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Distribution Impact of the Mortgage Interest Deduction in the Czech Republic

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Abstract

This paper focuses on the mortgage interest deduction for owner-occupied housing in the Czech Republic. The main research question concerns the distribution of personal income tax liability given the rather generous interest deduction for owner-occupied housing loans and changes to it when restrictions are placed on the interest deduction in 2014. We used data for the Czech Republic from the EU-SILC surveys for our analysis. We estimated the value of this tax expenditure at approximately CZK 4.1 billion in 2011, with more than half the amount spent by the highest two deciles in income distribution. Personal income tax reform is legislated to begin in 2015 one part of which will be a cap on loan interest. This reform will lead to a decrease in the yearly value of the tax expenditure but will be followed by an increase in the PIT rate. Taken together, this will generate greater tax expenditures. Our computations show that the impact will be negative on households in the highest decile, while other groups will feel some benefit.

Keywords: microsimulation, personal income tax, revenue forgone method, EU-SILC, tax expenditure

1. Introduction

Tax support for owner-occupied housing is a common public policy objective. It may take markedly different forms in different countries, but a common approach is to take into account interest on housing loans in calculating personal income taxes. In analysing the impact of tax exemptions for housing loans, researchers tend to speak of "mortgage interest deduction" (MID). Households permitted to take interest paid on housing loans into account in calculating their tax obligation pay lower personal income tax (PIT). This tax revenue reduction is generally called "tax expenditure" and the aim of a MID policy is to ease property acquisition for home-owners. Such a policy is rather expensive and there is increasing discussion concerning the reduction of the maximum amount of support given to individual households. This debate has gained in significance in light of problems with the sustainability of public finance and at a time when it seems there is a causal relationship between public support of homeownership, the "mortgage bubble" and an ensuing economic slump. One particular issue in relation to the budgetary cost of MID is the distributional aspect; although the costs of this policy are borne by the whole of society, the beneficiaries seem to be concentrated among the richest members of society. One may then ask what the results of such a policy are. Why should public support benefit individuals who could support themselves without assistance?

Knowing the extent of support of MID policy, its distribution among different income groups in society and what might be the impacts of a change in MID policy is important for many governments in developed countries. Austerity measures in public finance induce changes in tax policy and restriction of MID is one possible way to undertake reform. Experience from countries which have already changed their MID policy show that there are various options for MID reform and therefore diverse outcomes might be expected. Our paper examines what outcomes could be expected in the Czech Republic where a decision is being made concerning a sharp reduction in MID.

The goal of this paper is to calculate the current budget costs of MID and to discuss the distribution of support among households in the Czech Republic. Integral to this is an assessment of changes in the MID after the adoption of proposed changes to the income tax law. To achieve our goal, we precede with following sub-questions: What is known from previous research about the effect of MID and its reforms on tax revenue?

Do we have the data and is it possible to analyse them to attain the research objective? What does such an analysis prove?

In the first section, we discuss the pros and cons of different current models of MID. The discussion of MID as an important tax expenditure policy and its distributional aspects is broadened to encompass other aspects which are important when considering policy change and which are addressed in the present literature. At the same time, we discuss different calculation methods of MID and their impact on budgetary costs and distributional aspects. In the second section, we present the data and the methodology of calculation which we employ to establish the value of MID and its distribution in Czech society. In the third section of this paper, we present the main results of our calculations. We deal primarily with the budgetary costs of MID policy and its distribution in Czech society and compare our results to those of previous studies also outside the Czech Republic. We also discuss the impact of the policy change on public budget revenue and its distribution. In the last section, we sum up the main findings of our paper and discuss further questions that arise from addressing the main question of our paper.

2. Mortgage Interest Deduction as a Tool of Public Policy

The issue of public support and its distribution is one often addressed by researchers, particularly in a situation in which countries are undergoing MID reform. For example, Italy adopted changes to MID after 1992, ending ties between tax exemptions and the marginal tax rate. Jappelli and Pistaferri (2007) evaluate the impact of this change on Italian households. Another example is given by Bourassa and Grisby (2000), who discuss the impact of modifications to MID in the US.

