



Dr hab. Tomasz Bernat prof. US  
Uniwersytet Szczeciński  
Instytut Ekonomii i Finansów  
Katedra Ekonomii

**Review of PhD dissertation by MSc Thomas Krupa**  
on

**The impact of acquisitions on participating firms' efficiency within major European insurance markets**

Supervisor: dr hab. Leszek Czerwonka, prof. UG

**Scientific value of dissertation**

**Research originality**

The activities of economic entities are mainly based on achieving the goal of creating profits considering an enterprise's activity in the short term and increasing its value in the long term. The actions aimed at implementing these plans may be very different. It is important to take those that contribute to the development of an examined enterprise. From this perspective, taking up the topic of mergers and acquisitions in the insurance market in Europe is a topic; it is not only interesting from the research point of view but is also important from the point of view of the effectiveness of these solutions. It can be assumed that entities that want to merge into one new economic organism or entity take over others and want to create additional value for business owners or for itself through such decisions. It may be, for example, increasing the value of an enterprise on the market (increasing the prices of shares listed on the stock exchange), increasing the level of profit, increasing the market share, increasing revenues, etc. The important question in this sense then becomes: do these enterprises really implement the merger and acquisition goals? It is also important to identify the essential determinants of the decisions that are made. From the theoretical point of view, it seems obvious that implementing the above-mentioned goals is the primary motive. It turns out, however, that the decisions that are made are not always of this nature. The individual motivation of people that are involved in both the decision-making and participation in the entire process is also very common. This is interesting because such motives are not always unambiguously consistent with the set goals of mergers and acquisitions.

The dissertation of Mr. Tomasz Krupa is embedded in the realities of mergers and acquisitions in the main insurance markets in Europe. The main focus of his research is the effectiveness of acquisitions carried out by insurance entities. As already mentioned, it is assumed that M&A should be characterized by a positive economic effect and the effectiveness of the decision being made in various dimensions. However, as it results from economic practice, these activities (M&A) may have a completely different nature and effect than the intended ones (and not only on the insurance market). There are many examples of powerful global companies that, when entering the process of mergers and acquisitions, did not achieve the final result. Against this background, this dissertation aims to determine whether acquisitions in the European insurance market have actually improved the performance of those companies that take over other entities as well as to identify the main motives for the actions taken. The author put forward a fundamental research hypothesis: "The European insurance companies experience an improvement of efficiency after

acquisition events." The implementation of the set goal and verification of the hypothesis required the adoption of specific research methods, which were divided into two stages. In the first, two steps were taken. First, the most appropriate factors for the NSBM approach were selected based on a thorough literature review and an appropriate approach to the baseline variables. Then, on the basis of the data from the database, the most suitable records for the companies of the study were prepared and matched. In the second stage, the impact of various M&A motives on post-acquisition performance indicators was analyzed.

### **Scientific value of chapters**

The dissertation presented for evaluation consists of six chapters that are divided into theoretical and empirical ones, an introduction, the presentation of goals, research problems and methodology, and the final conclusions. Various compilations such as biographies and lists of tables and figures were also indicated. The appendices show the research methods, indicators, and developed databases.

The dissertation is structured in a logical way. First, the theoretical aspects are discussed on the pages of the first two chapters. Then, in Chapter 3, a study on the current situation on the European insurance market is presented. Chapter 4 presents the adopted research methodology. Chapters 5 and 6 are the results of the research, with a breakdown into the life and property insurance market.

**The first chapter** covers the historical background of the business that is related to mergers and market acquisitions and explains the most important terms that are used in the work. Then, the most important theories and motives for the growth and decline in value behind such M&A actions of enterprises were discussed. The motives for increasing the value of entities point to the theories of synergy, the theory of efficiency, the theory of corporate control, and the theory of market power. In turn, examples of motives that reduce the value of firms include the agency theory and the hypothesis of managerial hubris. The three most popular methodologies were then analyzed to evaluate their application to the results of mergers and acquisitions in the insurance market. Finally, the author compared their advantages and disadvantages, choosing the most appropriate one for the achievement of the goals and hypotheses.

