

DETERMINING FINANCIAL COMPENSATION IN THE CASE OF AGRICULTURAL LAND EXPROPRIATION – NEW METHODOLOGY

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Abstract: The objective of the contribution is to propose new methodology for determining financial compensations for the damage caused by expropriation of agricultural land. Using the methodology, all aspects affected by the expropriation of agricultural land are considered. In particular, loss of obtainable profit from particular crop on the expropriated land or its part of the deduction of all cultivation costs is taken into account. It was concluded that the current methodology is "unfair" to the owner of the expropriated land in many aspects. Using the methodology proposed, the financial compensation for the damage caused in a model case was increased by nearly CZK 25,000.

Keywords: method of capitalization of earnings, expropriation, damage, financial compensations, build-up model, agricultural land, investment plan

1 Introduction

Expropriation is an extreme case of the withdrawal or limitation of the right of ownership or the right corresponding to the easement of the subject of expropriation, usually real estate. It is an important act of power, ex officio interfering with one of the fundamental human right in the rule of law, namely the right to own a property. Expropriation can thus be executed only in the public interest, by law, and for compensation. Due to the significant interference in property rights, expropriation is executed only to a limited extent. The most frequent case is the case of agricultural land expropriation. Given the frequency of agricultural land expropriation, the paper submitted is directed in the same area, that is, expropriation of agricultural land.

In the Czech legal environment, expropriation is governed by the Act on Acceleration of the Construction of Transport Infrastructure (Czech Republic, 2009) and the act on revocation or limitation of ownership of land or building (Expropriation Act) (Czech Republic, 2006). Currently, in accordance with Czech legislation, expropriation of land is compensated by financial compensations in the amount of the usual price. This compensation is based on Section 10 (1) a) (Czech Republic, 2006). However, in practice, it is less common to determine compensation for ownership also under Section 10 (2) and (3) of the same Act, where both experts and expropriation authorities either do not take the compensation into account or consider them only partial, through a non-uniform methodology.

The absence of uniform methodology for determining the compensation for the damage caused by the expropriation often results in disputes between an owner and the expropriation authority as well as in possible negative impact on the schedule of an implemented/considered investment. Delaying the start of the construction due to the complications related to the expropriation has usually negative impacts on the whole society.

The objective of the paper submitted is to propose a uniform methodology that would respect the existing legislation and could be applied in the case of agricultural land expropriation. The proposed methodology could thus significantly contribute to accelerating the execution of engineering work (purchasing the lands) of the investment to which the conditions of the expropriation act are related. The objective of the paper is to create a methodology for determining the financial compensations as a compensation for the damage caused to the owner by the expropriation of land.

The proposed methodology for determining financial compensation for expropriated agricultural land will be applied in a model case of a medium-sized agricultural company Alfa.

The data for calculating the amount of financial compensation will be converted to average values in the year 2018.

2 Literary research

Under the Valuation Act, property and services are valued at the usual price, unless otherwise provided by the Act. For the purposes of this Act, the usual price is the price that would have been achieved by selling the same or similar property or by providing the same or similar service in the ordinary trade pattern in the Czech Republic on the valuation date, considering all circumstances that affect the price but not reflecting the effects of exceptional market circumstances, personal situation of a buyer or seller nor the influence of special popularity (Czech Republic, 1997). The usual price expresses the value of a thing and is determined by comparing (Stehel, Rowland and Mareček, 2019).

International Valuation Standards (IVS) (2017) do not clearly define this term. However, they define some basic terms based on which it is possible to define an equivalent term, which is the market value.

Market value is an estimated amount for which the property shall be exchanged on the valuation date between a voluntary buyer and voluntary seller in an independent transaction after proper marketing, where each party acts in an informed, reasonable, and non-compulsive manner (Vrbka et al., 2019).

In this case, the estimated amount is the value expressed by money obtained within an independent payment for a similar asset. Persons inwardly motivated to selling and buying within this transaction are called voluntary seller and voluntary buyer (Vochozka et al., 2019). An independent transaction refers to the assumption of the absence of any factor that would affect the entire course of the transaction of the amount of financial compensation between both participants in the transaction. IVS also considers rational the fact that both participants in the transaction strive to achieve the best and reasonable price form themselves. Having relevant information about the value of the purchased object is thus essential for both parties (Mařík, 2004).