2.1 Foreign Studies of MID

Pelegrino, Piacenza, and Turati (2011) study the actual and distributive impact of housing taxation and an alternative approach on Italian households. The microsimulation model used, which is described in detail in the authors' previous work, considers as input data those provided by the Bank of Italy from 2008 in its Survey on Households Income and Wealth (SHIW). In contrast to SILC, this survey includes interest paid on mortgages and the initial mortgage debt. In the alternative approach, they take into account the imputed rent from owner-occupied dwellings as a component of gross income for the purpose of personal income tax calculation. Pelegrino et al. (2011) find that the share of Italian households with a mortgage is only 8.1%, whereas in Germany it is 25%, in Great Britain and the US 50% and according to the Czech SILC survey, it is 14.3% in the Czech Republic. Their conclusions are that overall inequality in Italy measured by the Gini coefficient is decreasing; however, when considering the net cash income (rather than a broad definition of income), the greatest negative impact is on elderly people.

Jappelli and Pistaferri (2007) use SHIW data from 1989 to 2002 to evaluate the impact of tax system changes on the propensity to borrow in Italy. They assumed that the reform should have an impact on high-income taxpayers and multiple-income households by reducing the propensity to borrow in comparison with other population groups. However, they found no evidence that tax considerations shape demand for mortgage debt, either at the extensive or the intensive margin.

There are diverse models of mortgage interest deduction among different countries. The simplest version is that the taxpayer deducts all mortgage interest from his income. If progressive personal income tax applies, the subsidy from mortgage interest deduction depends only on the marginal income tax rate. In this simple system, high-income home owners usually gain greater benefit than middle-income owners who are a common focus group of public policies on home ownership. Lowering the level of public support may be realized through the appropriate combination of several measures. First, the maximum value of mortgage interest deduction may be reduced. This aims at large mortgages which are drawn by households with higher incomes on larger houses. Second, public support may be lowered by separating the public support value from the marginal tax applied on personal income. In Finland, Saarima (2010) states that before the tax reform of 1993, the average deduction rate exceeded 50%. Tax reform has introduced a single flat rate tax of 25%, which is applied against mortgage interest paid. The third possibility is the restriction of who may be eligible to apply MID and in which circumstances. This may involve the reduction of MID only for those mortgages for which public support was previously authorized or the recipient was accepted as eligible. Finally, MID may be accounted only against capital income, which may include imputed rental income from owner-occupied housing.

There are many motivations for MID reform. In many cases, the purpose of the reform is not stipulated or more often the purpose stated is not the single reason for the reform. However, the following arguments can be found in the literature: better targeting of public support, the demand for distributional fairness, improving the efficiency of the tax system, or the need for an increase in tax revenue. Saarima (2010) argues that the main goal

of the Finnish tax reform of 1993 was to improve fairness in capital income taxation by reducing the possibility of tax arbitrage. The reform involved the introduction of a dual income tax system in which interest expenses may be deducted mainly from capital income and the tax rate applied is flat – 25%. Gervais and Pandey (2008) show that the official governmental estimate of US revenue loss exceeded USD 74 billion in 2006. They suggest that the elimination of MID provision from the tax system would therefore increase tax revenue. However, due to expected changes in the capital composition of affected households, they argue that the real cost of this provision is much lower than the government estimate.

