

Impact of Mergers of Czech Companies on their Profitability and Returns

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Aim of the research

- The aim of this paper is to assess whether mergers of companies in the Czech Republic influence the profitability and returns of merged companies in the period of three years after the merger.
- The analysis is based on a sample of over 300 Czech companies implementing mergers in 2001–2010.
- Profitabilities of the merging and merged companies were represented by earnings after tax (EAT); returns were evaluated in relation to the total capital (ROA) and then in relation to equity (ROE).

Results (effect of mergers on EAT of merged companies)

- At the first stage, the impact of mergers on the amount of net profit after tax was analysed for all the included companies, i.e. regardless of the size of the merged companies.
- The following hypothesis was formulated and tested using the Wilcoxon matched pairs test:
 - H_0 : The merger has no effect on the value of EAT of the merged company.against
 - H_1 : The EAT value of the merged company 3 years after the merger is larger than the sum of EAT of the merging companies as of the decisive day (moment of merger).

The results of the Wilcoxon matched pairs test for EAT

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Pair of Variables	Wilcoxon Matched Pairs Test			
	Valid N	T	Z	p-value
EAT ; EAT after 3 year	312	22072,00	1,468598	0,141943

Results

- The p value of the one-tailed test that the merger increased is $p = 0.0710$. Also in this case, the Wilcoxon test did not prove at the significance level $\alpha = 5\%$ that a merger led to a statistically significant increase in EAT of merged companies three years after the merger. However, as the value of p is relatively low, close to the significance level of 5 %, we can conclude that a merger probably has a positive effect on EAT.

Results

- At the last step, we tested the particular company categories based on size (categories of large, medium and small companies based on the volume of their total assets). We used the Wilcoxon matched pairs test and tested a similar hypothesis as in the case of the entire sample of companies; just this time divided into size categories. The key results of the Wilcoxon matched pairs right-tailed test are presented in the following table:

Results

	Wilcoxon Matched Pairs Test	
	Number of valid	p – value
Small companies	74	0,4263
Medium companies	119	0,3934
Large companies	119	0,05761

Results

- Even when the sample of analysed companies was divided based on their size, the Wilcoxon test did not prove that a merger increases the value of EAT 3 years after the merger when compared with EAT of the merging companies at the moment of merger in any of the size categories. However, in the case of large companies the p-value is close to 0.05, it means that the statistical significance of EAT value increase in this company category was not proved at the significance level $\alpha = 5\%$ only very closely. For this reason, we can assume that large companies are helped by a merger as regards a positive effect on their EAT. Should the main reason for a merger be an increase in the company's net profit after taxation, we can say that a merger can be recommended to large companies. On the other hand, a positive effect on the value of EAT 3 years after a merger was not proved for the categories of small and medium companies; therefore, from the perspective of this indicator, we would not recommend a merger to these companies.

Results (effect of mergers on ROA of merged companies)

- The following hypothesis was formulated:
 - H_0 : A merger does not affect the value of ROA of the merged company.against
 - H_1 : A merger increases the value of ROA of the merged company 3 years after the merger.

Results

The results of the Wilcoxon matched pairs test for ROA of all companies, two-tailed alternative:

Pair of Variables	Wilcoxon Matched Pairs Test Marked tests are significant at p <.05000			
	Valid N	T	Z	p-value
ROA & ROA after	308	23638,00	0,09909	0,921065

Results

- The p-value for the hypothesis that the ROA after a merger increased is $p=0.92/2=0.46$, i.e. again insignificant. The Wilcoxon test of the sample of all companies did not prove that a merger affects the increase in the ROA in the period of 3 years after the merger.

Results

- The last part of the analysis of the merger effect on ROA of merged companies was an analysis of the particular company categories based on size with similar hypothesis.

Results

The results of the Wilcoxon matched pairs test for ROA of large companies

Pair of Variables	size=large Wilcoxon Matched Pairs Test Marked tests are significant at p <.05000			
	Valid N	T	Z	p-value
ROA & ROA after 3 ye	117	2672,000	2,120088	0,033999

Results

- The results indicate that the p-value for the two-tailed alternative is about 0.034; we can say that we were able to prove a significant effect of a merger on the return on assets of large companies 3 years after the merger (when compared with the return on assets of merging companies at the moment of merger) at the significance level $\alpha = 5 \%$.
- The p-value of the one-tailed alternative is 0.017, which means that the significant increase in return on assets 3 years after the merger was proved for large companies at the significance level $\alpha = 5 \%$.

