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## **NEW CATEGORIES OF SPARE PARTS AND THEIR IMPACT ON THE INCREASE OF INSURANCE CRIME IN AUTOMOBILE INSURANCE**

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## **NOWE KATEGORIE CZĘŚCI ZAMIENNYCH I ICH WPŁYW NA WZROST PRZESTĘPCZOŚCI UBEZPIECZENIOWEJ W OBREBIE UBEZPIECZEŃ KOMUNIKACYJNYCH**

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**Summary:** The introduction in 2003 of ‘sectoral exemptions’ in the automotive industry was vital for the economic policies of the European Union by providing consumers with easy access to goods and services for the automotive market, and maximally similar prices. Before the introduction of the regulation, they were required to assemble and sell spare parts only signed by the manufactures cars, calling them original parts. Regulation defined the term ‘original parts’ and ‘alternative parts’ as the elements installed in the car to its components, which are necessary for the proper functioning of the vehicle. Although few years has already passed since the GVO regulations has been introduced, the analysis of the components of the compensations paid out still shows that prices of the spare parts that are included in the general amounts of the repairs’ costs of the cars and which are reimbursed by the insurance companies is significant. The issue of the spare parts choice within the process of the motor loss adjustment still are a big research problem especially considering the increase of the crime committed in the field of the automobile insurance in Poland.

**Keywords:** insurance market, insurance fraud, motor market, spare parts, sectoral exemptions.

**Streszczenie:** Wprowadzenie w 2003 roku wyłączeń sektorowych w przemyśle motoryzacyjnym miało kluczowe znaczenie dla polityki gospodarczej Unii Europejskiej, zapewniając konsumentom łatwy dostęp do towarów i usług na rynku motoryzacyjnym po maksymalnie zbliżonych do siebie cenach. Przed wprowadzeniem rozporządzenia obowiązujące regulacje prawne dopuszczały jedynie sprzedaż części zamiennych sygnowanych znakiem producenta danego pojazdu, nazywając je „częściami oryginalnymi”. W rozporządzeniu zdefiniowano kategorię „części oryginalnych” oraz „części alternatywnych” jako elementów zainstalowa-

nych w pojeździe, które są niezbędne w procesie jego eksploatacji. Chociaż od wprowadzenia wspomnianych regulacji prawnych w postaci GVO minęło już wiele lat, analiza kwot wypłaconych odszkodowań wskazuje wyraźnie, że udział części zamiennych w tych kwotach jest nadal znaczny. Zatem kwestia wyboru poszczególnych części zamiennych w tym procesie stanowi istotny problem badawczy, ze względu na wzrost przestępczości w sektorze ubezpieczeń komunikacyjnych w Polsce.

**Słowa kluczowe:** rynek ubezpieczeniowy, przestępstwo ubezpieczeniowe, rynek motoryzacyjny, części zamienne, wyłączenia sektorowe.

## 1. Introduction

At the present stage of eliminating communication damages, information on vehicle repair costs has become an imperative of great importance. One can venture to the thesis that the passenger car sector achieves the highest costs of damage elimination by using original parts and usually relate to new vehicles from the highest market segment [Lewicki 2010]. However, many years of observation and analysis of the insurance sector clearly indicate that selected brands and models of vehicles appear on the market, which do not meet these criteria, but due to the wide availability of spare parts can become the subject of criminal activity.

Thus, the fundamental importance is gained not only by the issue of preliminary identification of these vehicles, already on the mere stage of reporting damage with the insurer, but also the correct estimation of the hypothetical costs of their repairs. Thus, the problem of new categories of spare parts and their impact on the increase of insurance crime within automobile insurance is an important research problem, given that in the available literature in the field of economical sciences there are no such analyses or studies in the interdisciplinary sense [Creutzig 2003].

The article is an attempt to signal the issue of availability of individual spare parts in the process of estimating the cost of repairs after extending the duration of vertical agreements in the motor vehicle sector from the prohibition of agreements restricting competition. For empirical purposes, the case study is used – the analysis of repair costs of the selected vehicles from individual market segments. The purpose of this article is to signal the existing formal limitations and the desired prospective directions of changes, which in the future may lead to the use of available data for improving the detection and for reducing the insurance crime rate in the area of eliminating damages from third-party liability insurance policies in Poland and Europe.