2.2 Czech Studies on MID

MID has been part of tax law in the Czech Republic since 1998, when taxpayers were first allowed to reduce their tax base by the amount of interest on housing loans paid up to CZK 300,000. It is rare to find answers to the questions of who the recipients of such a policy are and the amount of budgetary costs in the Czech Republic. The first comprehensive evaluation of tax expenditures in the Czech Republic was that of Kubátová and Jareš (2011), who discuss various viewpoints on tax expenditures and methods for measuring them. Their approach to quantification tax expenditure is generally known as the "foregone revenue method". However, the results of their study of 210 tax exemptions in the Czech Republic are primarily illustrative as they do not discuss distributional effects. Moreover their methodology and the assumptions on which the calculations are based are simplistic, as their main goal was to study all tax exemptions which can be found in the Czech tax system. The distributional effects of different residential tools and their effectiveness in the Czech Republic were analysed by Lux, Sunega, and Boelhouwer (2009). Even their methodological approach, which led them to make a claim of highly unequal distribution, might be questioned. According to them, taxpayers in the tenth income decile benefited most from the tax relief, their share being equal to 84% of total tax relief. They state that data from tax declarations in 2002 were used for their calculations, but they do not discuss nature of these data or where they obtained them.

3. Material and Methods

A primary reference used in this study is data from the EU-SILC survey *European Union Statistics on Income and Living Conditions for the Czech Republic* (SILC) for the period 2005–2012. The SILC database provides comparable, cross-sectional data on income, poverty, social exclusion and living conditions in the European Union. The SILC sample contains approximately 10 000 Czech households (for more on the EU-SILC survey methodology, see Czech Statistical Office, 2011). The SILC survey data are regularly used for housing policy analyses in the Czech Republic. Špalková and Špalek (2014) pondered whether tenure choice in the Czech Republic is driven by the same factors as those in other countries. Jahoda and Špalková (2012) used several cross-sectional SILC datasets to analyse rent deregulation process and its impact on income poverty.

The model used is based upon a simplified version of the Czech tax system. A study carried out by the Ministry of Finance of the Czech Republic (Jareš, 2010) showed that the value of some deductible items and tax credits is negligible compared to total tax revenues. The model therefore employs only deductible items for interest on housing loans, together with the following tax credits: basic credit (for individuals), tax credit for low-income spouses and child tax credit starting in the year 2006. Before 2006, a mix of tax credits and tax allowances was applied. The dependence of tax expenditures on housing loans may be expressed using the following equations:

$$T_{0,1} = f(I_0, TA_{0,1}, TS_{0,1}) \tag{1}$$

$$T^*_{0,1} = f\left(I_0, TA^*_{0,1}, TS_{0,1}\right) \tag{2}$$

$$TE^H_{0,1} = T^*_{0,1} - T_{0,1} \tag{3}$$

where $T_{0,1}$ In Equation (1) represents the household tax obligation at time 0 or time 1. The household tax obligation is influenced by the amount of taxable income I_0, in this case only at time 0 because the taxable income at time 1 is unknown. Time period 1 need not be entered into the calculations if we calculate the amount of tax expenditure only for period 0. However, as we presume a change in the tax policy we wish to analyse, we expand our calculations to include period 1. Another factor influencing the household tax obligation is the way in which the tax system TS is set up. For the purposes of the equations, the focus is on the means by which tax is calculated from the tax base taking into account tax exemptions TA. The means of calculating tax from the tax base ordinarily presumes that the appropriate taxation rates will be applied to the tax base. Thus, tax exemptions TA ordinarily take the form of items reducing the tax base (deductible items) or items which reduce the tax obligation calculated (tax credits). The calculations must then take into account the method by which taxable income is transformed to the tax base. The above procedure for calculating the tax obligation presumes that the unit of taxation is the household, which was indeed the case in the Czech Republic in 2005–2007. If the unit of

taxation is the individual, calculations proceed analogously but the tax obligation of households then consists of the sum of tax obligations of their individual members. The schematic procedure for calculating income tax illustrated above is given in detail for the Czech Republic in OECD (2010). A survey shows the same calculation approach for other OECD countries, as well as a description of any deviations from the general procedure outlined above.

In Equation (2), the hypothetical household tax obligation is given for a situation in which the taxpayer cannot reduce the tax base by the amount of interest paid on the housing loan. In such a situation, there is a higher tax obligation and lower net household income. Equation (3), then, expresses the value of the tax expenditure of the household taking into account the potential reduction in tax due to housing loan interest.

