


Distribution and use of tax support for housing in the Czech Republic

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ABSTRACT

This article focuses on mortgage interest deduction (MID) as an indirect tax support for acquiring one's housing. This form of support is the most widely used in the Czech Republic compared to other tax reliefs and causes the highest losses for the government budget. This paper provides quantitative evidence on how the MID was distributed among taxpayers in the Czech Republic in the period 2008–2019 in relation to taxable income and revenue losses for the government budget. Furthermore, it assesses the effectiveness of these tax measures in reducing socioeconomic inequalities among taxpayers. Research based on the application of the MID in tax returns has shown the effective distribution of the MID until 2017. Tax support for housing was used mainly by taxpayers with low taxable income, which is also the largest group. The essence of vertical equity has been fulfilled, which contributed to reducing the level of social inequality. This positive distributional effect has diminished over time. As of 2019, the highest share of public expenditure was redistributed to taxpayers with higher taxable income, indicating the existence of inequalities in the tax system. The different developments over time have shown that the use of the mortgage interest deduction cannot be assessed statically, as it evolves dynamically over time.

KEYWORDS

tax housing support, tax expenditure, mortgage interest deduction, income, public revenue, taxpayers

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1. INTRODUCTION

Affordable housing is a basic human need and contributes to social cohesion. Under the Lisbon Treaty, the legal basis for EU policy is the Charter of Fundamental Rights, which includes the right to housing assistance. Most countries support housing affordability (Andrews et al. 2011) through public housing subsidy programmes and direct social support. Many countries also use indirect support for home ownership through tax relief. Housing support through tax relief can take various forms, including one-off tax relief for the purchase of a dwelling, preferential tax treatment of savings related to housing, and mortgage interest deduction (MID). However, this is associated with a reduction in tax revenues for the government, and tax reliefs can represent a hidden subsidy in the tax system and higher administrative costs (Pechman 2001). The economic impact of tax reliefs is also reflected in the 2011 Council of the European Union Directive (EU 2011), which requires EU member states to publish detailed information on the impact of tax reliefs on public revenue.

However, in many countries, lost tax revenues are only estimated and underestimated or not reported at all; MID costs about 1.3% of GDP in the Netherlands and 0.3% of GDP in Belgium and Luxembourg (OECD 2021a). At a time when many government budgets are under threat from ageing populations, adverse cyclical trends, and the recent Covid-19 crisis, there is an urgent need to avoid inefficient government programmes (Myles et al. 2014; Polackova Brixi – Zhicheng 2004).

The number of EU countries offering MID increased from 14 to 18 between 1996 and 2006. Subsequently, the use of MID has been reduced and, in 2020, only 10 EU countries allowed the deduction of interest on housing loans. MID was applied in the Czech Republic, Denmark, Estonia, Finland, Italy, Luxembourg, the Netherlands, Portugal, Slovakia, and Sweden. In some countries (Finland and the Slovak Republic), MID is reserved for young taxpayers under an age limit (OECD 2021a).

In addition to assessing the impact of MIDs on public revenues, it is necessary to evaluate and assess their effectiveness in terms of achieving their stated objectives and what social and economic impacts they achieve relative to the costs incurred. The evaluation document should be broken down into a number of detailed sub-questions (GAO 2012). For example, are MIDs equitable? Do MIDs result in different benefits for similarly situated taxpayers? Who actually benefits from MIDs? Proper identification of the target group across the household income spectrum is also important, as MIDs can be highly regressive in that they can benefit those with relatively better economic backgrounds the most (OECD 2021a).

According to Donner (2000), the state should not replace the individual's activity in the area of housing or restrict their freedom of choice, but should provide support to households so that they can define and meet their housing needs themselves. With regard to the provision of housing support, households can be divided into several groups: the first group has sufficient income and savings and, therefore, does not need support; the second group has sufficient income but lower savings and is able to purchase housing on the open market, so that support is usually not required; the third group has no savings and is of average or lower income and cannot do without state assistance in acquiring home ownership; the last group has insufficient income and is targeted by the rental sector. However, in many countries, MID is available to all income groups regardless of their socio-economic conditions.



This article provides quantitative evidence on how MID was distributed among taxpayers in the context of their taxable income and the shortfall of public revenue in the Czech Republic in the period 2008–2019. Furthermore, it assesses the effectiveness of these tax measures in reducing socioeconomic inequalities among taxpayers.

The purpose of the paper is to expand the theoretical background and provide new information for professional discussion on possible reforms of MID in the context of tax policy, housing support, and public budgets.

This paper is divided into the following sections. This introduction is followed by a chapter reviewing the literature on MID. The third chapter focuses on the specifics of housing support in the Czech Republic. The fourth chapter explains the methodology of the paper and specifies the data used. The fifth chapter presents the results and their discussion. The final chapter summarises the main findings of the paper.

2. LITERATURE REVIEW

Both theoretical approaches and empirical studies compare the relationship between the total cost to the government of social housing programmes financed through direct expenditure and indirect financing in the form of tax reliefs. The polarity of views is evident here. For example, [Faricy and Ellis \(2014\)](#) traced the effect of both financing methods on public support for these programmes and found that support is generally higher when these programmes are provided through tax expenditures. [Prasad \(2011\)](#) compared MID with direct government support and pointed out that such a system tended to benefit certain individuals more and that the reduced financial capacity of public finances needed to be replaced by increasing other taxes. [Pechman \(2001\)](#) described tax deductions in the process of tax legislation and their relationship to fiscal policy and saw no difference between support through MID and support through government spending. [Splinter \(2019\)](#) pointed out that MID is a significant public expenditure and can have a negative impact on economic cycles.