**In the second chapter**, the PhD student focused on describing the theory behind the methodology of researching the effectiveness of mergers and acquisitions as well as assessing the DEA (data envelopment analysis) approach. First, the theory behind the yield limit based on Farrell's theory is described. The different approaches and types of DEAs are then explained, analyzing their advantages and disadvantages. Finally, the empirical literature was reviewed, which utilized methodologies for researching effectiveness in the insurance sector.

**The third chapter** is devoted to an overview of the European insurance market and the seven European countries that were selected for the survey. First, the development of the European insurance market towards its harmonization is described. Then, individual types of insurance (life and non-life) and the investment portfolio of insurance institutions on the European market were analyzed. Finally, seven European insurance markets were examined and compared. When adopting the criterion of the significance of the analyzed domestic market for the entire European insurance market, the doctoral student took the following countries into account: France, Germany, Italy, the Netherlands, Spain, Ireland, and Switzerland. For the above-mentioned insurance markets, the description of the market structure and the environment as well as the analysis of the collected premiums and claims in the life and non-life insurance sectors was described. Then, the development of the density

and penetration indices is described. Finally, important data on the M&A activity in the surveyed country is presented.

**The fourth part** of the dissertation is the methodological and empirical considerations of the PhD student. It presents broad hypotheses (six auxiliary hypotheses that are duplicated for both parts of the insurance market). The hypotheses relate to the theory of mergers and acquisitions and a review of the European insurance market. All of the hypotheses were supported by an empirical review. Subsequently, the PhD student presented the project of his own research. Then, the study design is explained in more detail and is divided into three stages. First, an overview of the selection of variables in the methodology and in the area of insurance is presented. Then, the preparation of data sources is described. Next, the model requirements for the DEA and NSBM approach were outlined, as were the life and non-life insurance models. Finally, the procedure of the statistical models was described.

**Chapter 5** presents an empirical analysis of the European life insurance market; this is divided into three parts. First, the requirements of the NSBM model are checked. Second, the ratings and performance indicators are calculated. Third, the significant differences in the coefficients of effectiveness between the acquiring and non-acquiring entities are tested by using two-sample tests. Finally, with OLS regression, the key drivers of the change in performance indicators were analyzed.

**Chapter 6** presents an empirical analysis of the European non-life insurance market. As in the previous section (the structure from Chapter 5 has been retained), it is divided into three parts. First, the requirements of the NSBM model are checked to indicate the ratings and performance indicators. Next, the significant differences in the coefficients of effectiveness between the acquiring and non-acquiring entities are presented. Finally, the OLS regression is presented in which the fundamental determinants of the changes in the effectiveness indicators are analyzed.

Chapters 5 and 6 logically close the whole book by combining elements of the theory, research, and practice of calculating effectiveness.

**The dissertation is closed with the concluding part** in which the most important results are discussed – verification of the research hypotheses, and a discussion on the possible interpretations of the achieved results. The author points out that the verifiability of the hypotheses was different depending on the market under study. The conclusion also indicates the limitations that occurred during the conducting of the research. These mainly concerned the selection of databases and the adopted methodology. The possibilities of further scientific research on the topic in question were also indicated.

The analysis of the individual chapters of the dissertation presented above is a valuable and logically constructed approach to the research and its description. On the one hand, it presents the theoretical basis along with empirical data, and on the other hand, it bases the research on an adapted research methodology. **This is the correct form of presenting a scientific achievement.**

#### **Fundamental value of dissertation**

The quality of the dissertation can be assessed through several important components, which include the ability to introduce the clarity of constructing the research goals and hypotheses, the correct selection of research methods, and the method of presenting and interpreting the obtained results against the background of previous research in a given topic, among others, into the research topic. Referring to the presented doctoral dissertation of Mr. T. Krupa, I state that all of the above-mentioned elements of the essential evaluation has

received my strongly positive assessment. Below, I present my comments on the construction of the part of the dissertation that is devoted to the objectives and hypotheses.