It is clear from the analysis above that expropriation is not a standard market act where a voluntary seller and voluntary buyer meet, but it is a unilateral legal act in which the owner (the expropriate) is "forced" to agree with the transaction and does not have any significant means of defence or any choice to voluntary selling. It is thus clear that expropriation is specific to a large extent, and the determination of the damage caused by expropriation should be paid increased attention to.

In the case of land expropriation, the main problem is always the determination of an adequate amount of financial compensations for expropriation and compensation for the damage caused. In the issue of land expropriation, there are two conflicting interests. First of them is the existence of the public need of the land and the second is the expected protection of land tenure and the protection of the owners' property rights (Gebremichael, 2016). The process of land expropriation is one of the key instruments available to the state to carry out land reform and other interests (Marais, 2017). Land expropriation is also one of the tools to satisfy the demand for building plots (Chu, 2009), which occurs in the case of agricultural land expropriation, most often in favour of technical infrastructure construction. In the Czech Republic, land expropriation is carried out mostly due to the construction of road and energy infrastructure (Hanák, 2015). Land expropriation can be executed on any type of land. In some regions in the world, agricultural land expropriation is a great risk endangering the survival of the owner, and it also represents a risk of job loss for seasonal farmers and other workers. These are only two of a number of reasons why the determination of adequate compensation for a land owner shall be paid great

attention to (Gao and Feng, 2013). According to Chu (2009), the compensation for the owner should be in accordance with the market mechanisms. Currently, the compensation for expropriation corresponds to the usual price of the subject of expropriation, that is, the market value of the given asset.

In Brazil, the risk of expropriation has a very negative impact on the local forest cover. The owner of forests often fell the whole forest on their land due to their fear of possible expropriation and transform the originally afforested areas into agricultural land. In Brazil, the risk of expropriating is much lower in the case of agricultural land, since it is much easier for their owners to convince the government wishing to expropriate the land that the land has its production value (Araujo et al., 2009). However, this also contributes to illegal logging (Amacher, Koskela and Ollikainen, 2009).

Wang, Qian and Guo (2019) analysed the impact of agricultural land expropriation on the lives of farmers active in the area where the expropriation has been executed in the People's Republic of China. From their perspective, expropriation mostly concerns land near towns and cities, and is carried out for the purposes of urbanization. According to the findings obtained, the way the compensation system in the People's Republic of China is established is not able to compensate sufficiently all property and non-property damage caused to the owners by the expropriation of agricultural land.

Subic-Kovac and Rakar (2010) point out that the expropriation of particular land significantly reduces the value of the surrounding land, which should not be forgotten when determining the compensation amount. This always depends on the characteristics of the given site, conditions, and purpose of the expropriation.

Remeikiene and Gaspareniene (2017) also state that the constant changes in the land layout, which can be also caused by the expropriation process, represent a major obstacle to the pursuit of organic farming.

Mei and Lei (2010) suggest an increase in financial compensation for property damage on agricultural land due to mining and construction activities through environmental tax. He and Asami (2014) investigated what amount of financial compensation would the land owners consider appropriate for the involuntary sale of the land. On average, the land owners require 3.74 times the financial compensations offered for the involuntary selling of their agricultural land. This is considered to be due to a strong emotional value the land has for its owner.

In the event that a high contribution of the real estate for the society is legally recognized, the government's first option is to try to purchase it through a voluntary selling/purchasing transaction. If the owner is not willing to sell the real estate in question, the government can use the expropriation process in order to obtain it. In the case of expropriation, the amount of financial compensations is set at the usual price (Sumrada, Ferlan and Liseč, 2013).

The expropriation process can take several forms. According to Wang et al. (2017), higher amounts of financial compensations for involuntary selling were achieved by the owners who negotiated with the investors on price than in the case of the owners who agreed to sell the agricultural land at the standard rate.

In African Rwanda, "unfair" law on providing financial compensation of expropriated land was in force until 2015. In 2015, the Act underwent an amendment, which considered the area of the expropriated land the main attribute for determining the amount of financial compensation, which was welcome news (Uwayezu and de Vries, 2019).

In the event of expropriation of land around towns due to urbanization, farmers who have lived only on crop and livestock

production for all their lives often do not have any choice but move to a town. Here, however, a big problem is with their employment in the labour market, as towns often do not offer any employment in this field (Bao and Peng, 2016).