## 2. The essence of the process of estimating the passenger car repair costs

At the very beginning, in order to identify the research area, the procedure of repairs cost estimation, used by most insurance companies in Poland, should be briefly

introduced. This in turn will allow comprehending the nature and importance of the research issues undertaken by the authors of the article.

As indicated by market practice, the repair effort is affected by technology imposed by the vehicle manufacturer, while the rate for one repair time unit, the so-called working hour, depends, among others, on the workshop, which performs the given repair. While the cost of spare parts is determined by the prices of parts determined by car manufacturers or parts distributors (for cars manufactured in Poland) and prices of parts determined by general importers and manufacturers' representatives (for imported cars) [PIMOT 2010].

The vehicle's accident repair cost in most cases can be equal to the amount of compensation for the incurred communication damages. However, one should remember that the amount of compensation due can also include additional costs, e.g. the cost of towing, parking, renting a replacement vehicle, lost profits, etc. [Lewicki 2010].

In insurance practice, in order to simplify and standardise the estimation process of repair costs, all entities of the widely defined motor-insurance market use specialised computer programs distributed by Audatex<sup>1</sup> or Eurotax<sup>2</sup>. It is worth noting that recently another expert system has appeared on the market (D.A.T<sup>3</sup>).

The fee for the repair of the damaged vehicle is settled based on the cost calculation made on the basis of one of the listed costing systems. The basis for valuation of repair (estimate) should be the technical assessment specifying the scope of damages and the way of their removal. In recent years, most insurance companies in Poland decided not to perform technical evaluations, replacing them with repair cost estimate<sup>4</sup>. Insurance companies have rightly assumed that most countries using the expert costing systems departed from performing technical evaluations. At this point it should be noted that in these countries the process of damage elimination, or at least defining the scope of vehicle damage, is dealt with by independent appraisers in most cases, and not the employees of the insurance company, which is important to preserve the objectivity and accuracy, both in terms of damage qualification and estimation of real cost of repairs.

Before performing the estimation, the vehicle type and its equipment are determined. This process takes place based on decoding the VIN plate (Vehicle Identification Number)<sup>5</sup> or by means of organoleptic inspection and reading the

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<sup>1</sup> The program for calculating repairs, containing the database of part prices and repair times specified by the manufacturers of the given vehicle brand.

<sup>2</sup> A competitive program for calculating repair costs Audatex.

<sup>3</sup> One of the modules of this system is the tool of SILVERDAT II expert calculation system used for many years in Germany.

<sup>4</sup> The use of such a procedure does not apply to all insurance companies conducting their activities in Poland.

<sup>5</sup> The VIN number has the record of all factory data regarding the given vehicle: place of manufacturing, year of manufacturing, model, type of engine, etc.

model labelling [Raatz 2005]. A significant impact on the determination of the amount of compensation comes from the precise determination of the vehicle equipment. For example, if the vehicle is equipped with electric windows in the door, and they became damaged, the labour of their changeover is other than for door with mechanically opened windows. Similarly, when a car is equipped with air-conditioning, heated seats, electric mirrors or also other elements of additional equipment, the cost of their repair or replacement will be different than in case of standard equipment.

The next element having a significant impact on the amount of compensation is the determination of the paint finish type. The amount of car painting costs depends on the fact if it is covered with one-, two- or three-layer coating and whether it is a metallic paint with pearlescent hue, or acrylic one<sup>6</sup>.

The so-called conditional codes are of importance for determining the amount of compensation. In costing systems, they are to enable the consideration of these elements, which can be put in the flat rate form expressed in money, e.g., the value of small used parts for repair (the standard), or the maintenance costs of the replaced or repaired parts. Conditional codes can also be expressed in the form of the percentage share in cost amounts dependent on the complexity of repair.

Changes in conditional codes are often used both by insurance companies (depreciation of parts) and repair shops as a tool for manipulating the size of estimated repair costs. Improperly applied conditional codes allow insurance companies to covertly reduce the value of parts used for repair<sup>7</sup>. The same dealings are used by repair shops in order to inflate the repair costs, and hence – to increase the amount of compensation due.