According to [Anderson et al. \(2007\)](#), MID changes the user cost of housing for taxpayers, but the effectiveness of MID is questionable because it may favour owners of more expensive homes and may not be effective in the initial rental decision or homeownership. The limit and setting of MID and whether the future homeowner will receive it are important determinants. [Hanson \(2012\)](#) demonstrated the effect of MID on mortgage interest rates, which use MID to their advantage, and recommended considering this fact when adjusting tax legislation.

Research largely suggests that the MID is mainly used by high-income taxpayers. In the Czech context, [Sunega \(2005\)](#) argued that the distribution of financial benefits from the possibility of using the MID was clearly skewed in favour of the most powerful taxpayers. However, in his research, he did not directly specify the data from which he drew. [Jahoda and Godarova \(2014\)](#) also agreed with this finding. They focused on the distributional aspect of MID in terms of budgetary costs, and according to them, it is an instrument with high budgetary costs borne by the whole society, while the beneficiaries of MID are concentrated among the richest members of society. Their results are based on the 2012 SILC household survey and model the value of MID on the basis of mortgage lending volumes, interest rates, and housing market values.



Some research on the distributional impact of MID in European countries has used a micro-simulation model, EUROMOD, which captures a number of institutional features of the tax and benefit system. As [Matsaganis \(2011\)](#) notes, EUROMOD is a static model based on purely arithmetic calculations and relies on results reported in surveys, which may not be identical to the data reported to the authorities. Using this model, [Figari et al. \(2019\)](#), for example, quantified the share of MID received by the richest 20% of the population as 58% in the Netherlands, 40% in Sweden, and 37% in Italy. [Fatica and Prammer \(2018\)](#) reported that differences in tax subsidies were not particularly pronounced across income quintiles. Tax subsidies were regressive (i.e., increasing with income) in Belgium, the Netherlands, and, to a lesser extent, in Austria and Greece. It was mostly progressive (i.e. decreasing with income) in Germany, Portugal, and, to a lesser extent, Malta.

[Estman and Tyger \(2019\)](#) quantify consumption as 60% of total MID support for taxpayers in the highest income bracket in the United States. They argue that this is due to regressive taxation. High-income taxpayers claim items more frequently in their tax returns because they are more likely to benefit from MID. [Rose \(2015\)](#) and [Schalck \(2017\)](#) find a similar percentage distribution. [Rose \(2015\)](#) finds that the tax savings from MID are skewed toward higher-income households. He also points to the negative fact that MID can be used for other houses or yachts (e.g. in the Czech Republic, MID can only be used for one's own housing. This house cannot be used for business purposes).

According to [Poterba and Sinai \(2011\)](#), the effects of MID are limited by age and personal income, and the use of MID violates the principle of tax equity. In addition to violating the principle of tax fairness, MIDs are correlated with price fluctuations in the housing market and lead to distortions in capital allocation and rental decisions. Finally, they are embedded in higher asset prices, which is contrary to the goal of promoting home ownership ([Marekwica et al. 2013](#)). [Hanson and Martin \(2014\)](#) pointed to the distortions in the housing market caused by MID. In terms of economic efficiency, they show that MID creates a significant deadweight loss. MID is an ineffective policy to promote home ownership and improve social welfare.

Some authors favour a reduction of MID or discuss its complete abolition ([Rose 2015](#); [Gervais 2002](#); [Anderson et al. 2007](#); [Bourassa – Grisby 2000](#)). This would virtually eliminate its negative impact on government revenues and distributional effects and, in the long run, on house prices. The resulting increase in government revenue could be used to provide direct rent subsidies to low-income tenants to support social objectives. In addition, MIDs are not subject to regular and systematic monitoring and add to the complexity of the income tax system. According to [Poterba and Sinai \(2011\)](#), eliminating the mortgage interest deduction would particularly affect young households and delay their transition from renting to homeownership, as young households tend to have high debt burdens relative to their assets. An interesting solution is to transform MID into a mortgage interest credit, which could be better targeted at low- and middle-income taxpayers ([Drukker 2021](#)).

The analysis of MID and its international comparisons is complicated by the lack of a common definition and different normative tax bases. Estimates of the size and distribution of MID do not take into account the behavioural responses of households and depend on the specific form of the deduction and the broader tax and housing policy context. MID can take the form of a deduction from taxable income, a tax credit deducted from the final tax liability, or even a negative tax (e.g. in Slovakia).



3. TAX SUPPORT FOR HOUSING IN THE CZECH REPUBLIC

As in many other former Communist countries in Central and Eastern Europe (Csizmadý et al. 2017), home ownership is the dominant tenure type in the Czech Republic, with 75% of households owning their home (i.e., 59% of households live in a directly owned dwelling and 16% of households live in a directly owned dwelling with an outstanding housing loan). Home ownership is also high among people with low incomes (OECD 2021b). This is also related to the privatisation of the municipal housing stock in the first half of the 1990s. Municipal housing was offered to existing tenants at relatively low prices (Table 1).