Shi (2016) summarizes the impact of agricultural land expropriation as a reduction in the level of well-being of the land owners. For an investor, the expropriation process represents a multi-annual problem. Each year of delay in the implementation of the investment plan represents a 5-percent increase in the implementation costs. Frequent changes in the legislation regulating the expropriation process also significantly prolong the entire process. The relevant Czech legislation enables to provide compensation only for the loss of the land. However, land owners are justified in claiming the compensation for the loss of the profit from the expropriated and the surrounding land. Very often, therefore, they are more inclined to accept compensation in the form of other land with a corresponding fertility level (Hanák, 2015).

Pursuant to the Expropriation Act, the expropriate is entitled to claim a compensation at the amount of the usual price of the land or building including the accessories if the ownership right was revoked or at the amount of the right corresponding to easement if the right of ownership to the land or building was limited by easement or if the right corresponding to easement was withdrawn or restricted (Czech Republic, 2006).

Di Benedetto (2017) points out the problem that the current case-law is established to protect an individual property rights but does not take into account the rights of common utility that is connected with functional ecosystems. Agricultural areas also provide some ecological and thus publicly useful service for all inhabitants. This fact should not be forgotten.

The current political situation leaves the decisions regarding land management on the land owners. Land ownership overcomes the dilemma between the issue of waste of natural resources and the moral obligation to abandon land ownership in favour of public interest (Katz, 2013).

In the Republic of South Africa, the government considered the idea of making a law that would allow land expropriation without any right for compensation. The aim of this law was to encourage the farmers to strive for a maximum efficiency of land use (Sibanda, 2019). Kwarteng and Botchway (2019) drew the consequences the enforcing of such law would have for the government of the Republic of South Africa. Such a law would be contrary to international law and would damage the economy of the state; the government would become a target of individual litigation for which it would have to spend considerable financial resources.

3 Materials and methods

3.1 Determination of revenue from crop production on expropriated agricultural land

First, there will be analysed the process of agricultural land valuation currently used in the Czech Republic in the case of providing compensation for their expropriation. Subsequently, there will be proposed and presented a methodology for determining the amount of financial compensations that would better compensate the damage caused according to the current agricultural market. The methodology proposed will be demonstrated on the example of a model situation in the process of expropriation of a part of agricultural land owned and cultivated by a company Alfa. Finally, the methodology will be applied to determine the breakeven point for the possible purchase of agriculture land by an economically minded and rational farmer.

Information about the current method of land valuation and calculation of financial compensations for the damage caused by the agricultural land expropriation will be sought. To determine the market price of agricultural land, the data from the

agricultural information portal farmy.cz will be used. In the model case, the average market price of agricultural land for the year 2018 will be used.

Since in the following model case, the reason for expropriation will be the construction of a motorway across the land to be expropriated due to the construction of this type of transport infrastructure, technical parameters for construction of motorway infrastructure in the Czech Republic will be used. In this case, it will be the construction of a six-lane motorway. According to the technical parameters, for this type of motorway infrastructure, the width will be 33.5 m (ceskedalnice.cz, 2019).

For the model case, it will be assumed that the company Alfa farms 16.1 ha of farmland, which, according to Eurostat (2019), corresponds to an average area of agricultural land farmed by an average agricultural company in the EU. On the basis of this data, the size of expropriated land necessary for the implementation of the investment plan for the construction of this type of transport infrastructure.

For the calculation of the amount of financial compensations in accordance with the standard valuation process in the Czech Republic, Formula 1 will be used.

$$AFC = \text{area of expropriated land} \times \text{market price of agricultural land} \quad (1)$$

where: AFC refers to the amount of financial compensations.

After the calculation carried out using the current method of determining the amount of financial compensations for the damage caused by expropriation, the proposed methodology for calculation using the method of capitalization of earnings will be used. Capitalization of earnings is calculated using Formula 2.

$$LV = \frac{e_z}{r} \quad (2)$$

where: LV is the value of the expropriated land,
 e_z is permanent earning based on the past or future development,
 r is the degree of capitalization.

For the application of the proposed methodology for determining the amount of financial compensations as the compensation for the damage caused, a model case will be a set of crops cultivated most on the agricultural land in the Czech Republic. Specifically it will be winter wheat, spring barley, oilseed rape, and ware potatoes. First, it will be necessary to determine the attainable profit based on the past or future development (e_z).

This set of crop will be chosen on the basis of the proportion of the individual crops in the total cultivated arable land in the Czech Republic. The share of individual crops cultivated on the arable land in the Czech Republic is shown in Table 2. The data from the year 2018 will be obtained from the database of the Czech Statistical Office (CSO).