After introducing conditional codes, the person performing the estimation includes data regarding the damaged parts qualified for replacement or repair. It should be mentioned that the calculation systems automatically implement the repair technology imposed by the vehicle manufacturer. For example, if the door of the damaged vehicle qualified for replacement, the calculation system will automatically assess the time, and thus the costs, of the previously mentioned retooling of doors, that is removing the hardware from the damaged door and installing it in the new one. Similarly, if the replacement relates to the trunk floor of the damaged vehicle – the system, having the registered technology determined by the manufacturer of the selected vehicle, will take into account all activities (including the dismantling and assembling the component elements of the car), which take place when replacing the trunk floor.

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<sup>6</sup> Many years of market observations suggest that this issue has been repeatedly marginalised to the practice of eliminating damages.

<sup>7</sup> Insurance companies used these codes, consciously assuming that the consumer, with his level of knowledge about calculation systems, will not notice that the prices of parts have been reduced (unless such a reduction was valid).

The opposite situation is true in case of qualification of the given element for repair. Operations related to the disarmament of elements for repair should be introduced independently. Therefore, it is important to know the current technique and technology of repairs and the construction of vehicles. Often the operations that are related to the disarmament of the given element for repair exceed the repair time of the damaged element.

Another factor affecting the determination of compensation is the rate for the body and varnish working hour. In costing systems, the working hour is divided into the so-called time units. Each estimate clearly defines the amount of time units that constitutes the working hour for the given manufacturer – this is called the time base. Moreover, individual operations are included in the form of units of time, which are spent by the vehicle manufacturer on their execution.

In summary, analysing the repair cost estimate document we obtain the information about:

- rate per working hour which was used to estimate repair costs;
- value of labour related to the removal of the damage, that is repairing or painting the damaged vehicle;
- value of spare parts and materials used to remove the damages;
- list of parts which were qualified for replacement by the insurance company, repair shop or appraiser.

### **3. The impact of the availability of selected categories of spare parts for individual vehicle models on the growth of insurance crime**

At the very beginning of considerations, it should be mentioned that the European Commission [RC (EU) no. 461/2010 of May 27] in 2010 undertook the decision to extend the period of validity of regulations concerning group exemptions in the automotive sector until 2023. In addition, car repair due to accident damage, according to the aforementioned regulations, is not a warranty repair, so for this repair it is possible to use parts of categories different than the original parts<sup>8</sup> [Creutzig 2003]. An important element of legal regulations is the rule that it does not violate the rights of the victim (or the person entitled to compensation) to choose the damage repair [Creutzig 2002]. However, it gives the possibility to negotiate with them the costs and to convince them to the principle of minimising the damage in financial terms.

Taking into account only the theoretical aspect of the spare parts category it can be mistakenly concluded that all parts existing on the home market are available in all categories described in the Union [RC (EU) no. 461/2010 of May 27] and Polish legal regulations [Rozporządzenie Rady Ministrów z dnia 8 października 2010].

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<sup>8</sup> The person, who decides about the choice of applied parts during the repair process, is, according to the applicable legal regulations, only the owner of the vehicle, and not the insurance company.

Both, market observations and the original studies, indicate that in case of many vehicle brands found on the Polish market the full assortment coverage was not stated in relation to particular categories of spare parts.

At the first stage of exploration one can venture to the idea that this type of information can be constituted only by data significant in relation to the processes of eliminating communication damages, but nothing could be more wrong. In fact, insurance companies have recognised a chance in the aforementioned legal regulations for further significant reduction of amounts of awarded and paid compensation [CTGA 2013], the system of automotive industry actions was developed aiming to, first of all, identify the selected brands of vehicles in which the application of the mentioned regulations will be hindered or even impossible. Secondly, to lead to the practice, in which the cash equivalent is obtained from insurance companies only for new service parts, and in reality, perform the repair of the damaged vehicle at a much cheaper cost.

In most cases, car brands can be identified without any problems, which are in particular exposed to the fraudulent activity. The key determinant of their choice in the criminal activity is the economic factor, which is the high cost of spare parts.