First of all, it should be noted that the PhD student divided the methodological part into two parts. In the first, he points towards research hypotheses, while the second presents the model and calculation methods. Analyzing this division through the prism of the huge amount of data and the scope of the research that was undertaken by the PhD student, I conclude that this is the right approach.

The doctoral student presented the basic research goal and 13 auxiliary goals. The main goal is to determine whether acquisitions on the European insurance market actually improve the results of companies that take over other entities and to identify the main motives for the actions taken. The auxiliary goals develop and detail towards research on mergers and acquisitions, evaluate the insurance market, and use appropriate research approaches. On the one hand, such a large number of auxiliary goals indicates the issues of interest to the author and the element of the research work in great detail, which shows a good understanding of the topic in question. On the other hand, such a large fragmentation of the subject matter causes a certain amount of research chaos and difficulty in unambiguously understanding the very essence of the undertaken activities. It is difficult to indicate whether any of these goals are more or less important or whether each of them has the same essence in relation to the whole research. For the target of seven European countries with their insurance markets, it is not entirely clear where the number seven comes from and how it was chosen. At this point, it is possible to justify this choice more briefly.

Referring to the above objectives, the PhD student made the main hypothesis, which is as follows: "The European insurance companies experience an improvement of efficiency after acquisition events." This is consistent with the rationality of economic thinking, which assumes that all activities should bring a positive effect. This means that takeovers of insurance companies should be economically effective in this case.

Then, dividing the research subject into two groups (the life insurance market, and the non-life insurance market), he proposed six research hypotheses for each of the groups. These are as follows:

**For the life insurance market:**

**1a.** European life insurance acquirers experience a greater improvement of efficiency after an acquisition event compared with life insurance non-acquirers.

**2a.** European life insurance acquirers experience a greater improvement of efficiency in the investment division after an acquisition event compared with life insurance non-acquirers.

**3a.** A higher level of leverage before the acquisition leads to an increase in the acquirer's efficiency in the European life insurance sector. When the optimal level of leverage is exceeded, a further increase in leverage leads to a decrease in the acquirer's efficiency.

**4a.** To a certain extent, an acquirer's efficiency in the European life insurance market decreases as its size before an acquisition increases. However, when the acquirer's size exceeds a certain level, further increases in size lead to increases in the acquirer's efficiency.

**5a.** An acquirer that operates under non-decreasing return to scale (NDRS) (increasing return to scale (IRS) or constant return to scale (CRS) before an acquisition event increases its efficiency in the European life insurance market.

**6a.** A lower level of liquidity before the acquisition event leads to a greater efficiency increase in the European life insurance acquirers.

**For non-life insurance market:**

- 1b.** European non-life insurance acquirers experience a greater improvement of efficiency after an acquisition event when compared to non-life insurance non-acquirers.
- 2b.** European non-life insurance acquirers experience a greater improvement of efficiency in the production division after an acquisition event when compared to non-life insurance non-acquirers.
- 3b.** A higher level of leverage before an acquisition leads to an increase in the acquirer's efficiency in the European non-life insurance sector. When the optimal level of leverage is exceeded, a further increase in leverage leads to a decrease in the acquirer's efficiency.
- 4b.** To a certain extent, an acquirer's efficiency in the European non-life insurance market decreases as its size before an acquisition increases. However, when the acquirer's size exceeds a certain level, further increases in size lead to increases in the acquirer's efficiency.
- 5b.** An acquirer that operates under NDRS (IRS or CRS) before an acquisition event increases its efficiency in the European non-life insurance market.
- 6b.** A lower level of liquidity before an acquisition event leads to a higher efficiency increase in European non-life insurance acquirers.

The presented detailed research hypotheses are generally properly constructed and allow us to get acquainted with the undertaken research plan at dissertation. Most of these have been clearly and logically presented. My comments that are related to Hypotheses 1a and 1b, 2a and 2b, 3a and 3b, and 4a and 4b are as follows:

Like Hypotheses 2a and 2b, supportive Hypotheses 1a and 1b are relatively related; this means that verifying one of them simultaneously falsifies the other. It is quite a complicated way of presenting research assumptions, which could be simplified by presenting only one hypothesis that compares both markets (life and non-life insurance). The achieved effect would be the same with less research effort.