In the 1990s, the state withdrew from financial participation in new housing construction and the number of new dwellings declined. This led to the introduction of standard financial market instruments to enable households to raise funds to finance their housing needs. The first such instrument was the building savings account, which was introduced in 1993 and was a combination of a savings and a loan product. In 1995, legislative conditions were created for the operation of mortgage loans.

The lack of housing affordability, especially in cities, for the younger generation is still a problem in most countries (Lux et al. 2023). The Czech Republic is characterised by the aforementioned high homeownership rate but also by a relatively low volume of mortgage lending. The mortgage market in the Czech Republic is relatively mature (Lunde – Whitehead 2016), but a portion of sales are made without a mortgage, suggesting a link to the intergenerational transfer of ownership (Lux et al. 2021; Lux et al. 2018).

The Czech Republic implemented MID in the Income Tax Act in 1998 as part of its housing policy to promote the affordability of housing, especially for young families. MID is the most widely used tax support compared to other tax reliefs (e.g., tax relief for life insurance, pension insurance, and philanthropy) (FACR 2021). The amount of interest paid during the tax year on a loan (a loan solely to secure one's own home) can be deducted from taxable income. The total amount of MID within a family could not exceed CZK 300,000¹ in a given year. This level of

Table 1. Housing tenure distribution in the Czech Republic (%)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Own outright	62.3	63.2	63.9	63.6	62.4	61.6	60.6	60.0	59.4	58.9
Owner with mortgage	14.3	14.6	14.3	14.3	14.1	13.8	14.7	15.6	16.0	16.5
Rent (private)	5.4	13.9	13.8	17.1	17.8	17.6	17.2	17.0	17.5	17.9
Rent (subsidized)	14.9	4.8	4.5	1.0	1.4	2.0	2.1	1.8	1.4	1.2
Other, unknown	3.2	3.4	3.4	4.0	4.3	5.1	5.3	5.5	5.7	5.5

Source: authors, based on OECD (2021c).

¹The average daily nominal exchange rate of CZK/EUR amounted to 25.672 in 2019 (CZSO 2021a).



MID has long been criticised for favouring citizens with above-average incomes. From 2021, this amount was reduced to CZK 150,000. This was due to the abolition of the real estate transfer tax, which amounted to 4% of the value of the property sold. The intention, according to the government, was to stimulate the real estate market, which had been negatively affected by the coronavirus pandemic, and to promote the availability of owner-occupied housing (CDPCR 2021).

Housing taxation in the Czech Republic is considered one of the lowest in the EU. There is no real estate transfer tax and no imputed rent tax. Only a recurrent tax on immovable property is levied. The calculation of this tax uses a unitary approach to determine the tax base (based on the area of the property) without linking it to the real value of the property. The share of property tax in GDP was 0.2% in 2021 (EU 2023). Capital gains on the sale of a property are exempt from income tax if the property has been the owner's main residence for at least two years or if the gains have been reinvested in purchasing a home of another.

The application of MID is closely related to the design of the income tax. The abolition of progressive tax rates in 2008 made the Czech Republic one of the countries with more favourable tax conditions, especially for citizens with above-average incomes. The introduction of a linear tax rate of 15% fundamentally changed the principle of redistribution, reduced social solidarity, and affected the MID effect for low-income taxpayers. This advantage for high-income taxpayers has been gradually removed, and in the context of the economic crisis, a 7% solidarity tax was introduced in 2013. In 2021, the Czech Republic returned to progressive taxation by introducing a marginal tax rate of 23%.

Czech tax law also provides for tax credits (reductions in final tax liability), which reduce the effectiveness of the MID for low-income groups. Each taxpayer was entitled to a tax credit of CZK 24,840 until 2020. This means that the taxpayer's tax liability on annual income up to CZK 165,600 was zero. The amount increased to CZK 27,840 in 2021 and to CZK 30,840 in 2022. The loss of the housing support increases with each additional tax credit that the taxpayer can claim individually (for a spouse, a disabled person, for studies or for a child's preschool education). In the case of a taxpayer who can claim a spouse's credit, they will pay no tax on a tax base of CZK 371,200 (Table 2) (effective from 2022).

Table 2. Tax calculation with a tax credit

	Up to 2020		The year 2021		From 2022	
	individual	+ spouse	individual	+ spouse	individual	+ spouse
taxable income	165,600	331,200	185,600	351,200	205,600	371,200
tax (15%)	24,840	49,680	27,840	52,680	30,840	55,680
- tax credit to taxpayer	24,840	24,840	27,840	27,840	30,840	30,840
- tax credit to spouse		24,840		24,840		24,840
= tax	0	0	0	0	0	0

Source: authors.



Note that the above does not apply to child tax credits. For low-income taxpayers with no tax liability, the child tax credit is a bonus paid by the government to the taxpayer.

4. METHODOLOGY

The research is based on static data provided by the Financial Administration of the Czech Republic. Data are processed on the basis of tax returns. Due to tax confidentiality, it is impossible to work with individual data, and the available data are partially aggregated. The financial administration divides taxpayers into groups according to the amount of their taxable income. For each group created in this way, data in aggregate amounts and the number of taxpayers are provided. Therefore, it is necessary to work with average amounts, which may partially limit the analysis carried out.

However, tax returns are the only relevant source for assessing MID, which makes it possible to analyse long-term trends and monitor changes in taxpayer behaviour over time. We evaluate MID in the 2008–2019 period. Since 2008, a linear income tax rate of 15% has been applied in the Czech Republic, and the conditions for claiming MID have not changed during the period under consideration. 2019 was the last year for which data were available at the time of writing.