Tab. 1: Percentage of selected crops on the arable land in the Czech Republic in 2018

Crop	Share on arable land [%]
Winter wheat	31.4
Spring barley	9
Oilseed rape	16.7
Ware potatoes	0.9
In total	58

Source: Czech Statistical Office, 2019 (Own adaptation).

Table 1 indicates that in the Czech Republic, the most cultivated crop is winter wheat (31.4%), while ware potatoes are the crop with the lowest share (0.9%). Other cultivated crops making up for the remaining 42% will not be considered in this case due the high crop heterogeneity. This is the model calculation for an

average farm in the Czech Republic; the composition and share of crops can therefore be considered sufficient for determining the average.

Furthermore, it will be necessary to determine the yield of all aforementioned crops per one hectare of agricultural land in the climatic conditions of the Czech Republic. According to the information portal vynosyplodin.cz (2019), the yield of winter wheat ranges between 5-7 t*ha⁻¹ per year. In the case of oilseed rape, it is 3-3.8 t*ha⁻¹ per year. According to the Czech Statistical Office (2019), the yield of ware potatoes in 2018 was 29.12 t*ha⁻¹ per year. The yield of spring barley was 4.93 t*ha⁻¹ per year in 2018 (Agrarian Chamber of the Czech Republic, 2019).

In the model case, the upper yield limit of the individual crops per hectare will be considered, since there is the assumption that the model agricultural company Alfa strives for achieving the highest yield possible using available means.

In determining the financial return on sales of the selected crops, the data on the development of their market value obtained from the database Eurostat (2019) will be used. As the values in the database are given Euros, this amount will be converted according to the average exchange rate for the year 2018 (1€ = 25.643 CZK. Table 2 shows the market values for 100 kg of all selected crops in the Czech Republic in 2018.

Tab. 2: Market values of 100 kg of selected crops in the Czech Republic in 2018

Crop	Market value [€]
Winter wheat	15.94
Spring barley	15.28
Oilseed rape	36.08
Ware potatoes	19.09

Source: Eurostat, 2019 (Own adaptation).

Table 2 clearly shows that in 2018, the highest price was in the case of oilseed rape (36.08 €), while the lowest price was in the case of spring barley (15.28 €).

The amount of permanent attainable profit based on the past or future development (e_z) will be calculated using Formula 3.

$$e_z = a * b * c \quad (3)$$

where: a is the yield of winter wheat from 1 hectare (t/ha),
 b is the area of the land expropriated in hectares (ha),
 c is the market price of winter wheat (CZK/t).

As in the Eurostat database in the Czech Republic, the market values of all crops are given per 100 kg, it will be necessary to calculate the yield of all crops from 1 hectare in tons using the coefficient 10, due to the correction of the units for further numerical operations.

For the proposed methodology, it will also be necessary to determine the value of the degree of capitalization (r). To determine the capitalization rate (r), build-up model will be used according to Formula 4.

$$r = r_f + r_{pod} + r_{finstab} + r_{LA} \quad (4)$$

where: r_f is risk free yield,
 r_{pod} is the risk premium for business risk,
 $r_{finstab}$ is the risk premium for financial stability,
 r_{LA} is the risk premium for the size of the company.

As input values for the build-up model to determine the degree of capitalization, the data released by the Czech National Bank (CNB) and the Ministry of Trade and Industry (MTI, 2019) will be used. Given that the model agricultural company Alfa represents an average company farming on an average-sized land, the risk premium for the size will not be considered in this case (r_{LA}).

The final calculation of the amount of financial compensations for the damage caused by the expropriation of agricultural land will be carried out using Formula 2 for each of the selected crops. Finally, a weighted average will be calculated from all resulting yield values for each crop in order to achieve the optimum result of the overall average yield from the expropriated land.

To the weighted average yield from the selected crops, the subsidy provided for the area of cultivated crop irrespective of the type of crops (SAPS payment) will be added. The amount of SAPS for the year 2018 was 3,388.15 CZK/ha.

3.2 Determination of the costs of expropriated agricultural land farming

From the economic point of view, farming and sowing of crops is a cost item. It is necessary to consider all costs of the individual agro-technical operations that need to be carried out in preparing agricultural land for cultivation and subsequent care of the crop in order to maximize the yield per hectare.