3.1 Description of the Czech Tax System

Table 1 summarizes the basic characteristics of the tax system with respect to MID in the Czech Republic.

Table 1. Summary of chief tax system parameters for calculating employee income tax

	Period 0 (2005–2007)	Period 1 (2008–2012)	Period 2 (2013–2014)	Period 3 (2015)
Tax base	Gross wage	Labour cost of employee	Labour cost of employee	Gross wage
Tax exemption employed	Mix of deductible items and exemptions	Tax credits	Tax credits	Tax credits
Interest on housing loans figured into tax base	max. CZK 300 000 p.a.	max. CZK 300 000 p.a.	max. CZK 300 000 p.a.	max. CZK 80 000 p.a.
Tax rate on tax base	Progressive scale	Flat rate 15%	Flat rate 15% + solidarity tax 7% (on income exceeding 48 times monthly average wage)	Flat rate 19% + solidarity tax 7% (on income exceeding 48 times monthly average wage)

Source: Czech legislation

Note: Labour cost of employee, called Supergross Wage, is wage plus employer's social security contribution

Because of changes in the tax system and limitations on figuring interest into the tax base, we simulate three states according to Table 1 (period 1, 2 and 3; Act No. 458/2011 Coll., amending laws related to the establishment of a single tax collection point). There will also be a change in the amount of tax exemptions for taxpayers. The first change is the implementation of a new tax rate from 2013. This is called "solidarity tax" and is paid from income exceeding 48 times the average monthly wage. Later still, in period 3, the tax base is no longer calculated as the labour cost of employees, but rather as the simple gross wage. Reducing the tax base, however, will be substituted with the growth in tax rate – from 15% to 19%. The analysis will thus also indicate the impact of the proposed changes on the effective amount of the instrument being analysed and its distribution in society.

In the following step, we apply the above calculation procedure for tax exemptions to the SILC survey data to calculate the overall tax exemption for the Czech Republic and its distribution among individual groups of households.

3.2 Modelling of MID Using SILC Data

The SILC 2012 household survey data codes whether households employ a mortgage or other form of loan for housing purposes, but the data matrix does not indicate what the effective exemption amount is. Also missing is data on total loan payments for 2011, as well as interest payments for the same period. The Czech Statistical Office collects these data but does not provide them to analysts (allegedly because of the low data validity). Because of this, data concerning yearly housing loan interest had to be imputed into the matrix by the model. This is described in the following equations:

$$\mathrm{MIV}^{\mathrm{i}} = \emptyset\mathrm{MV}^{\mathrm{i}} * \mathrm{IR}^{\mathrm{i}} \tag{4}$$

$$\emptyset MV^i = V^i * \frac{MV_*^i}{V^i} * \frac{\emptyset MV^i}{MV_*^i} \quad (5)$$

in which Equation (4) shows that interest payments on mortgages (housing loans) MIV^i for each household are equal to the average amount of the mortgage for the year in question $\emptyset MV^i$ and the interest rate for that year IR^i. Equation (5) then specifies the average amount of the mortgage in greater detail, as given by the market value of the residence V^i, the share of the market price of the residence covered by the original mortgage $\frac{MV_*^i}{V^i}$ and the share indicating what portion of the mortgage remains unpaid for the year in question $\frac{\emptyset MV^i}{MV_*^i}$.

The SILC 2012 data contain only information on the estimated market value of household residences. We have used this in unchanged form in place of market values to determine the amount of interest payments. We start from the fact that households making payments on housing loans have the best information on the market value of their residence and have no reason not to divulge this information in a survey. Furthermore, the housing loan depends upon the residence in which the household currently lives (a necessary condition for taking into account loan interest on housing loans in determining income tax). With regard to the interest rates paid by a household, it may be noted that in general the interest rate correlates negatively with the amount of income and differs with respect to the period during which the loan was taken out, the length of time for which the rate remains fixed and the percentage of the market value covered by the loan. This information is not contained in the SILC survey. This required that we replace the individual interest rate with a uniform rate. This rate was calculated as a simple five-year moving mean of the mortgage index ("Hypoindex"), which describes the average interest rate on newly issued mortgages (see Table 2).