The data cover an average of 2.06 million taxpayers per year during the period under review. This represents 41% of the country's economically active population (CZSO 2021c). The rest do not have to file a tax return. They can claim MID as part of the tax settlement with their employer. In this case, data are not collected, even though information on the characteristics of those taxpayers is desirable for the analysis of various tax policies and tax administration. The Ministry of Finance approaches this shortfall with the hypothesis that the average amount of MID is the same as that of taxpayers filing a tax return (MFCR 2023). Obtaining the entire database would result in a disproportionate increase in the administrative burden on affected entities.

We are inclined to believe (e.g., Slemrod 2016) that the characteristics and behaviours of taxpayers not filing tax returns may differ from those of taxpayers filing tax returns, leading to potential biases in generalising findings to the population as a whole. A possible way to expand the data would be to conduct a questionnaire survey, but this makes it impossible to monitor trends over time. For these reasons, we approach the evaluation of MID using only tax return data and do not consider other taxpayers.

The basic criterion for evaluating MID is the amount of the taxpayer's taxable income. Due to the nature of the data, it was not possible to find a range of taxable income deciles that would have approximately the same number of taxpayers in each taxable income interval. Therefore, in the first phase of evaluating the distribution of MID among taxpayers, we created ten equally sized taxable income ranges (Table 3).

Table 3 shows that the variance of the last range is not bounded from above. Therefore, some results calculated on average values may be distorted in this last range.

We assign taxpayers to each group according to their declared taxable income and the absolute amount of MID claimed in their tax returns.

The foregone revenue method is used to calculate the loss of budget revenue due to MID for each group in order to assess the distribution of the MID in terms of indirect public expenditure (public budget losses). This is an ex-post calculation of the budget revenue lost when taxpayers



Table 3. Ranges of taxable income (TI)

Range	1	2	3	4	5
TI (thousand CZK)	1-500	5,001-1,000	1,001-1,500	1,501-2,000	2,001-2,500
Range	6	7	8	9	10
TI (thousand CZK)	2,501-3,000	3,001-3,500	3,501-4,000	4,001-4,500	4,501- more

Source: authors.

use MID. This method is used by, for example, OECD (2010), Polackova Brix and Zhicheng (2004), Bratić (2006) and Fookes (2009).

In the second phase, we focused on the first range of taxable income (1 – 500,000 CZK), which better represents the general population and includes the highest number of taxpayers. Also, in this case, we divided taxable income into ten equal ranges, where the variance of the taxable income range is CZK 50,000, and we assigned the taxpayers to each created group according to their declared taxable income and the absolute amount of MID claimed in tax returns (Table 4).

The resulting tax is zero to the annual income of CZK 165,600. This is the reason for the ineffectiveness of MID for taxpayers with taxable income in groups 1.1 to 1.3. Due to the finding that these taxpayers also claim MID in their tax returns, we corrected the calculated loss of public revenue. At the same time, to evaluate the distribution of MID, we added the loss of public budget revenues for the first group.

In the case of MID evaluation, we assume that if MID is claimed in the tax return, it is claimed by the taxpayer with the higher taxable income as part of the optimisation of the family budget. We use Pearson's correlation coefficient to prove relationships. Due to explanatory power, the data was kept in the Czech crowns.

5. RESULTS AND DISCUSSION

The distribution of taxpayers in the ten taxable income ranges is as follows. Range 1 is the most numerous, including taxpayers with annual tax bases from CZK 1 to 500 thousand. This is more than 80% of the total number of taxpayers filing tax returns. Range 2 includes, on average, 15% of taxpayers. The remaining 5% of taxpayers are divided between ranges 3 to 10.

Table 4. Ranges of taxable income (TI) within the first range (thousand CZK)

Range	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10
TI	1-50	51-100	101-150	151-200	201-250	251-300	301-350	351-400	401-450	451-500

Source: authors.



Furthermore, the absolute amount of MID claimed in tax returns is allocated to each taxable income range (Fig. 1), and the revenue foregone method is used to calculate the government budget revenue loss (Table 5).

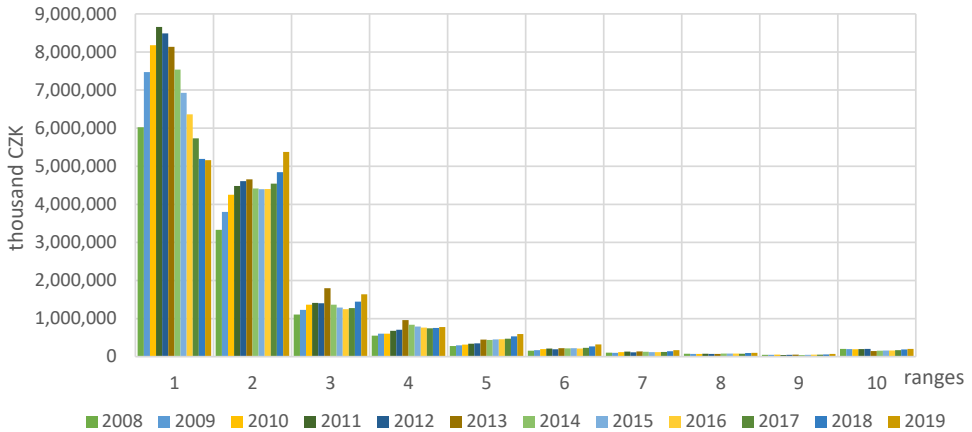


Fig. 1. The absolute amount of MID claimed in the tax returns (CZK)
 Source: authors, based on [FACR \(2021\)](#).

