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The Impact of the Real Estate Tax Reforms on the Tax Burden in the Czech Republic

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ABSTRACT

The article deals with the evaluation of the impact of real estate tax reforms on their tax burden in the Czech Republic in the years 1993–2024. Real estate tax is one of the direct taxes, and in comparison, with income taxes, its importance lies mainly in providing income for local budgets. The unit type of tax rate specifically determines real estate rates. Facts, that tax reform in the area or real estate tax are minimal, the tax burden is often decreasing. As the tax burden decreases, so does the tax revenue. However, when tax reform occurs, this reform is often characterized by a significant increase in the tax burden. This is also evidenced by the last implemented tax reform in 2024 when rates increased by approximately 80%. The previous tax reform occurred in 2010 and increased rates by 100%. Despite this increase, the real tax burden decreased compared to the first analysed year 1993 and the last year 2024. The results of the regression analysis show that inflation is the factor that negatively affects tax revenue. To minimize a decrease in tax revenue from 2024, a provision containing an inflation coefficient is implemented in the legislation as part of the 2024 reform. Conversely, a reduction in the tax burden was not found for real estate intended for permanent housing in small municipalities with up to 600 inhabitants. On the contrary, there was an increase in the tax burden. Scientific methods such as analysis and comparison, as well as regression and correlation analysis are used to achieve the paper's goals.


KEYWORDS

inflation, property tax, rate indexation, tax revenue, tax reform; tax rate

JEL C50; H20; H71; K34


УДК 336.201

Влияние реформы налога на недвижимость на налоговую нагрузку в Чешской Республике

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АННОТАЦИЯ

В статье рассматривается оценка влияния налоговых реформ по налогу на недвижимость на налоговую нагрузку по недвижимости в Чешской Республике в 1993–2024 гг. Налог на недвижимость является одним из прямых налогов и по сравнению с налогами на прибыль его значение заключается в основном в обеспечении доходов местных бюджетов. В налоге на недвижимость используются твердые ставки. Несмотря на то, что налоговая реформа в области обложения

недвижимости и сам налог минимальны, налоговая нагрузка зачастую снижается. По мере снижения налоговой нагрузки уменьшаются налоговые поступления. Однако, когда происходит налоговая реформа, она сопровождается значительным увеличением налоговой нагрузки. Об этом свидетельствует последняя реализованная налоговая реформа в 2024 г., когда ставки выросли примерно на 80 %. Предыдущая налоговая реформа была проведена в 2010 г. и повысила ставки на 100 %. Несмотря на рост ставок, реальная налоговая нагрузка снизилась по сравнению с первым анализируемым 1993 г. и последним 2024 г. Результаты регрессионного анализа показывают, что инфляция является фактором, негативно влияющим на налоговые поступления. Для минимизации снижения налоговых поступлений с 2024 г. в законодательство в рамках реформы 2024 г. внедряется норма, содержащая коэффициент инфляции. И наоборот, снижение налоговой нагрузки не было обнаружено для недвижимости, предназначенной для постоянного проживания в небольших муниципалитетах с численностью населения до 600 человек. Там произошло увеличение налоговой нагрузки. Для достижения поставленных целей работы используются такие научные методы, как анализ и сравнение, а также регрессионный и корреляционный анализ.

КЛЮЧЕВЫЕ СЛОВА

инфляция, налог на имущество, индексация ставок, налоговые поступления, налоговая реформа, налоговая ставка

1. Introduction

Real estate tax has been part of the tax system of the Czech Republic since its inception in 1993. According to Radvan [1], this year was one of the most uncomplicated tax reforms in the world. During the entire period of validity of the Real Estate Tax Act, only two major tax reforms took place in this area. The first reform took place in 2010. All applicable tax rates were increased by 100% as part of this reform.

The second tax reform, which occurred at the beginning of 2024, was slightly different. In addition to the increase in tax rates by approximately 75%, the law implemented the so-called inflation coefficient. This coefficient should automatically consider the change in the price level in the economy.

The reason for its implementation was also so that further reforms in the area of tax rates would not be necessary in the future. The reason for inflation coefficient is the fact that most real estate tax rates are of the unit type. This causes the real revenue of this tax to decrease when the price level increases.