Table 2. Moving mean of the mortgage index in the Czech Republic (2007–2012)

	2007	2008	2009	2010	2011	2012
Average of the mortgage index	4.6%	4.6%	4.8%	5.0%	5.0%	4.7%

Source: Authors' calculations based upon Hypoindex.cz

The key value for further calculation is the average amount of unpaid loans for 2011 and this value as a share of the market price of the residence. In general, for households with mortgages, this amount is a function of the initial mortgage amount (at the time the loan was taken out by the household), the anticipated repayment period, the period of time for which the household has already been repaying the loan and the interest rate. Unfortunately, these data are also missing from the SILC survey. To model the average unpaid loan amount, we have therefore used the Czech National Bank statistics as a basis. As part of the ARAD system, total housing loans for the population are recorded. As of 28 February 2012 (the SILC survey took place in the spring of 2012), households in the Czech Republic have been provided with housing loans in a total amount of CZK 733 billion. The development of the amount of housing loans for the population is indicated in Table 3.

Table 3. Amount of loans to the populace as of 28 February 2014 in billions CZK

Year	Loan amount
2013	811.8
2012	775.4
2011	732.7
2010	687.0
2009	621.8
2008	524.1
2007	383.1
2006	289.4
2005	214.7

Source: Czech National Bank (2014)

Using the SILC 2012 data, we have therefore modelled the average amount of unpaid loans so that their sum for all households is set equal to CZK 733 billion. Under the formula, we have anticipated that the unpaid loan amount for each household would consist of a fixed percentage of the market value. As the data do not provide information on mortgage interest paid, we use the same percentage of the market value for all households with

mortgages. In order to reach the amount of CZK 733 billion indicated above, we estimate that each household with a mortgage has an average amount still to repay on the loan equal to 51.8% of the market price of the residence. In our previous paper (Jahoda & Godarová, 2013) we discussed different methods for calculating mortgage interest paid based on the length of time a household has lives in the premises. Both methods of mortgage interest calculation yield similar results.

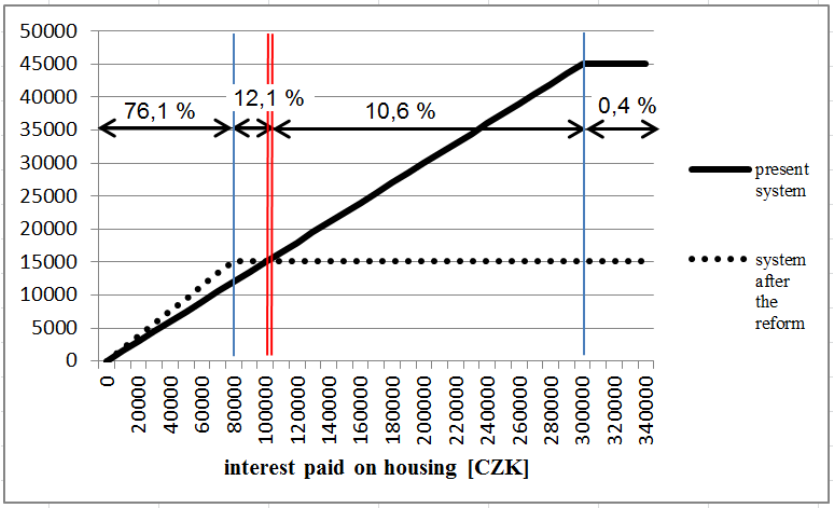

Figure 1. Household tax exemptions as a function of interest paid on housing (thousands CZK yearly)

Source: Author's calculations based upon SILC 2012 data

Note: MID is calculated simply as the tax rate multiplied by MIV

Figure 1 indicates the amount of tax exemptions dependent upon the amount of interest paid on housing loans without the presence of a "solidarity tax" rate and its distribution within Czech society based on the SILC 2012 data.