In Hypotheses 3a and 3b, the doctoral student uses the term "optimal level of leverage." However, the concept of optimality is complex and can refer to many different aspects of decision-making. The approach towards optimality in a context such as that which can be found in the hypotheses under discussion does not clearly allow for its problem-free understanding.

Hypotheses 4a and 4b have similar levels of ambiguity. This is the concept of a 'certain level,' which is also undefined in its size. The very construction of the hypotheses is also quite complicated, as they consist of two sentences in which each of them depends on something that is not fully defined.

The adopted methodology for researching insurance markets in Europe is very extensive. This is due to the subject and the scope of the research. The subject of the research is insurance markets, which (from the point of view of operation) generate a large amount of data that can be analyzed. The scope of the research is the processes of the mergers and acquisitions of insurance companies, which are relatively complicated and multidimensional. Therefore, it is necessary to apply research methods that will be able to capture all possible variables and factors that affect the final result. At this point, it should be noted that an author in every workplace seems to know this problem, especially when constructing the research that is undertaken in the subsequent steps. Importantly, he has tried to include not only countable indicators in them but also uncountable ones, such as the motives for taking specific actions. The author also dealt with a huge amount of statistical data that was generated by the insurance market during the analyzed period. All of these activities should be assessed as being appropriate, and the large amount of work that was required to process the collected research material should be appreciated.

From a technical point of view, the part that is devoted to the methodology should include a presentation of the main research goal and auxiliary goals in addition to the hypotheses and the undertaken research methods. This would help build this part of the work more clearly.

#### **Editorial correctness of dissertation**

The formal assessment of the editorial correctness of the presented doctoral dissertation is very high. One can see that the work is prepared well in terms of the graphics, technical aspects, and text. This makes it easier to both read it and understand the transferred knowledge. The charts and tables are placed in the correct places, with appropriate markings and descriptions that point to their most important elements. The pages are properly numbered, and the numbering of the tables and charts is correct. It should be noted that, in the dissertation, the author created a large number of charts and tables; this was the result of the large amount of processed basic material. The paper adopts the convention of indicating end references, which is the correct way to go. The work also contains three attachments, the last of which is the longest (more than 100 pages); this is the result of presenting the prepared numerical materials for calculations.

The only minor drawback of the presented doctoral dissertation is the lack of distinctions in the text of the most important information. This can be done very easily by making specific parts of the text bold-faced. This would allow one to concentrate on the most essential elements of the presented work more quickly.

The work has a small number of typographical and grammatical errors as well as incorrectly spelled authors' names (e.g., Stigler, p. 44); however, the few exceptions do not change the overall very good assessment.

#### **Substantive remarks**

Each scientific dissertation should be subject to evaluation, which includes a critical analysis of the presented research material; there is no difference in the case of Thomas Krupa's dissertation. Below, I present comments of a substantive nature that regard the research methodology.

The presented work is an interesting study on an issue that is very important from the point of view of every economic entity – achieving the effectiveness of the undertaken activities. The analyzed work concerns achieving the efficiency of an insurance company that takes over another entity on the market. This caused several basic problems that the doctoral student had to face; these are as follows:

There is no explicit definition of the concept of mergers and acquisitions. The author gives many different definitions in this case, referring to the comparison of their use and the benefits and disadvantages resulting therefrom.

The author ultimately adopts one of the given definitions as the leading one throughout the work. This was due to the necessity to take the various forms of efficiency that are possible to obtain into account during the process of taking over an enterprise. Therefore, the author applied various types of effectiveness – examining them on the basis of the collected material. These were necessary to take behavioral factors such as the non-financial decision-making motives of managers or owners into account. The author analyzed the basic motives of company managers, too.

One of the elements of the M&A case analysis is to show their numbers of scales in recent years. In addition to the description of the positively completed merger and acquisition

processes in this case, it was also worth mentioning a few unsuccessful ones in my opinion to look for the reasons for their failures.