The question is whether the tax reform in 2024 has compensated for this real rate decrease or whether the tax burden is still falling despite the increase in rates by more than three-quarters of the origi-

nal values. One of the arguments for tax reform was to return the tax burden to its original value when the real estate tax law entered into force in 1993. Another reason was also an international comparison when the real estate tax revenue was compared to other countries, not only in Europe, and was firmly below average¹.

While personal income tax shares for almost a fifth of the total tax revenue, real estate tax shares for only about 2% [2]. Due to the different budgetary purposes of this tax, real estate tax is still an essential part of the tax system of the Czech Republic. The reason is that the tax revenue does not go as stated by Singh et al. [3] or Zhu & Dale-Johnson [4] to the central budget but to the territorial budgets of the municipalities where the real estate is located. Moreover, compared to income taxes [5], property taxes are less prone to tax evasion and have lower tax distortion. These facts also emphasize the high importance of property taxes and the relevance of this study.

The article aims to evaluate the development of the tax burden on the real estate tax in the Czech Republic from 1993 to 2024 in the context of the implemented tax reforms.

¹ Tax on Property. Paris: OECD, 2024. Available at: <https://data.oecd.org/tax/tax-on-property.htm#indicator-chart> (accessed: 13.01.2024).

Since the tax rates were not indexed to inflation until 2024, *another goal* is to assess whether the inflation affects the tax revenue. If it has these effects, then whether it is positive or negative. Compared with other direct taxes, e.g., personal income tax, the share of real estate tax in the tax revenue, as mentioned above, is lower.

The following hypotheses are formulated:

H1: The tax burden on real estate is the same as in 1993 based on the 2024 tax reform.

H2: the resulting tax rate takes into account inflation in the economy from 2024.

The article's structure is in accordance with the chosen objective as follows. In the introduction, the meaning of the research topic is defined. Subsequently, a section deals with an overview of research studies in real estate taxation. In the next part, the used methodology and input data are characterized. The text's main part is analysing the development of the tax burden and the relationship between tax revenue and inflation in the economy. The results are summarized in the conclusion, or limitations of the study and other possible research proposals on real estate tax topics are presented.

2. Literature

Various research studies have analysed aspects of real estate taxation in the past. The studies primarily focused on the tax rate, the tax burden on real estate or the harmonization of this tax. The importance of real estate tax was also discussed, both in the context of the municipalities budget and in the context of the state budget.

Two possible approaches can be applied in the field of real estate taxation.

Perez [6] mentions that it is an approach of taxation by area or value. In European countries, the principle of taxation by area is more often used, i.e. the basis of the tax is usually the size of the real estate.

Balíková et al. [7] state that there is a specific real estate where the tax liability is determined based on the value of the real estate. This situation is typical, especially in forests or agricultural land. In most cases, the tax rates are of the unit type [8].

Relatively broad competencies in the field of tax rates are offered to the municipalities or cities in whose territory the immovable property is located.

Turley [9] states that the tax reform of real estate taxation carried out in Ireland after the financial crisis in 2008 could become an inspiration for other countries as well. The reason for this is the existence of self-assessment and valuation bands. A progressive tax rate is typical for income taxes. More about income tax and rates, e.g. Istok et al. [10] or Kirschnerova & Janouskova [11]. However, this is not typical of real estate tax. The tax rate is not uniform, but it differs depending on the location of the real estate.

Taranu & Verbeek [12] or Kresch et al. [13] found that urban sprawl can be prevented by using higher property tax rates in large cities. At the same time, high rates create pressure to use the space as efficiently as possible. Similar conclusions regarding tax rates were also found by Grover & Walacik [14], who analyse these aspects in European and Asian countries.

Felis & Roslaniec [15] dealt with tax rates in Poland. Even these conclusions of the study confirm that it is desirable to have more tax rates and options for adjusting these rates.