4. Results and Discussion

In this section, we indicate the basic statistics for the amount of tax exemption for housing loans (i.e. tax charges connected to this deductible item). We use SILC 2005–2012 data (or 2004–2011) to show the development in numbers of families with mortgages, as well as the development of the amount of total tax exemption for housing loans. We carry out a basic overview of tax exemptions in 2011 (using SILC 2012 data) and distribution by decile groups in society. In the concluding the section, we describe the impact of planned legislative changes in this area and the amount and distribution of the effective exemption.

4.1 Development in the Number of Households with Housing Loans and Effective Tax Exemption 2004–2011

Table 4 shows a growth trend in the number of households using mortgages to finance their housing. In 2005, the proportion of households with a mortgage was not quite 10% of all households in the Czech Republic. By 2011, this share had already exceeded 14%. As noted above, the SILC data do not contain information on the amount of loans or interest paid, making it impossible to state with certainty whether the loan amount is also growing. However, using the model as described, we have estimated the annual amount of tax expenditure during individual years.

Table 4 indicates that between 2004 and 2006, there are no data on the value of residences in SILC surveys. After 2006, the total number of loans provided grew, also representing greater expansion in the number of housing loans. The amount of effective exemption per household also grew, influenced on the one hand by growing real estate prices and thus housing loans and on the other by the enrichment of Czech society, with taxpayers moving into higher brackets within a progressive tax system. The trend was not dampened by replacing the progressive tax scale with a proportional 15% tax, which also played a significant role. In summary, the situation has remained stable in the last three years, with stated tax expenditure of approximately CZK 4 billion, which is equal to EUR 160 million or 0.11% of GDP.

Table 4. Development of nos. of households with mortgages, potentially incl. tax exemptions 2004–2011

		No. of households		Share	Tax expenditure		
Year	SILC data	Total	With housing loan		Nominal (CZK million)	Year-on-year change	Per household with loan
2004	2005	4 012 695	378 573	9.43 %		n.a.	
2005	2006	4 027 670	422 622	10.49 %		n.a.	
2006	2007	4 043 341	405 293	10.02 %		n.a.	
2007	2008	4 081 852	445 704	10.92 %	2 515		5 643
2008	2009	4 116 364	521 212	12.66 %	3 735	1 220	7 167
2009	2010	4 149 665	593 803	14.31 %	4 271	535	7 192
2010	2011	4 180 620	611 902	14.64 %	4 453	182	7 277
2011	2012	4 254 867	608 224	14.29 %	4 147	-305	6 819

Source: Authors' calculations based upon SILC 2005–2012 data

4.2 Basic Overview of the Distribution of Exemptions for 2011

In the introduction to this article, we noted that a negative characteristic of tax expenditures is their reduced transparency and we look at this in greater detail in this section. We indicate the current distribution of tax exemptions among Czech households and discuss the impact of the reforms in preparation. Table 5 indicates the number of households with a housing loan, the total number of exemptions used by these households and the average amount of exemption per household with a housing loan. It should be mentioned that tax expenditure exists even when the taxpayer pays zero PIT. The amount of tax expenditure attributable to MID is reduced by the influence of the tax credits (see Section 3).