Table 5. Indirect public sector expenditure (CZK)

Year	Total expenditure	Taxable income range 1	%	Taxable income range 2	%	Taxable income range 3 to 10	%
2008	1,781,834,400	903,291,809	50.69	499,317,177	28.02	379,225,414	21.28
2009	2,098,263,900	1,120,690,650	53.41	569,955,450	27.16	407,617,800	19.43
2010	2,303,438,550	1,226,850,000	53.26	637,916,250	27.69	438,672,300	19.04
2011	2,436,054,511	1,298,596,840	53.31	672,154,009	27.59	465,303,663	19.1
2012	2,428,413,068	1,273,177,308	52.43	691,479,608	28.47	463,756,153	19.1
2013	2,495,880,575	1,220,141,230	48.89	698,661,147	27.99	577,078,198	23.12
2014	2,284,920,961	1,130,738,079	49.49	662,734,755	29.00	491,448,127	21.51
2015	2,174,278,788	1,039,272,462	47.80	659,700,991	30.34	475,305,335	21.86
2016	2,078,818,652	954,130,581	45.90	660,435,481	31.77	464,252,590	22.33
2017	2,013,584,309	859,786,430	42.70	681,318,861	33.84	472,479,019	23.46
2018	2,028,738,358	778,897,042	38.39	726,434,502	35.81	523,406,814	25.8
2019	2,163,146,550	774,115,350	35.79	806,651,850	37.29	582,379,350	26.92

Source: authors, based on [FACR \(2021\)](#).



According to [Surrey's \(1973\)](#) tax expenditure concept, MID is an indirect state expenditure whose purpose is to provide governmental financial assistance to the taxpayers, in this case, to housing. The results show that taxpayers use the highest percentage of this support in the taxable income range 1. This represents an average of 47.7% of the total financial support for the entire period under review. Taxpayers in the taxable income range 2 use, on average, 30.4% of this support, and other taxpayers included in the ranges 3 to 10 consume 21.9% of support.

The following results are based on the above:

- 80% of taxpayers have taxable income of up to CZK 500,000 (range 1) and consume, on average, 47.7% of the total state housing support in the form of MID.
- 15% of taxpayers have taxable income between CZK 500,000 and 1 million (range 2) and consume 30.4% of the total tax support for housing.
- Only 5% of taxpayers have higher taxable incomes (ranges 3–10). These taxpayers consume 21.9% of the total tax support for housing.

In terms of the budgetary costs that this indirect support means for the state, housing support is redistributed mainly to taxpayers with taxable income included in range 1 (lowest), in years under review.

On the other hand, the data show that the average MID per taxpayer, and therefore the tax saved, is lowest for these taxpayers ([Fig. 2](#)). However, this is consistent with the fact that these taxpayers do not reach higher mortgage volumes (more expensive properties) with their income and ability to repay the debt. Therefore, the interest paid and the deductibility of the MID is lower.

The Czech Republic still has a high maximum MID limit (although the maximum limit was reduced in 2021), making it impossible, as [Anderson et al. \(2007\)](#) argue, to target support to needy households (see also [Splinter 2019](#)). There is also no limit on the maximum amount of mortgage that would receive tax status. According to [Anderson et al. \(2007\)](#), the ability to deduct interest payments should lead taxpayers with a higher range of taxable income to buy more expensive properties. However, according to the development of the average MID, this does not translate into higher taxable income ranges.

The distribution of indirect public sector expenditure ([Table 5](#)) also shows the following. Taxpayers in the taxable income range 1 consumed more than 50% of total housing support in 2008–2012. In the following years, their consumption declined and spilled over to taxpayers in the taxable income range 2. This trend may be due to rising house prices ([Fig. 3](#)). Despite the fall

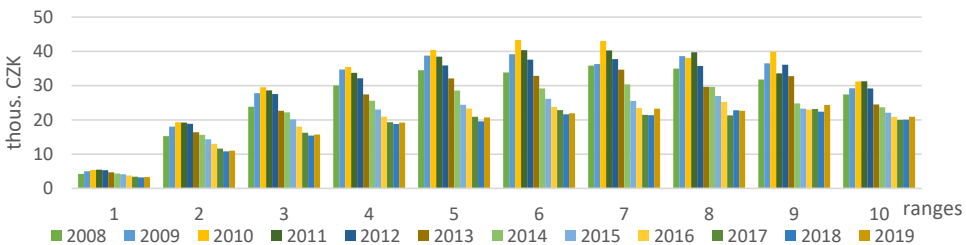


Fig. 2. Average MID claimed in tax returns
 Source: authors, based on [FACR \(2021\)](#).