Malkowska et al. [16] emphasize that tax rates for permanent housing should be lower than rates for immovable property used for business. They point out that a tax burden that is too high is not desirable, and the possibility of increasing the revenue of municipal budgets is also through the use of fees. Also, in the context of tax evasion, this tax is relatively resistant, a real estate is visible, and it is thus challenging to conceal the ownership.

Yildirim & Ural [17] or Senavi & Osmani [18] confirm the very high significance of the real estate tax as income for municipal budgets.

The principle of real estate tax in most countries allows local governments relatively wide possibilities for adjustments, which can significantly increase the tax burden. According to Decker [19] or Cohen & Fedele [20], the reason is, for example, considering the lower attractive-

ness of some parts of municipalities or cities or the infrastructure, which is also at a lower level.

Compared with other taxes, real estate tax reforms are less frequent. For example, a relatively often amended tax is the value-added tax [21; 22]. Real estate tax reforms are done rarely. This means that if the reform is implemented, there is a higher increase in the tax burden.

Ding & Hwang [23] examined the effects of real estate tax reform on the tax burden in Philadelphia. According to the results of their research, this reform in 2013 caused a tax shock.

Ramajo et al. [24] carried out in the Spanish environment from 2006 to 2015 found relative rigidity in real estate tax rates. It follows that legislative changes in the area of taxation of real estate tax are rare in this state too.

Surico & Trezzi [25] confirm that the Italian tax system also shows relatively rare changes in tax reforms related to real estate taxation. However, if they occur, a significant increase in the tax burden is also typical. One of the ideas in which direction the tax burden on real estate in Italy could go is an increase in the tax burden on property.

Moscarola et al. [26] say that if this were to happen, the tax burden of income taxes would be reduced. This would better fulfil the tax principle of equality and justice. This justice is also ensured by the fact that there are immovable things which are exempt from tax. Mayburov & Leontyeva [27] mention a public road as an example.

Mishra et al. [28] examined aspects of real estate taxation in India. It is also recommended that this state carry out tax reform. Changes are proposed not only in the area of tax rates but also in the method of determining the tax base. The implementation of property taxes can also affect investment construction.

Wang et al. [29] mention that due to the tax reform in China, there was a decline in the construction of family houses. This decrease was, according to Wu et al. [30], especially in big cities. This fact proves the already mentioned, that there

is a need to have tax rates graded according to the attractiveness of the locality or the level of public services provided. Taxes finance these services. For this reason, even at the level of tax theories, the justification and existence of taxes are very often emphasized [31; 32].

In the Czech Republic, as already mentioned, real estate tax has been part of the tax system since the founding of the Republic. In the past, in addition to this tax, a tax on the acquisition of immovable property was also collected.

Smrzová [33] states that as a result of the tax reform in 2020, this tax was abolished. Also, in the Czech Republic, municipalities can influence the tax revenue for real estate tax.

Janoušková & Sobotovičová [34] confirm the above with their research. On the contrary, research by Romanová et al. [35] states that the possibility of adjusting the tax revenue is low in the Czech Republic.

Sedmíhradská & Bakos [36] state that in 2014, less than a tenth of municipalities in the Czech Republic used the possibility to increase the coefficients. Not only for this reason, but the real estate tax also does not fulfil a fully redistributive function from the point of view of tax principles in the Czech Republic. On the contrary, it fully ensures this according to Gencev et al. [37] personal income tax.

The review of research studies thus shows the clear potential of this research study. Eliminating the research gap lies on the one hand in how long the period is analysed. Furthermore, the fact that it considered the changing price level in the economy, from which several studies conducted in the past deviated. Another uniqueness is the methodology used to verify or refute the hypotheses formulated in the introduction.

3. Data and Methodology

3.1. Data

The input data for the analysis is from the following sources:

1. Data on tax rates from Act No. 338/1992 Coll., on real estate tax.

2. Data on the rate of inflation in the economy from the website of the Czech Statistical Office².

3. Data on the tax revenue from real estate tax from the Financial Administration website³.

The input data is thus made up of a database for 1993–2024 in the case of real estate tax rates. About the availability of data, the time series of data on tax revenue ends in 2022, in the case of inflation in the economy, the last data was available for November 2023.