Table 5. Estimated yearly tax exemption for 2011 by income decile

SILC 2012		Decile group according to OECD-modified equivalence scale annual income										
		1	2	3	4	5	6	7	8	9	10	Total
With mortgage	No. of households	24 429	35 430	37 278	38 245	51 587	58 327	74 045	88 440	87 435	113 008	608 224
	Ø mortgage value (CZK million)	0.978	0.948	1.058	0.982	1.030	1.046	1.184	1.120	1.428	1.906	1.275
Estimated yearly tax exemption	Mean (CZK)	813	2 133	4 405	4 025	4 113	5 652	6 398	6 437	8 655	12 320	6 819
	Sum (CZK million)	20	76	164	154	212	330	474	569	757	1 392	4 147
	Row sum (%)	0.5%	1.8%	4.0%	3.7%	5.1%	7.9%	11.4%	13.7%	18.2%	33.6%	100.0%

Source: Authors' calculations based upon SILC 2012 data

Table 5 gives a breakdown of tax exemptions by decile groups. It is no surprise that the largest share of tax exemption is claimed by the tenth income decile, both in terms of absolute numbers (more than 30% of the total) and on a relative basis per household (CZK 12 230 in 2011). The table shows that the amount of exemption correlates positively with household income. This is due to the fact that as households obtain greater income, it becomes easier to pay back loans and thus take them out (there are four times as many households with housing loans in the tenth decile than in the first). One may further say that taxpayers with higher incomes draw higher mortgages. Such households may thus apply a greater tax exemption.

Our estimate of yearly tax exemption is 20% lower than that presented in Jareš (2010, p. 70). In his study, a different method of calculation was applied, which does not allow evaluation of the distributional aspects of this public policy. According to the Czech Ministry of Finance, his results are overestimated due to the method of calculation. He extrapolates total MID using data from tax returns of individuals with a higher income. According to our calculations, almost 66% of the tax expenditure connected with MID may be attributed to last three income decile groups. One may think that these individuals do not deserve public support as they have the means to support themselves without it. At the same time, there are also some limitations in our method of calculation. Not every mortgage is subject to tax preference handling (e.g. mortgages used for renovation or for

the purchase of a buy-to-let apartment) and the amount of an older mortgage cannot be calculated from the current market price of the apartment. Unfortunately such information is not present in the SILC database.

4.3 Income Tax Reform and Tax Exemptions for Housing Loans

The following tables show the impact of changes in the tax system as depicted in Table 1. The chief points include: the implementation of solidarity tax in period 2, then a reduction in the maximum amount of deductible items to CZK 80 000, a change in the calculation of the tax base and an increase in the tax rate to 19% in period 3. As shown in Figure 1, households with yearly interest up to CZK 80 000 make up almost 80% of the total. For these households, the changes will bring higher tax exemptions (resulting in a reduced tax obligation). The total impact of the reforms on public finance remains unknown, but the total tax exemption will increase from the original CZK 4.147 billion to CZK 4.513 billion under the conditions in period 2, or CZK 4.856 billion under those in period 3 (see Table 6).

Table 6. Estimated yearly tax exemption before and after reform by income decile (SILC 2012 data)

SILC 2012		Decile group according to OECD-modified equivalence scale annual income										
		1	2	3	4	5	6	7	8	9	10	Total
Count		425 549	425 343	425 633	425 425	425 556	425 282	425 492	425 560	425 239	425 788	4 254 867
Count (mortgage=1)		24 429	35 430	37 278	38 245	51 587	58 327	74 045	88 440	87 435	113 008	608 224
Estimated yearly tax exemption in period 1	Mean (CZK)	813	2 133	4 405	4 025	4 113	5 652	6 398	6 437	8 655	12 320	6 819
	Sum (CZK million)	20	76	164	154	212	330	474	569	757	1 392	4 147
	Row Sum (%)	0.5%	1.8%	4.0%	3.7%	5.1%	7.9%	11.4%	13.7%	18.2%	33.6%	100.0%
Estimated yearly tax exemption in period 2	Mean (CZK)	844	2 322	4 808	4 423	4 541	6 236	6 997	7 130	9 474	13 155	7 420
	Sum (CZK million)	21	82	179	169	234	364	518	631	828	1 487	4 513
	Row Sum (%)	0.5%	1.8%	4.0%	3.7%	5.2%	8.1%	11.5%	14.0%	18.4%	32.9%	100.0%
Estimated yearly tax exemption in period 3	Mean (CZK)	918	3 365	5 549	4 744	5 529	7 410	8 439	8 595	10 091	11 865	7 983
	Sum (CZK million)	22	119	207	181	285	432	625	760	882	1 341	4 856
	Row Sum (%)	0.5%	2.5%	4.3%	3.7%	5.9%	8.9%	12.9%	15.7%	18.2%	27.6%	100.0%