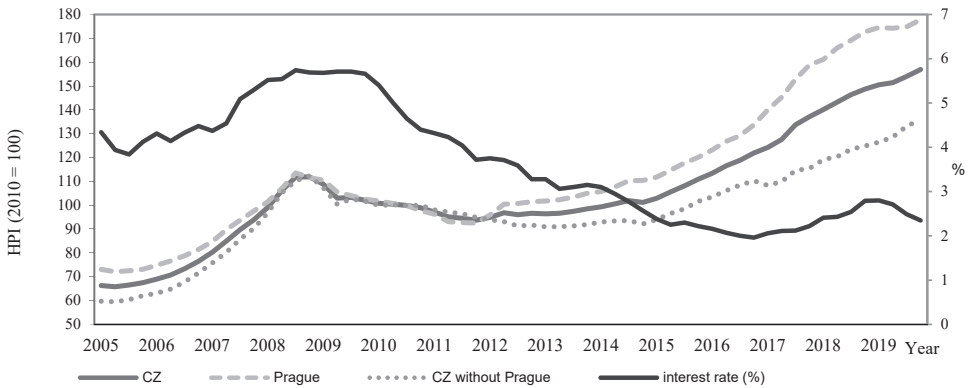


Fig. 3. House price index and mortgage interest rate

Note: HPI – House price index; CZ – Czech Republic; Prague – The capital of the Czech Republic.

Source: authors, based on CNB (2021) and CZSO (2021b).

in mortgage interest rates, buying property is difficult for taxpayers in the taxable income range 1 due to high prices.

Another reason for this development may be the stricter conditions for obtaining mortgages. The maximum mortgage limit of up to 100% of the property's value has been reduced to 85% (LTV – loan to value). The ratio of total monthly repayments to net monthly income has been set at 45% (DSTI - debt service to income). According to Eurostat, in the third quarter of 2021 the HPI (house price index), rose by 9.2% in the EU compared with the same quarter of the previous year. The highest increases were recorded in Czechia (+22.0%) (EU 2021). It can be assumed that the trend of housing support consumption will continue to decline in the taxable income range 1 and will move into the taxable income range 2.

The existence of a relationship between the total consumption of housing support in the form of MID for taxpayers in the taxable income range 1 and the house price indices was proved by the Pearson correlation coefficient. A strong indirect linear relationship was found with a correlation coefficient of $r(11) = -0.9, P < 0.05$.

The average MID per taxpayer (Fig. 2) shows a similar annual trend in all taxable income ranges during the years under review. This trend is strongly correlated with the evolution of average mortgage interest rates (Fig. 3). The correlation is significant at the 0.05 level in the taxable income ranges 2 to 10 (Table 6).

Due to rising inflation and other inflation expectations, the Czech National Bank has raised the base interest rates on which the bank loan interest rates are based. House price inflation has also accelerated (HPI increase of 22% in Q3 2021). If, in previous years, the highest consumption of housing support in the form of MID has been among taxpayers in taxable income range 1, based on demonstrated relationships, an outflow of MID consumption from range 1 to higher ranges can be expected. The effect of this support will be significantly reduced in favour of taxpayers with taxable income in the higher ranges. The development of the mortgage and property market has a significant impact on the use of MID and its distribution among taxpayers.





Table 6. Pearson correlation coefficient

		R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8	R_9	R_10
Interest rate	Pearson Correlation	0.540	0.583	0.689	0.774	0.773	0.729	0.714	0.777	0.752	0.743
	Sig. (2-tailed)	0.070	0.047	0.013	0.003	0.003	0.007	0.009	0.003	0.005	0.006
	N	12	12	12	12	12	12	12	12	12	12

Source: authors.

In the following section, the research is focused only on the use of MID in the taxable income range 1, which includes 80% of all taxpayers. We have divided this range 1 into ten equal-sized groups/ranges. The spread of taxable income ranges in this case is CZK 50,000 and to distinguish them from the previous ranges, we refer to them hereafter as ranges 1.1, 1.2, 1.3, etc. (see Table 4).

The share of taxpayers in the taxable income ranges 1.1 to 1.10 is shown in Table 7, and the absolute amount of MID claimed in the tax returns is shown in Fig. 4.

Up to a certain level of taxable income (see Table 2), the resulting tax burden is zero, and the reduction of this taxable income by MID is irrelevant. If these taxpayers repay their mortgages,

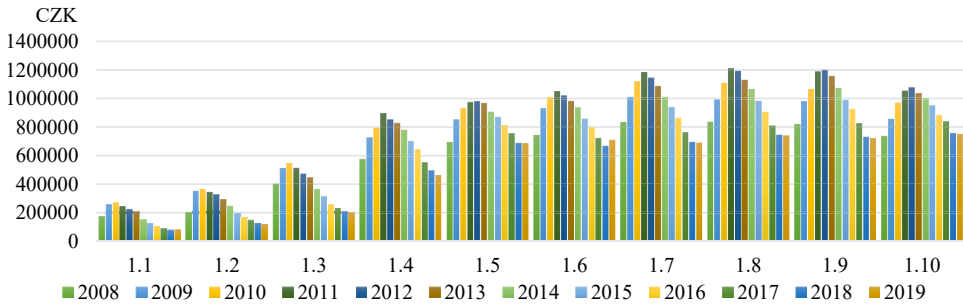


Fig. 4. The absolute amount of MID claimed in the tax returns (CZK)
 Source: authors, based on FACR (2021).