All data have been monitored since 1993, i.e., since the Czech Republic's founding. Such a long research period creates a long enough time series to carry out the analysis, as the data are usually for 30 years.

3.2. Methodology

The article uses the methods of description, analysis and comparison. To evaluate the development of the tax burden, the difference in the amount of tax liability between the first and the last analysed year is compared, generally determined by formula (1):

$$AD = X_1 - X_2, \quad (1)$$

where AD is the difference in tax liability, X_1 is the tax liability in the first analysed year and X_2 is the tax liability in the last analysed year.

In addition to these basic methods mentioned above, regression and correlation analysis are used to evaluate dependence. The correlation coefficient is used to assess the strength of the dependence between the analysed variables. The aim of the study is also to analyse whether changes in the price level affect the tax revenue from real estate tax. In general, the equation is determined by (2):

$$Y = b_0 + b_1 \cdot X_1, \quad (2)$$

² Inflation. Prague: Czech Statistical Office, 2024. Available at: <https://www.czso.cz/csu/czso/cri/indexy-spotrebitelskych-cen-inflace-prosinec-2023> (accessed: 13.01.2024).

³ Tax Revenue. Financial Administration, 2024. Available at: <https://www.financnisprava.cz/cs/dane/analyzy-a-statistiky/udaje-z-vyberu-dani> (accessed: 13.01.2024).

where Y is the inflation rate, X_1 is the real estate tax revenue. As mentioned in the introduction, the valorisation of tax rates took place during the period of validity of the Real Estate Tax Act only in 2010 and 2024.

The regression analysis will be used to determine whether inflation has a negative or positive effect on tax revenue. A prerequisite for applying the regression model is, for example, verifying the absence of autocorrelation, as mentioned by Ho et al. [38] or Sabab et al. [39].

4. Evaluation of the tax burden

4.1. Evaluation of the development of tax rates for the period 1993–2024

The rate for real estate tax is determined by the type of unit tax rate for buildings. This type of tax rate is also used for most lands. Table 1 shows the CZK rates for the subject to tax in the Czech Republic in the first analysed year, 1993, and the last year, 2024. Given that there are no tax reliefs or deductible items for the real estate tax, the nominal tax rate is a reliable indicator showing the actual tax burden [40; 41].

The data in Table 1 shows that in comparing the first and last analysed year, tax rates increased by at least 3.5 times the value of the rate in the first analysed year, i.e., in 1993.

A relatively discussed topic of reforms in the real estate tax is the question of indexation of tax rates according to the rate of inflation or the market value of property. A comparison of what the rate should be if it were to be indexed to the inflation and how it is also shown in Table 1. The data in the last column of this table indicates that if inflation were to be considered, tax rates should be in larger amounts. In all cases, the real estate tax rate has decreased.

This phenomenon occurred despite the tax reform implemented in January 2024, when there was a significant increase in the tax burden. This leads to the same conclusion as the study by Turley [42], that the tax burden of real estate taxes is decreasing globally. The main reason is the fact that the states do not have an indexation of rates based on inflation implemented into the legislative regulation.

Over the analysed period, tax rates were reformed twice, in 2010 and again in 2024. While most rates increased by 100% in 2010, the reform implemented in 2024 increased tax rates by approximately 75–83%, depending on the type of real estate. This finding agrees with the results of foreign studies [21; 22; 24]. The smallest increase was for real estate intended for permanent residence.

It is shown in more detail in Table 2. In the Czech Republic, the tax rate policy is set in such a way that the tax burden for buildings intended for housing is lower, and on the contrary, rates used in business activities have a higher tax burden. The recommendation of the study [16] is thus respected.

For the period 1993–2009, the average rate of inflation in the Czech Republic was 5.75%. At this average annual inflation rate, the rates in 2010 increased to double value, i.e. the increase was 100%.

For 2010–2023, the average rate of inflation is lower, namely 3.6%. The increase was thus lower from 75 to 83%.

The reform on January 1, 2024, increased tax rates in such a way as to preserve the principle of lower taxation of real estate for permanent housing and, conversely, the highest taxation of real estate intended for business activity.

The above conclusion is also supported by the correlation matrix, a selected part of which is shown in Table 3.