In the model case of land expropriation, all agro-technical cost operations will be considered for cultivation of each of the selected crops separately.

The data on the amount of costs of growing individual crops will be taken from the information web of the Institute of Agricultural Economics and Information (Institute of Agricultural Economics and Information, 2005). Since only the data on the average costs of the individual selected crops on one hectare of arable land for the year 2005 were found, the costs will be recalculated using the increase by the rate of inflation between 2005 and 2018 to the prices corresponding to the year 2018. Table 3 shows the costs of growing selected crops in 2005 and the costs corresponding to the year 2018 after the recalculation using the inflation rate.

Tab. 3: Average costs of growing selected crops

Crop	Costs in 2005 (CZK)	Costs in 2018 (CZK)
Winter wheat	15,931	20,721
Spring barley	13,140	17,091
Oilseed rape	15,162	19,721
Ware potatoes	73,504	95,604
In total	117,737	153,137

Source: Institute of Agricultural Economics and Information, 2005 (Own adaptation).

Table 3 shows that in 2018, the highest costs of growing crops on one hectare were in the case of ware potatoes (CZK 95,604), while the lowest costs required growing spring barley (CZK 17,091).

As in the case of yield, a weighted average will be calculated for all resulting cost values for each crop in order to achieve the optimum average yield from the expropriated land.

The weighted average costs of growing selected crops will be deducted from the weighted yield average. This will provide the resulting amount of the damage caused by expropriation.

3.3 Determination of breakeven point

After calculation, the breakeven point will be determined for the maximum yield from the use of the agricultural land. After its determination, it will be possible to specify the appropriate amount of money which a potential economically minded and rational farmer would consider appropriate to purchase agricultural land even if they have the information about its subsequent expropriation in a longer time horizon (that is in a year or in a longer period of time). The calculation of breakeven point will be calculated using Formula 5.

$$\text{Breakeven point} = \frac{\text{yield from use}}{\text{area of land}} \quad (5)$$

To determine the breakeven point using Formula 5, the yield value from the use of the land will be used as the numerator in order to identify the amount of money that an economically minded and rational farmer would consider reasonable to buy such a land. The profit will be achieved if the purchase price of the land is below the breakeven point.

4 Result

A model case for which both methods of determining the financial compensation for the damage caused by agricultural land expropriation will be applied is represented by a medium-sized agricultural company Alfa.

The dimensions of the arable land with an area of 16.1 hectares, considering a regular rectangular shape, were set to 500 x 322 m. The investment plan in the form of the transport infrastructure construction should run across this area, in parallel with the shorter side of the rectangle (land). The length of the aforementioned motorway infrastructure is thus 322 m.

The resulting expropriated area required for the implementation of this investment plan is 1.0787 ha (10,787 m²) of agricultural land (33.5 m * 322 m = 10 787 m²). The average market price of agricultural land for the year 2018 was set at 24.1 CZK/m² (www.farmy.cz, 2019).

By inserting the data in Formula 1, it is possible to obtain the amount of financial compensation for the damage caused by the agricultural land expropriation determined in accordance with the current methodology used.

$$\begin{aligned} AFC &= 10,787 \text{ m}^2 * 24.1 \text{ CZK/m}^2 \\ AFC &\cong 259,967 \text{ CZK} \end{aligned} \quad (6)$$

According to the current methodology, the amount of the financial compensation would be 259,967 CZK (after rounding).

For the application of the proposed methodology for the calculation of the compensation for the damage caused, the value e_z was determined using Formula 3 for each of the selected crop. After inserting the values in Formula 3 in order to determine the value e_z for each of the selected crop, the following relations will be obtained:

- Winter wheat

$$\begin{aligned} e_z &= 7 * 1.0787 * (15.94 * 25.643) * 10 \\ e_z &\cong 30,864 \text{ CZK} \end{aligned} \quad (7)$$

- Spring barley

$$\begin{aligned} e_z &= 4.93 * 1.0787 * (15.28 * 25.643) * 10 \\ e_z &\cong 20,837 \text{ CZK} \end{aligned} \quad (8)$$

- Oilseed rape

$$\begin{aligned} e_z &= 3.8 * 1.0787 * (36.08 * 25.643) * 10 \\ e_z &\cong 37,924 \text{ CZK} \end{aligned} \quad (9)$$

- Ware potatoes

$$\begin{aligned} e_z &= 29.12 * 1.0787 * (19.09 * 25.643) * 10 \\ e_z &\cong 153,768 \text{ CZK} \end{aligned} \quad (10)$$

The weights for calculating the weighted average for all selected crops are represented by their percentage of total agricultural arable land in the Czech Republic (see Table 1).