The market observations and the studies conducted by the authors which are presented in this paper<sup>9</sup> allow for the identification of typical vehicle brands in three crucial market segments<sup>10</sup> and so, for example: in segment D special attention should be paid to the type of models: Mercedes C-class, BMW series 3, Audi A4, in E class models: BMW series 5, Mercedes-Benz class E, Audi A6 while in class F vehicles include Audi A8, BMW series 7, Mercedes-Benz class S<sup>11</sup>. It was found that in most cases, this practice applies to vehicles with a lifetime from 5 to 10 years. The impact on this state of affairs comes from the considerable availability of parts for these particular vehicle models on the secondary market. Identification of the vehicles listed above in the elimination processes of communication damages should not cause major problems. However, in relation to these brands we can observe the trend of the occurrence of alternative parts on the market and in different quality categories (in particular in relation to such elements of the body like the headlights, windows, air-conditioning systems, suspension components). This can lead to the increase in probability of detecting attempts to defraud the compensation, without

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<sup>9</sup> Original studies were performed in 2013 while maintaining scientific standards both in terms of sampling (about 5000 thousand communicative damages) and the method of inference.

<sup>10</sup> Literature indicates that the current version of the market distribution divides the European population of passenger cars into 10 categories, while the first six result directly from the criterion of the total length, and the next ones from the utility values related to the type of body. Particular categories were marked with consecutive letters of the alphabet. This division is periodically upgraded, so that it is tailored as closely as possible to the current situation on the automotive market.

<sup>11</sup> In case of these vehicles the largest amount of suspicion has been identified regarding the attempts to extort the undue compensation from liability insurance policy of the material property damage.

posing a 100% guarantee of obtaining the economically satisfactory amount from the criminal activity.

The introduced changes to the elimination procedures of communication damages by insurance companies have led to the search of new segments and vehicle brands, for which performing insurance crimes guarantees the achievement of substantial profits<sup>12</sup> without raising any suspicion. Therefore, a thesis can be adopted that the insurance criminals noticed a new market niche of minimising risk with simultaneous generation of profits. As demonstrated by the studies, new brands – for which not only a significant increase of frequency were observed, but also the size of paid compensation – include, for example, Nissan Primera (P12) from segment D, Volvo S80 from segment E and in case of van segment – the Chrysler Voyager. Noteworthy is also the significant increase in the damage activity in the SUV segment of the selected models from different vehicle brands.

To sum up, although the listed vehicle brands are not distinguishable in the first stage of eliminating communication damages by insurance companies as the so-called sensitive vehicles, they constitute a significant percentage of all communication damages reported and eliminated by insurance companies in Poland and need appropriate attention, as it is presented by existing research results.

#### **4. The analysis of repair costs of the selected vehicle brands from the individual market segments – a case study**

The complexity of the body and paint works, specification of the used materials and diversified technology of repair of passenger cars require an alternative approach. Therefore, in their simulations, in order to show significant correlations, the authors used the preconceived patterns of behaviour. Thus, the subject of further considerations is not the qualification and analysis of individual costs composing the total cost of vehicle repair. The summary account of repair costs of the selected vehicles is presented from the strictly selected market segment. Moreover, for the purposes of the study it is simply assumed that the repair cost is the sum of service costs and the prices used for spare parts.

At the very beginning in order to maintain the logical correctness and methodological value of the study, it was assumed that:

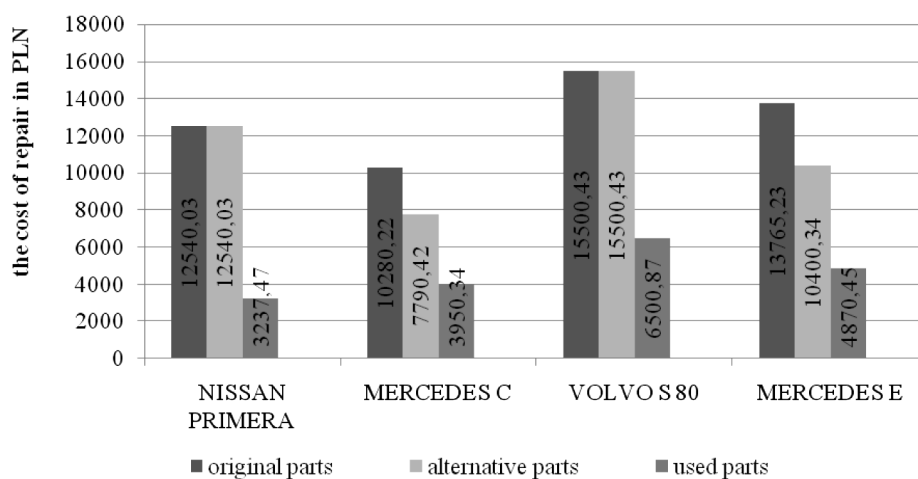
- the scope of the research includes selected vehicles from individual market segments. Four vehicle models were selected for the analysis from two market segments with specified features and purpose. With respect to the selected vehicles a significant increase of their claims was noted in 2013 on the Polish insurance market;