There is a direct dependence for all real estate, as the value of the Pearson correlation coefficient is close to 1. Both reforms in 2010 and in 2024 preserve the principle of distributing the tax burden set by the Property Tax Act since 1993. This does not mean that, for example, only the tax burden on business buildings would increase at the expense of reducing the tax burden on other real estate.

Table 1. Comparison of rates in 1993 and 2024 in CZK

| A type of immovable | Nominal rate in 1993 | Nominal rate in 2024 | Multiply the increase for the period 1993–2024 | Rate adjusted for inflation in 2024 |
|--|----------------------|----------------------|--|-------------------------------------|
| Building plots, buildings, housing units | 1.0 | 3.50 | 3.50 | 4.10 |
| Built-up areas, other areas | 0.1 | 0.35 | 3.50 | 0.40 |
| Buildings for business | 5.0 | 18.00 | 3.60 | 20.50 |
| Buildings for recreation | 3.0 | 11.00 | 3.67 | 12.50 |
| Garages | 4.0 | 14.50 | 3.63 | 16.50 |

Table 2. Inflation and increase in tax rates in %

| Period | Inflation average per year | For Permanent housing | For business | For recreation | Garage | Built-up and other area |
|-----------|----------------------------|-----------------------|--------------|----------------|--------|-------------------------|
| 1993–2009 | 5.75 | 100 | 100 | 100 | 100 | 100 |
| 2010–2023 | 3.60 | 75 | 80 | 83 | 81.25 | 75 |

Table 3. Correlation matrix

| Type of real estate | For Permanent housing | For business | For recreation | Garage | Built-up and other area |
|-------------------------|-----------------------|--------------|----------------|----------|-------------------------|
| For Permanent housing | 1 | | | | |
| For business | 0.999739 | 1 | | | |
| For recreation | 0.999292 | 0.999891 | 1 | | |
| Garage | 0.999596 | 0.999984 | 0.999958 | 1 | |
| Built-up and other area | 1 | 0.999739 | 0.999292 | 0.999596 | 1 |

4.2. Tax burden on real estate for permanent residence

The next part of the analysis deals with the taxation of building plots, residential buildings and units for permanent housing. Typically, the tax burden is lower for this real estate than real estate intended for recreation or business. For real estate intended for permanent residence, coefficients according to the size of the municipality are used for taxation. The principle of these coefficients is set so that the more inhabitants the municipality has, the higher the value of the coefficient.

The coefficient, according to the number of inhabitants, affects the resulting tax rate. The principle of adjusting the tax rate is captured (3):

$$TR = BTR \cdot C, \quad (3)$$

where TR is the tax rate, BTR is the basic tax rate and C is the coefficient according to the size of the municipality.

For further analysis, it will be assumed that the area of the building plot is 100m². The real estate size very often determines the tax base. A comparison of the tax burden in 1993 and 2024 is shown in Table 4. This comparison is made not only over time but also across the size of municipalities according to the number of inhabitants. The more inhabitants there are in the municipality, the higher the coefficient according to the number of inhabitants is used.

The results in the Table 4 show that if the burden on real estate should respect inflation in the economy, the tax liability after recalculation of inflation (TLAI) should be higher in most cases. With the location of the real estate in a larger mu-

nicipality, the difference between the actual tax burden and the tax burden if the tax rate were indexed to the rate of inflation (AD) also widens. If AD is positive, it means that the real tax burden is falling. In most cases, the percentage difference (PD) is less than 1, which also confirms that the tax burden on real estate intended for permanent residence has decreased over the entire period of validity of the law. This is despite two major tax reforms that significantly increased tax rates.

The real decrease in the tax quota for real estate tax is approximately 35%. This fact thus confirms that the tax burden on real estate is developing regressively in the Czech Republic. The stated findings agree with the results of foreign studies, e.g. [24; 44].

However, the value of the PD difference higher than 1 is based on real estate in municipalities up to 300, resp. 600 inhabitants. In this case, the conclusion is the opposite, and the tax burden has increased more than the price level in the economy. These conclusions agree with [45].