Table 7. The share of taxpayers in the ranges of taxable income (%)

	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10
2008	17.3	12.5	15.3	13.4	9.6	8.2	7.5	6.4	5.4	4.4
2009	20.6	15.3	14.4	12.0	8.5	7.4	6.9	5.9	5.0	4.0
2010	20.6	14.9	14.3	12.4	8.4	7.3	6.8	6.0	5.1	4.1
2011	19.3	14.9	14.4	13.1	8.4	7.3	6.9	6.1	5.3	4.3
2012	19.2	14.5	13.9	13.7	8.4	7.2	6.8	6.2	5.5	4.5
2013	19.5	14.4	13.8	13.9	8.5	7.1	6.7	6.1	5.4	4.5
2014	18.7	14.4	13.5	14.4	8.7	7.3	6.7	6.2	5.5	4.6
2015	16.7	13.8	13.3	15.2	9.3	7.6	7.0	6.5	5.8	5.0
2016	16.0	13.4	12.8	15.4	9.7	7.8	7.2	6.6	6.0	5.2
2017	15.6	13.1	12.6	14.7	9.9	8.1	7.3	6.8	6.2	5.6
2018	15.3	12.9	12.7	14.7	10.0	8.2	7.4	6.9	6.2	5.8
2019	14.9	12.9	12.8	14.3	10.2	8.6	7.5	6.9	6.2	5.8

Source: authors, based on FACR (2021).



housing support in the form of MID cannot be used. These are all taxpayers in the first three taxable income ranges (1.1–1.3). It is an average of 45.4% of taxpayers in the period under review (i.e., 35.6% of all taxpayers). We assume that from 2021 onwards, when the credit per taxpayer was increased, there has likely been a higher proportion of taxpayers for whom housing support in the form of MID will be insignificant. In 2022, the insignificance of MID will also affect the fourth taxable income range (1.4).

Although for taxpayers in the first three taxable income ranges (1.1–1.3) the application of MID is insignificant and does not result in any tax savings, MID is claimed in tax returns (Fig. 4). In terms of the total amount of MID claimed, this is not a large amount (1.63% on average over the whole period under review), but it is a relatively high percentage of taxpayers (Table 7). Therefore, indirect public sector expenditure shown in Table 5 must be reduced by the so-called dead MID.

The unjustified application of the MID has adverse effects on increasing administrative costs on the taxpayer's side and on the side of the tax administration. It also points to the low tax literacy of taxpayers. The finding corresponds to low tax knowledge, which has already been proven in the past by primary research (Janoušková – Kirschnerová 2018). Only 13.9% of the respondents knew the amount of tax savings from MID.

We assume that, as part of the family budget and the effort to keep taxation as low as possible, MID is mainly claimed by the family member whose income is higher (there is no joint taxation of households in the Czech Republic). From this we can conclude that the total family budget will not be too high. However, even these low-income families have mortgage loans that are difficult to repay in the event of any unexpected financial failure and, as Fatica (2015) argues, create significant financial pressure or a sharp decline in asset values for households.

In light of these findings, we have to modify the results, which were based on an assessment of the use of MID by the whole set of taxpayers. The first results showed that 80% of taxpayers are classified in the taxable income range 1 and consume, on average, 47.7% of total housing support in the form of MID. 15% of taxpayers are classified in the taxable income range 2 and consume, on average, 30.4% of the total housing support. The remaining 5% of taxpayers are classified in taxable income ranges 3 to 10 and consume 21.9% of the total housing support.

If the results are adjusted for taxpayers classified in the ranges 1.1 to 1.3, for whom the use of MID is irrelevant (i.e. it does not provide tax savings), the results will be different. The percentage of taxpayers in the taxable income range 1 decreases from an average of 80%–67.3%. These taxpayers consumed, on average, 44.8% of the total housing support in the form of MID over the period under review. 22.7% of taxpayers are in the taxable income range 2 and account for 32.1% of the total housing support. Other taxpayers (ranges 3–10) account for 23.1% of housing support (Table 8).

The evolution of claimed MID over time shows that until 2012, the support was relatively stable, with almost half of it used by taxpayers in the taxable income range 1. Subsequently, the support was gradually redistributed from the taxable income range 1 to higher ranges. This trend logically follows from the decreasing number of taxpayers in the taxable income range 1. This means that taxable incomes increase; thus, the number of taxpayers in the taxable income range 2 strengthens. These taxpayers also transfer their claimed MID. If this trend continues, the predicted consumption of housing support in the form of MID for 2023 would be 18% for taxpayers in the taxable income range 1 and 44.3% for taxpayers in the taxable income range 2.



Table 8. Adjusted indirect public sector expenditure (CZK)

Year	Total expenditure	Taxable income range 1 (%)		Taxable income range 2 (%)		Taxable income ranges 3–10 (%)	
		expenditure	taxpayers	expenditure	taxpayers	expenditure	taxpayers
2008	1,664,862,201	47.23	71.7	29.99	19.9	22.78	8.4
2009	1,929,770,235	49.34	71.5	29.53	20.2	21.12	8.3
2010	2,126,232,530	49.37	71.3	30.00	20.5	20.63	8.2
2011	2,270,726,449	49.91	71.3	29.60	20.3	20.49	8.4
2012	2,274,503,250	49.21	70.8	30.40	20.7	20.39	8.6
2013	2,353,889,418	45.80	67.7	29.68	21.2	24.52	11.2
2014	2,170,185,235	46.82	69.0	30.54	21.1	22.65	9.9
2015	2,078,770,808	45.40	67.8	31.74	22.0	22.86	10.2
2016	1,999,353,901	43.75	66.6	33.03	23.0	23.22	10.4
2017	1,943,766,984	40.64	63.7	35.05	25.3	24.31	11.0
2018	1,966,543,455	36.44	59.8	36.94	27.9	26.62	12.2
2019	2,103,242,446	33.96	57.0	38.35	29.9	27.69	13.1

Source: authors.

