following from the revelation of quiet reserves in accounting of the company. The third hypothesis has been confirmed.

The last hypothesis concerned the fields of economic activities of the merging companies. We hypothesized that there will be a faster growth in the rate of merging companies in up-to-date fields compared to the traditional ones. Rapid growth was ascertained for mergers in the field of real estates, despite or maybe due to the global overheating of the real estate market. Moreover, the transformation activity grew rapidly in the field of trading goods, products and services. A gradual increase appeared in public services and health care. On the contrary, manufacturing industry, which traditionally belongs to the strongest fields of national economy, saw few mergers. The merger rate also decreased in the fields related to new technologies, such as production of power, gas and water, telecommunications, computer technology, and financial intermediation. In these fields, there were fewer mergers; however, they were significant as regards the volume of transformed assets. As Table 4 shows, the hypothesis has not been confirmed – the frequency of mergers is not determining here, it is the volume of property entering the merger.

6. Conclusions

The research monitored activities of Czech entities in the field of mergers during the last ten years. We have presented theoretical arguments for the development of company transformation activities as well as empirical analyses. For the research a database of companies which implemented mergers during the monitored period was created. The conducted analyses helped us answer the questions related to the relationship between company transformations and the bank and financial crisis, the global development of M&A and also the global waves of mergers. The hypothesis has been confirmed that mergers under control of a majority owner or only one owner will predominate in the times of crisis. As regards the ownership structure of the transformed companies, the domestic owners are losing the dominant share in favour of foreign owners.

Contrary to our expectations, more mergers took place in companies dealing with real estates and trading companies than in those dealing with information technologies.
The growing interest in M&A which appeared in the world economy after the end of the financial crisis has been reflected in the number of implemented mergers in the Czech Republic. Although a strong correlation between the economic cycle and merger activity has not been confirmed, it is clear that a stable economic environment allows for an easier estimation of potential merger target. Further work with the database of companies which participated in domestic or cross-border mergers will allow us to assess the motives and economic consequences of mergers.

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