How the tax burden should develop if the tax rates were indexed according to the rate of inflation is shown for real estate intended for permanent residence in Figure 1.

In reality between 1993–2009, the tax burden remained the same in nominal value, and the tax burden decreased in real terms. The 2010 reform increased the tax rates, but these rates were unchanged until the end of 2023. The implementation of the inflation coefficient was included in the real estate tax by the tax reform in 2024.

Table 4. The development of the tax burden in CZK and the results of the analysis

| Population | Up to 300 | Up to 600 | Up to 1 000 | Up to 6 000 | Up to 10 000 | Up to 25 000 | Up to 50 000 | Statutory city | Prague |
|------------|-----------|-----------|-------------|-------------|--------------|--------------|--------------|----------------|--------|
| 1993 | 30 | 60 | 100 | 140 | 160 | 200 | 250 | 350 | 450 |
| 2024 | 350 | 350 | 350 | 490 | 560 | 700 | 875 | 1 225 | 1 575 |
| TLAI | 158.8 | 317.7 | 529.5 | 741.2 | 847.1 | 1058.9 | 1323.6 | 1853.1 | 2382.5 |
| AD | -191.0 | -32.3 | 179.5 | 251.2 | 287.1 | 358.9 | 448.6 | 628.1 | 807.5 |
| PD | 2.204 | 1.102 | 0.661 | 0.661 | 0.661 | 0.661 | 0.661 | 0.661 | 0.661 |

4.3. Does inflation affect tax revenue?

Using regression analysis, the next part of the study will examine the relationship between the inflation rate and the real estate tax revenue. The amount of the tax revenue is significantly lower compared to other direct and indirect taxes. The real estate tax revenue, as mentioned by, for example, Espinosa et al. or Bocci et al. [46; 47] not only in the Czech Republic is an important income item for the municipalities where the real estate is located.

More detailed results of the regression analysis are shown in Table 5. The general form of the regression model is shown in part 3, which deals with the essential characteristics of the used methodology. The explained variable in the regression equation is tax revenue. Regarding the availability of data on tax revenue, the last examined period is 2022. The analysis is carried out for the period

1993–2022. With regard to the tax reform in 2010, the study is carried out not only for the entire period 1993–2022 (model 1) but also for the period 1993–2009 (model 2) and 2010–2022 (model 3). The regression models are consistent with studies by Noguchi et al., or Kim & Choi [48; 49] at the 5% significance level.

The first regression model determined (4) shows the tax revenue’s dependence on the inflation rate for the entire analysed period 1993–2022. The years 2023 and 2024 are not included in the analysis because the data on the tax revenue for these years are unavailable. Equation (4) has the following form:

$$Y_1 = -0.00047 X_1 + 7.897. \quad (4)$$

Based on the value of the x_1 coefficient of equation (4), it can be concluded that inflation affects tax revenue negatively. The reason is, on the one hand, the unit tax rates, which cause their real value to