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<sup>12</sup> Assuming that the damage and deformation is applied to the selected areas and parts of the vehicle.

- each selected vehicle was subject to an individual process of repair provided by a particular car manufacturer;
- in order to estimate the repair costs the specialized expert program called Eurotax was used, supporting the numerical experiment with the cost calculating method, as currently this is the only method used in practice of cost estimation of passenger car repairs by insurance companies in Poland;
- considering the scope of hypothetical repairs, it was assumed that the analysis of costs in each case would concern the same selected area of vehicle damages. For comparison, in each case the prices of spare parts from February 2017 were used;
- in order to illustrate mentioned dependencies, repair costs were analysed in three basic variants: repair while using: original parts, alternative parts<sup>13</sup> and parts coming from the secondary market;
- in case of the cost simulation: when using the original parts, the average rates of body and paint labour used in the Western Pomerania region, were adopted, while in two other variants, the rates applicable in most repair shops of the Western Pomerania region were adopted.

From the point of view of the correctness of exploration and the ability to capture the required data, results of the numerical experiment are presented by Figure 1.



**Fig. 1.** Analysis of repair costs of the selected vehicles

Source: own study base on [Eurotax 2015].

It results from the above collective simulation regarding the analysis of repair costs of the selected vehicles from two examples of market segments that in

<sup>13</sup> Defined in the *Explanatory Brochure to the Commission Regulation* [CR (EC) no. 1400/2002 of 31 July 2002, p. 45].



reference to the Volvo and Nissan brand there is no possibility to use repair costs of the alternative parts in the process of cost estimation, which – in case of a potential litigation – places the insurance company on the losing position. It is worth noting that in the case of these two vehicles, higher hypothetical repair costs were observed in relation to car models commonly considered as cost-consuming while repairing. Furthermore, the high availability of spare parts for these particular models on the Polish automotive market enables the repair of the vehicle and obtaining *de facto* a significant profitability from the criminal activity.

## 5. Conclusion

Extension of legal regulations by the European Commission in 2010 regarding the sector exemptions on the automotive industry has significantly affected the reduction of sums of the awarded compensation in case of liquidation damages from the insurance policy<sup>14</sup> by insurance companies in Poland. But on the other hand, it has led to the evolution of behaviours and changes of “tool” selection serving the insurance crime within communication insurance [PIMOT 2010].

In many publications referring to the issue of insurance fraud, we most of all indicate the activity related to the prevention of detecting these crimes, describing the methods, tools or other ways, which lead to the detection of the crime, often forgetting about what is the driving force behind these actions – i.e. the economic account. It is this determinant that should be placed in the main scope of attention [IIHS 2002].

The conducted cost simulations showed the fundamental impact of sector exemptions on the estimation process of repair costs, clearly indicating that in 2014 the vehicle repair was possible with the use of other spare parts than the original ones. However, a more important result of these studies is the indication of new, previously unidentified brands and segments of vehicles, which can serve the criminal activity in the area of communication insurance in Poland.

Summing up, the attempt undertaken by the authors to assess the availability of particular categories of spare parts as determinants for the growth of insurance crime, the case study – insurance policy material damage to property, does not fully exhaust the essence of the matter, and only constitutes an attempt to signal the complexity of the studied issues regarding the effect of implementing sector exemptions on the automotive-insurance market, in the aspect of insurance crime issues in Poland.

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<sup>14</sup> It should be kept in mind that significant changes apply also to the damages eliminated from theft insurance policy. The authors wish to emphasize that this issue was not in the scope of considerations of this article.

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