However, as already mentioned, the use of MID is heavily influenced by interest rates and house prices, which are currently rising turbulently, and time-series predictions could be misleading.

According to [Sunega \(2005\)](#), effective distribution of housing support in the form of MID can be considered to be one in which the number of supported beneficiaries with lower taxable incomes is higher than the number of beneficiaries with higher taxable incomes. At the same time, the absolute amounts of support are higher for taxpayers with lower taxable incomes. Under these conditions, the effective distribution of MID fulfils the essence of vertical equity and reduces the level of social inequality. By this definition, the assessment of MID distribution resulting from this research up to 2017 is relatively favourable. Tax support for housing is mainly consumed by the group of taxpayers belonging to the taxable income range 1, which is also the most numerous. If MID reduces the tax burden on a wider range of low-income taxpayers over the long term, it could be considered a tool for promoting social justice in housing.

The findings on the application of MID up to 2017 contradict those of other researchers, who mostly report that MID tends to favour high-income taxpayers. For example, in the Czech Republic, [Sunega \(2005\)](#) quantified that only less than 1.3% of the total amount of housing support in the form of MID was shared by 50% of households with the lowest income. [Jahoda and Godarová \(2014\)](#) assigned 66% of the total amount of housing support in the form of MID to the last three decile groups. The difference in results may be due to the time period of each study (Sunega analysed the year 2002, Jahoda and Godarová the period 2004–2011) and the different selection of data, which is based on EU statistics.



However, if we focus on the development of MID in individual years of the entire monitored period, we see that the positive distribution effect decreases over time and disappears completely in 2018. From this year, vertical inequality starts to emerge, and housing support in the form of MID begins to be consumed to a greater extent by taxpayers in higher income ranges. Support becomes ineffective and begins to deepen social inequality. These results begin to align with those of other researchers, who show that MID is used primarily by high-income taxpayers (e.g. Figari et al. 2019; Estman – Tyger 2019; Schalk 2017 or Rose 2015).

From the perspective of the principle of horizontal equity, an important element is the fair application of tax rules. Horizontal equity, in the case of MID, refers to whether tax deductions are fairly and equally available to all taxpayers regardless of their economic or social status. However, as shown, lower-income taxpayers benefit much less from MID than higher-income taxpayers. This benefit is directly proportional to the amount of the mortgage and, therefore, to the amount of interest that is paid. On the one hand, a low-income taxpayer cannot afford a high mortgage, and their interest payment is low. On the other hand, for some taxpayers, there is no scope to claim MID because of the way income tax, including other credits and deductions, is constructed. And third, a taxpayer who does not have a mortgage completely loses the benefit of claiming MID. Then, we can agree with Swift and Cavalcanti (2003) or Poterba and Sinai (2011), who also point to horizontal inequalities. MID allows people with similar taxable income to pay different amounts of tax and only benefits mortgage payers.

The importance of assessing the distribution of MID over time has also been demonstrated by research. The application of MID is influenced by a combination of tax, legislative, and economic factors (Poterba – Sinai 2011). We have shown the dependence on the level of interest rates, the conditions set for obtaining mortgages, and house prices. As the input conditions change over time, the positive distributional effect of MID with the ability to reduce the level of social inequality has become ineffective.

6. CONCLUSIONS

The study focused on housing support in the form of MID. In the Czech Republic, MID is one of the most often used tax reliefs and causes the highest losses to the public budget. The research provided quantitative evidence on how MID was distributed among taxpayers in relation to their taxable income in the 2008–2019 period and sought to assess how effectively MID contributed to socioeconomic equity among taxpayers.

The results up to 2017 were not in line with the findings of other researchers (i.e., that the application of MID was skewed in favour of high-income taxpayers) and showed an its efficient distribution. The tax relief for housing was used mainly by taxpayers in the first range. This is also the largest group of taxpayers. This was in line with the principle of vertical equity and helped to reduce social inequality. If in the long run, MID reduces the tax burden for a wider range of taxpayers, it could be seen as a tool to promote social justice in the housing sector. This is in line with the objectives of this housing support.

However, this positive distributional effect diminishes over time and from 2019 onwards, the highest amounts of public expenditure were distributed among taxpayers with higher taxable incomes. This shows the existence of inequalities in the tax system that may favour richer taxpayers, and the tax policy applied becomes an ineffective tool to promote affordable housing for different income groups, increasing social inequalities.



The different developments over time have highlighted the need for a regular evaluation of MID and its year-to-year comparison. Research shows that MID is sensitive to changes in interest rates, mortgage availability, and house prices. Regular evaluation of the distributional effects of MID is essential to adapt tax and housing policy to the current economic and social conditions and to ensure an optimal balance between promoting home ownership, equity, and economic stability. Alternative policies that are more equitable and effective in promoting affordable housing for different income groups and striking a balance between promoting housing and minimising income inequality should be discussed.

When interpreting the results of the distributional impact assessment of MID, certain limitations of the data used have to be taken into account. As mentioned above, it was not possible to work with individual data for confidentiality reasons, and the available data are partly aggregated. In addition, the data do not take into account information on the wealth and asset portfolios of taxpayers. Nevertheless, we believe that the results obtained extend existing research and provide a solid evidence base that can contribute to the debate on MID.

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