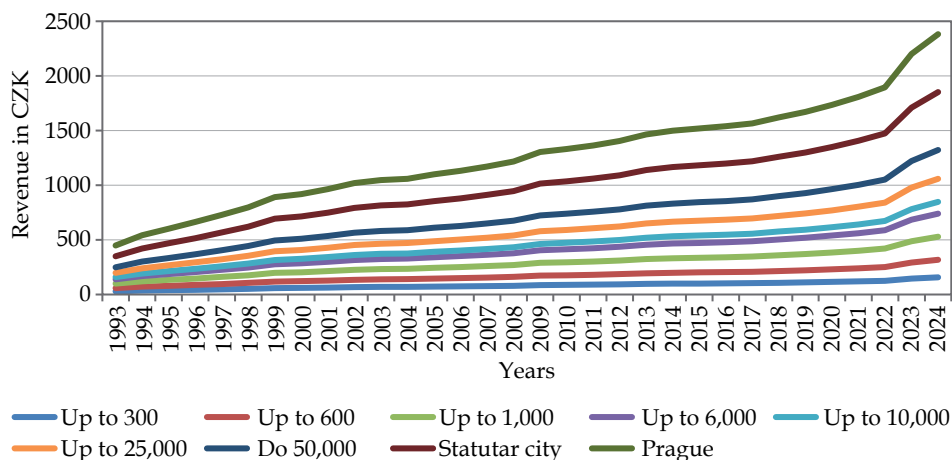


Figure 1. Tax burden based on inflation indexation

Table 5. Regression analysis

| | Model 1: 1993–2022 | | Model 2: 1993–2009 | | Model 3: 2010–2022 | |
|---------------|--------------------|--------|--------------------|--------|--------------------|-------|
| | Coef. | Sig. | Coef. | Sig. | Coef. | Sig. |
| X_1 revenue | -0.00047 | 0.0098 | -0.00527 | 0.0008 | -0.00202 | 0.028 |
| Constant | 7.897 | 0.0009 | 29.687 | 0.0001 | 18.130 | 0.045 |
| Observation | 30 | | 17 | | 13 | |
| R^2 | 0.302 | | 0.731 | | 0.604 | |
| F-test | 2.91 | 0.0098 | 17.23 | 0.0008 | 6.325 | 0.028 |
| DW test | 1.675 | | 2.062 | | 2.045 | |

decrease when the price level increases. Another reason is the fact that tax reforms in the area of real estate taxation are minimal, and this fact also has a negative effect on tax revenue. The conclusions of the analysis are consistent with the results of studies [23–25].

For each regression equation, it is also verified whether the conditions for the reliability of the regression model are met. Since the model has only one variable, it is not necessary according to Gokmen et al. [50] to test the multicollinearity of the data.

Another assumption of the regression model is to verify that the data has no autocorrelation. According to the results of the Durbin-Watson test, this assumption is fulfilled, as can also be seen from the DW value in Table 5.

The principle of the Durbin-Watson test is discussed in more detail by, for example, Ozdilek [51]. In equation (4), the value of the F test, or the significance level (Sig) for the constant and variable, also is under 0.05. A slight problem, however, is the coefficient of determination R^2 , which only takes a value of 0.302.

For this reason, the following procedure is chosen so that 1993–2022 is divided into two sub-sections, where the dividing point is the year 2010, i.e. the year when the tax reform regulating tax rates was carried out. The equation for the period 1993–2009 is determined by (5):

$$Y_2 = -0.00527X_2 + 29.687. \quad (5)$$

In this case, all the conditions for using the least squares method to model dependence are met. It is also confirmed here that inflation affects tax revenue negatively. What is positive about this model is that the value of the determination index R^2 has significantly increased.

The last, third regression equation examines the dependence of the tax revenue on inflation for the period 2010–2022. The coefficient for the variable X is based on equation (6) of the same type as in equations (4) and (5). This also confirms the negative influence of this macroeconomic indicator on the tax revenue from real estate tax:

$$Y_3 = -0.00202X_3 + 18.130. \quad (6)$$

Therefore, these conclusions of the analysis are not very optimal findings, especially from the point of view of the recipient of this tax, i.e., the municipalities and cities where these real estates are located. Not only abroad but also in the Czech Republic, this tax is included in local governments' budget.

5. Discussion

The real estate tax burden in the Czech Republic decreased in most cases over the analysed period 1993–2024. The main reason for this fact is minimal tax reforms in the area of tax rates. These took place only in 2010 and in 2024.

Even though the increase in these rates was by 100% or by approx. 75%, the real tax burden on real estate has fallen, and if inflation were to be indexed to this period, the rate increase in 2024 would also have to be 100%. It follows that the formulated hypothesis $H1$ was not confirmed.

To minimize a decrease in the tax burden from 2024 and thus also a decrease in tax revenue, an inflation coefficient was implemented in the legislation regulating real estate taxation as part of the tax reform. This coefficient will multiply the tax liability calculated according to the rates valid for 2024.

It will also not be necessary to carry out another tax reform in the area of rates in the future, using the inflation coefficient will result in the fact that the tax burden will also remain unchanged in real terms. This area, i.e., the inflation coefficient, is frequently debated.