After rounding, the weighted average yield of all selected crops is CZK 33,248. Furthermore, the data in Table 3 were used to calculate the weighted average of costs of growing the selected crops. The weighted average after rounding is CZK 23,060.

The subsidy intended for agricultural land for the year 2018 was converted to the level of subsidy for the expropriated land in the model case.

$$3,388.15 \text{ CZK} * 1.0787 \text{ ha} \cong 3,655 \text{ CZK} \quad (11)$$

The resulting amount of subsidy was subsequently added to the weighted average of yield from the selected crops.

$$33,248 \frac{\text{CZK}}{\text{ha}} + 3,655 \frac{\text{CZK}}{\text{ha}} = 36,903 \text{ CZK} \quad (12)$$

Subsequently, the permanent attainable profit in the model case was calculated by the difference of the yield and costs.

$$36,903 \text{ CZK} - 23,060 \text{ CZK} = 13,843 \text{ CZK} \quad (13)$$

The permanent attainable profit in the model case was set to CZK 13,843. Subsequently, the capitalization rate (r) will be calculated using Formula 14.

$$r = 2.01\% + 2.49\% + 0.36\% = 4.86\% \quad (14)$$

According to the CNB (2019) data, the risk-free yield was 2.01% as of 31 December 2018. The value of the risk premium for business risk and financial stability were taken from the MTI data as of the same date. On the basis of this data, the capitalization rate was set at 4.86%. Subsequently, all necessary values were inserted in Formula 15.

$$HP = \frac{13,843 \text{ CZK}}{0.0486} \cong 284,835 \text{ CZK} \quad (15)$$

According to the proposed methodology, the amount of financial compensation for the damage caused by the expropriation of a part of agricultural land was determined at CZK 284,835 after rounding, which is CZK 24 868 (284,835 CZK – 259,967 CZK = 24,868 CZK) more than when using the current methodology.

In order to respect the current methodology for calculating the amount of compensation for the expropriated land, the results achieved can be interpreted as a compensation for the loss of ownership in the amount of CZK 259,967, while the compensation of the loss of the possibility to use the expropriated land economically is CZK 24,868.

In the event the farmer decides to purchase the agricultural land for the purposes of a profit from the subsequent sale in the expropriation process, about which they were informed in advance, the breakeven point is determined in order to identify the maximum yield from the use, at which the purchase of the land would be worth for the farmer. For the determination of the breakeven point, Formula 5 was used.

$$\text{Breakeven point} = \frac{284,835 \text{ CZK}}{10,787 \text{ m}^2} \cong 26.41 \text{ CZK/m}^2 \quad (16)$$

In the case of purchasing the land for the purposes of its later selling, the land would be worth buying for the farmer if the purchase price was lower than 26.41 CZK/m².

5 Conclusion

The objective of the paper was to propose a methodology for determining the amount of financial compensations in the case of compensation for the damage caused by the expropriation of a part of agriculture land.

According to the proposed methodology for determining the amount of financial compensation for the expropriation of the agricultural land, the amount was higher compared to the methodology currently used. In the model case, the increase was nearly CZK 25,000.

However, in our opinion, the proposed methodology better reflects all the aspects of the damage caused that shall be compensated to the owner of the expropriated land. The calculation of the permanent attainable profit derived from the past or future development in the model case is based on the statistical data from the year 2018 for each of the selected crops. The data are available for other crops; therefore, the methodology can be applied to any agricultural land used for the production of any crop. The capitalization rate has been determined using the built-up model and is a very variable tool, since in specific cases, it is possible to consider the individual aspects of the assessed land that may or may not be considered in the calculation. This ensures the universality of the proposed methodology and its repeatable applicability.

Although the annually determined average market price of agricultural land also considers the compensation for the damage caused, it does not take into account the damage caused in terms of the type of crop produced on the expropriated agricultural land. This lack is also eliminated using the proposed methodology.

Finally, another contribution of this paper is the possibility to determine the breakeven point for the purchased land. The objective of the paper was thus achieved.

The paper also deals with the current methodology for determining the amount of financial compensation of the expropriated land. The output of the paper can be applied in connection with the current methodology for calculation.

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Primary Paper Section: A

Secondary Paper Section: AH