In the first chapter, the doctoral student presented various methods of researching the effectiveness of business takeovers in the insurance market in detail. Then, using a simple analysis of the advantages and disadvantages of the individual solutions, he chose the method that best met the expectations of the research assumptions that were set. This is a good solution because the reader can easily find out what, how, and why will be tested. At the same time, he pointed out several different forms of efficiency that can be examined on such a complex example as insurance companies in the merger and takeover processes on European markets. Due to the large amount of data and the multiplicity of the goals and hypotheses, the doctor properly used statistical methods to help assess the final effect of these activities.

#### **Research methodology**

The research methodology for the dissertation is mainly described in Chapter 4. The aim of the work and the auxiliary goals were only shown in the introduction and nowhere else – it would also be worth showing them in the methodological Chapter 4. The hypotheses are shown in the introduction, in the methodological part, and in the conclusions. Such a multiple presentation of hypotheses facilitates the understanding of the adopted research methods and the answer for whether a given hypothesis has actually been verified. In the conclusions, the PhD student indicated exactly how the hypotheses were verified, but it is not enough to show whether the goals that were set in the work were achieved.

As already indicated, some of the auxiliary hypotheses could be presented in a different way (or even omitted). This is due to the relationship between the hypotheses and the life and non-life insurance markets as well as the relatively high complexity of the hypotheses themselves.

For the purpose of calculating the various types of effectiveness of taking over insurance companies, the PhD student used research methods that were divided into two stages. In the first stage, significant changes in effectiveness between the entities that participated in the merger process were analyzed by using the NSBM (network slacks-based measure) method, and the main motives for these changes were assessed. In the second stage, the statistical regression method was used as the standard one in the data-development analysis. The use of these methods was possible thanks to the data that was obtained from two important sources: the Thompson Reuters databases, and the data from PricewaterhouseCoopers. These data sources are of high quality and can be used to provide relevant scientific research results.

In accordance with the proposed methods, the implementation of the selected research material allowed for the verification of the hypotheses (main and auxiliary). At the same time, the PhD student did not try to convince the reader that all of the hypotheses were positively verified; based on the research results, he instead indicated that the process of taking over insurance companies on the European market did not always end with obtaining the formal effectiveness of the decisions that were made. There are many different factors behind this, including very often the motives of managers. As it results from the presented research, the main hypothesis was therefore positively verified in the case of non-life insurance in Europe in the analyzed countries. As for the life insurance companies, this hypothesis was not positively verified. This led to the conclusion that the process of taking over insurance companies is neither easy nor simple and that efficiency improvement is only achieved on the non-life insurance market.

#### **Questions for doctoral student**

1. The presented work is based on an analysis of the market in insurance (life and non-life insurance in seven selected European countries). This concerns the processes of company takeovers and the effectiveness of these activities. Based on the opinion of the PhD student, is the creation of banking and insurance holdings (bancassurance) also dictated by the willingness to improve their operational efficiency, especially in the context of the results of the research in the dissertation?

2. In the doctoral student's opinion, is the harmonization of the European insurance market conducive to increasing the effectiveness of the activities of an insurance company? The driving force is the EU body that decides how enterprises are to operate on a given market. Such decisions can be regarded as interference of the free operation of enterprises in the market. If so, is harmonization really beneficial to this sector in the European and national economies?

3. In the opinion of the doctoral student, may the size of a company (measured, for example, with market shares) be of importance when assessing the effectiveness of a takeover? Is it not the case that large enterprises take over much smaller firms in order to box out the competition (which indicates the negative effectiveness of such activities)? How should this be interpreted?

**Final opinion**

I, the undersigned, declare that the reviewed doctoral dissertation of Tomasz Krupa meets the conditions that are specified in Art. 13.1 of the Act of March 14, 2003, on academic degrees and academic titles as well as on degrees and titles in the field of art (Journal of Laws No. 65, Item 595, as amended). I am applying for the admission of Mr. Thomas Krupa to further stages of his doctoral dissertation.

At the same time, I request that the doctoral dissertation be distinguished with an appropriate award due to the high research value of the work and the details of the study, especially regarding the analysis of the large amount of collected research material in international terms for seven European countries.

December 06, 2021

*Tomasz Bernat*