The conclusions of several studies, e.g. [24; 25; 28], about the main reason why the tax revenue from real estate is decreasing in most countries is the almost unchanging legislation, and the unit type of tax rate have been confirmed. Increasing the tax burden is not a popular step from the taxpayers' point of view. Due to the fact that the reforms are taking place only minimally, the rate increase is rare. But if it happened the level of increasing is very high. Although taxpayers may believe their tax burden is increasing, the study results show the opposite conclusion. On the contrary, the implementation

of the inflation coefficient confirms the validity of hypothesis *H2*. However, its validity is only partial because, in the case of agricultural land, the inflation coefficient has a permanent value of 1.

An increase in tax rates can also affect investment in real estate. This may be reflected in the fact that the construction of new houses in smaller cities, where the tax burden is lower, will be preferred. At the same time, in larger cities, where there is often a shortage of space, this can be reflected in an increase in the efficiency of use.

Studies [14] and [15] confirmed that in the Czech Republic, there is not just one same rate for all real estates; on the contrary, there are more rates. The amount of these rates is graded according to the real estate's use or location.

The factor causing the decrease in tax revenue is inflation. The results of the regression analysis confirmed this in all regression models. Municipalities and cities in the Czech Republic can apply a local coefficient or increase the coefficient for real estate for permanent housing according to the number of inhabitants. According to [34] and [36], most municipalities do not use this because citizens do not perceive this fact positively. The way to achieve stable tax revenue is to reflect inflation in the calculation of tax liability. This is exactly what the tax reform ensures from 2024.

It is also justified that real estate that used for business activity should have a higher tax burden. According to Dinterman & Katchova [52], the increased tax burden can also be transferred to another entity in the case of real estate for housing. In renting, it can be a transfer from the landlord to the tenant in the form of a higher rent.

The tax reform of the real estate tax in 2024 increased the tax burden, but if the goal was to ensure that the tax burden returned to the values of 1993, i.e. the first year when the real estate tax law was in force, then it can be stated that the tax reform did not meet this goal. The second goal of the reform was to implement into the law a measure that would take inflation into account when calculating the tax burden. On the contrary, this goal was completely fulfilled by the tax reform.

A limiting factor must be considered in the study. This is mainly due to the availability of data on tax revenue when the last is for the year 2022. The Financial Administration of the Czech Republic has not published the data for a more recent period. From the point of view of the first part of the analysis dealing with aspects of tax rates. This limitation doesn't occurred at this section, data are available for the entire analysed period of 31 years. The second limiting factor of this study is that it is abstracted from applying the local coefficient when calculating the tax because, as stated in the study [34; 36], more than 80% of municipalities do not use this coefficient.

6. Conclusion

The aim of the study was to evaluate the development of the tax burden on the real estate tax in the Czech Republic from 1993 to 2024 in the context of tax reforms. The analysis results show that the tax burden on real estate has decreased with minor exceptions. On the other hand, the tax burden increased for real estate intended for permanent housing in small municipalities with up to 600 inhabitants. Other real estate shows a reduction in the tax burden in a comparison between 1993 and 2024 despite two tax reforms.

The reform in 2010 doubled the tax rates, in 2024 there was another increase of around 80%. The reason for the decrease in the tax burden was that until the end of 2023, issues of indexation of tax rates according to inflation were not implemented into the law.

According to the regression analysis results, inflation is the factor that negatively affected the tax revenue. This caused an ever-declining share of real estate tax in the total tax revenue. This fact is particularly negative from the point of view of the municipalities or cities in whose territory the real estate is located. This is because the tax revenue is not directed to the central but, on the contrary, to the regional budgets.

In the area of real estate tax, tax reforms are not often carried out, e.g. in comparison with income tax or value-added tax. This does not mean that the real estate tax research area has been complete-

ly examined. The evaluation of the effect of implementing the inflation coefficient or the increase in tax rates in 2024 on tax revenue may be the subject of another study.

Even though, as already mentioned, real estate tax shares a tiny percentage of

the total tax revenue, the real estate tax is a significant part of the tax system of the Czech Republic. By this tax, the principle of horizontal justice is fulfilled, and the importance of this tax as revenue for local governments' budgets is unquestionable.

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