Source: Author's calculations based upon SILC 2012 data

From a decile standpoint, a greater negative impact from the reforms may be observed for the tenth decile. All other deciles will benefit from increased tax exemptions under the reform. From the perspective of income tax reform and the impact of changes in tax deductibility for housing loan interest, we maintain that our analysis demonstrates that the proposed change in tax exemptions will be insignificant. The analysis also shows that even if the change in the amount of tax exemption does not entirely mimic the distribution of exemptions before reform, the reforms will not bring about any essential change in redistribution.

5. Conclusions

Tax support for owner-occupied housing is one of the most common focuses of research. In times when austerity measures in public finance are posed, one suggestion might be MID reform which would cut back the budgetary

cost of this policy. During the previous 20 years, we can see various attempts at such reforms with different outcomes. Some countries limited the maximum amount of MID when defining the tax base. The maximum value of the support might also be fixed. In the case of progressive personal income tax, some countries separated the value of the support from the influence of the actual rate of tax.

When we take into account present problems with the sustainability of public finance, which can be seen in most developed countries, the issue of the budgetary costs of a MID policy arises. What are the present costs of the MID policy and what would be the savings if this policy were changed? Who are the present beneficiaries and what would be the change in their position after reform is implemented? These are the questions which are the concern of present governments and which we have addressed in our paper.

Public support for housing is discussed widely in the Czech Republic. The government uses several tools to influence the cost of housing or the tenure status of households. MID, or more generally interest deduction on housing loans, is an instrument with a large-scale budgetary cost. Therefore, it is perhaps surprising that the Czech government is not asking questions concerning the budgetary cost, distributional impact and effectiveness of such public support. Our results show that the MID policy is one of the most expensive public policies performed through the tax system. We calculated the amount of exemption at CZK 4.147 billion for the Czech Republic; this value is based upon a "foregone revenue method" of calculation.

This paper is based upon SILC survey data which monitors whether households are making use of housing loans. The amount of interest is then modelled using the value of the residence occupied by the household. There are two methodological points in our research which might be discussed in future research. The first is the question of the lack of transparency – the amount of support and its distribution are not recorded in the data, but have to be modelled. The second is the budget impact on tax inflows, which is connected to the foregone revenue method of calculations. Tax exemptions for housing loans influence tenure choice, which is not neutral. The amount of exemption is dependent in particular upon the marginal tax rate on incomes. Changes thus influence household demand for loans and thus including behavioural changes of households in calculations could slightly change the outcomes of the analysis. Yet, in our opinion, we present the most accurate budgetary estimate of MID policy in the Czech Republic and its distribution aspects in Czech society. It is beyond the scope of this paper to address the question of the effectiveness of public support.

Also, there is currently discussion in the Czech Republic about reducing the maximum amount of MID taxpayers may use in calculating their tax. Tax reform, which is spread out over the period 2013–2015, is based on reducing the amount of MID and on changing the tax base definition, accompanied by a tax rate increase. According to our calculations, these changes will have a negative impact on approximately 10% of households making use of housing loans. This relatively light impact, according to our calculations, results from two facts: on the one hand, almost 80% of households will not be affected by the change in the amount of interest deduction because their MID amounts are already lower than CZK 80 000; on the other hand, the reform is likely to increase the tax rate from 15% to 19%, resulting in growth in effective support for smaller loans. Together with the new "solidarity tax rate" (7% surcharge), the reforms could even lead to a small total increase in the amount of tax exemptions of approximately CZK 700 million and a more even distribution of the exemptions in society.

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