The results of the Wilcoxon matched pairs test for ROA of medium companies

Pair of Variables	size=medium Wilcoxon Matched Pairs Test Marked tests are significant at p <.05000			
	Valid N	T	Z	p-value
ROA & ROA after 3 years	117	3136,000	0,858098	0,390839

The results of the Wilcoxon matched pairs test for ROA of small companies

Pair of Variables	size=small Wilcoxon Matched Pairs Test Marked tests are significant at p <.05000			
	Valid N	T	Z	p-value
ROA & ROA after 3 years	74	1263,000	0,670711	0,502405

Results

- The results show that a merger does not help increase efficiency of property use for medium and small companies within 3 years after the merger, while study [5] ascertained that in small companies the total assets increase significantly 3 years after the merger. The results of this study prove that small companies cannot use the increase in assets to increase their returns.

Results (effect of merger on ROE of merged companies)

- However, the histogram of the ROE differences is not symmetrical, and thus the Wilcoxon matched pairs test could not be used.
- Therefore, the sign test was used. The following hypothesis was formulated:
 - H_0 : A merger does not affect the ROE of merged companies.
 - against
 - H_1 : The ROE of a merged company is higher 3 years after a merger than the ROE of merging companies as of the moment of merger.
- The conducted paired sign test did not prove that a merger leads to a statistically significant increase in ROE. The p-value was 0.09496.

Results

- Thus in the last part of the analysis of merger effect on the ROE of merged companies, the companies were again divided into the size categories based on the value of total assets of the merged company. The sign test was used due to the asymmetry of histograms with similar hypothesis.

Results

The results of the sign test of the ROE for individual size categories of merged companies

Size category	The resulting one-tailed p-values of the sign test
Large companies	0,00467
Medium companies	0,4267
Small companies	0,8523

Results

- The results of the sign test prove that at the significance level $\alpha = 5\%$ mergers lead to a statistically significant increase in the ROE three years after a merger for large companies only (when compared with the ROE of merging companies at the moment of merger).
- On the other hand, a statistically significant increase in the ROE of merged medium and small companies within three years after the merger was not proved when compared with the ROE of merging companies at the moment of merger.

Conclusions

- The statistical analysis performed for the sample of 308 merged companies with headquarters in the Czech Republic in which mergers were implemented in 2001–2010 ascertained at the significance level $\alpha = 5\%$ that 3 years after a merger there is no statistically significant increase in net earnings after taxes (EAT) in any of the company size categories as compared with the value of EAT of merging companies at the moment of merger.
- However, a significant increase in EAT 3 years after a merger was not proved only closely for large companies by the Wilcoxon matched pairs test; therefore, for these companies we can consider a possible positive impact of mergers on EAT.
- As regards the statistical analysis of merger effect on the return on assets (ROA) of merged companies, a statistically significant increase in ROA of merged companies 3 years after the merger when compared with the ROA of merging companies at the moment of merger was found for large companies at the significance level $\alpha = 5\%$.
- This leads us to the conclusion that large companies were able to increase the efficiency of their use of invested capital, although further results show that the increase is not substantial. Large companies can probably use synergic effects of mergers better which leads to an increase in returns of their business activities.

Conclusions II

- There was no statistically significant increase in returns on assets in medium and small companies; with respect to descriptive statistics of small and medium companies it seems that mergers do not help these company size categories and even decrease their returns.
- Should the main motive for a merger be the increase in business activity efficiency measured by the returns on assets, a merger could not be recommended to small and medium companies.
- On the other hand, a merger can be a contribution for large companies.
- Analogical conclusions were also reached based on the analysis of merger effect on the returns on equities of merged companies.
- Also in this case a statistically significant increase in returns on equity of merged companies 3 years after a merger was proved at the significance level = 5 % for large companies only.
- Thus we can state, based on the analysed sample of companies merging in the Czech Republic in 2001–2010 and the returns on equity that mergers are the most profitable for large companies.
- In contrast, mergers are not profitable for small and medium companies from the perspective of returns on equities and thus increase in profitability for company owners.

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