IMPACT OF TAXES ON REDISTRIBUTION IN THE CZECH REPUBLIC

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Abstract

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The paper deals with the distributive effects of taxes during last years in the Czech Republic. Using EU-SILC data for selected types of households, the paper assesses changes in the distribution of gross incomes and effects of the changes in taxes on the distribution of incomes after taxes. The analysis is carried out on different types of households. The analysis is performed using Lorenz curves and Gini coefficients. The conclusions show that the tax system has changed the distribution of incomes insignificantly.

Czech Republic, redistribution, tax reforms

In all developed countries, government changed taxes and benefits every year. These changes have impacts on the redistribution of income or wealth (Kubátnová, 2010; Široký, 2008). This problem of distributive impacts is not yet solved in the framework of harmonization of tax systems, although it is clear that the gradual harmonization in this area (Nerudová, 2011) will have an impact on redistribution.

For evidence-based discussion of a tax policy, is necessary to measure the impact of tax changes on the distribution of household income. These measurements can be done on the macro level, i.e. from the perspective of all households respectively individuals (question of a tax units) or at the micro level, i.e. for different household types. In this case it is possible to use a dual approach. First, a simplified modelling of the impacts of taxes on standardized household. In this case are modelled impacts of taxes on hypothetical tax unit. Second, it is an approach that uses actual data from the statistics of income and expenditure of households, such as statistics or family accounts or EU-SILC (EC, 2010).

The main objective of this paper is to analyse (with the data for 2005–2009) the impact of tax changes on distribution of incomes in the Czech Republic and see if one can find a link between the type of government and the impact of tax changes on an income distribution.

METHODS AND RESOURCES


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Europe-wide standardised survey European Union – Statistics on Income and Living Conditions (EU-SILC) is since 2005 performed also in the Czech Republic (name: Living Conditions). Data from this survey allow comparing not only households in the Czech Republic, but thanks to the standardisation also across the EU. This option also applies to an inquiry of representative data on income distribution of individual types of households, their gross income, taxes and transfers provided to the households. Data in the corresponding EU-SILC statistics reflect the status of the previous year. The taxonomy of households covers in the EU-SILC different types of households. These are general, described as the three-digit code, where the first number indicates the number of economically active adults in the household, the second number represents the number of economically inactive adult family members and the third figure is the number of children. For example, household type 111 means, that first adult is economically active, second adult is economically inactive and household has one child. In case there are more than 2 children in the household, the third number takes the value of 9. In order to analyse the impact of taxes on the income distribution, we will cover the following types of households:

- **111**: First adult economically active, second adult economically inactive, 1 child
- **112**: First adult economically active, second adult economically inactive, 2 children
- **201**: Two economically active adults, one child
- **202**: Two economically active adults, 2 children

The analysis shows households that are complete (e.g. with two adults) and who have one or two children.

In order to analyse the impact of taxes on the income distribution, we will cover the following types of income: income P0, which represents earned income and income P1, which represents earned income minus insurance premia minus taxes plus tax credits. In this research we do not discuss impacts of benefits policy on income distribution.

Data are based on Europe-wide standardised EU-SILC data (EC, 2010) for the Czech Republic and using standard Lorenz curves and Gini coefficients (Hindls et al., 2007) will be quantified impacts of these fiscal instruments.

**RESULTS AND DISCUSSION**

**Impact of taxes on Lorenz curves**

Frequently used tool for an analysis of the impacts of taxes and compulsory insurance premia on the distribution of income are Lorenz curves. The x-axis of Lorenz curves indicates households arranged from the poorest to the richest and the y-axis shows their cumulative share on the total income (wealth) of the file. Axes x and y are labelled in percentages or in hundredths up to one and Lorenz curves always start at zero and end at one. The line of equality (LC) shows that under completely equitable income distribution, each person / household would receive an equal share of income (wealth) and the value of the x-axis coordinate is in this case is always equal to the value of the y-axis coordinate (x is always equal to y). For the opposite extreme position to the flat distribution (Lorenz curve of total inequality) would

![Lorenz curves for households with first adult econ. active, second adult econ. inactive, 1 child (111): gross income (GI) and income after taxes (ATI)](image)

1: Lorenz curves for households with first adult econ. active, second adult econ. inactive, 1 child (111): gross income (GI) and income after taxes (ATI)

Source: own processing of EU-SILC data (2006–2010)
apply that except for the last richest individual nobody acquires any income at all (for all $x < 100\%$ it holds that $y = 0$, for $x = 100\%$ is $y = 100\%$). From Lorenz curves are derived Gini coefficients.

Following charts show impacts of changes in taxes and compulsory insurance premia on the gross income. Changes in Lorenz curves are shown for the years 2005 and 2009 and households 111, 112, 201 and 202.

From the results for years 2005–2009 it can be highlighted that:

- for household 111 income inequality has increased in gross incomes distributions; taxes and insurance premia have reduced inequality in all years the similarly,
- for household 112 income inequality has decreased in gross incomes distributions and taxes and insurance premia above that have reduced inequality in all years, but less for high income households in 2009,
for household 201 income distribution remains almost the same in gross incomes; taxes and insurance premia have reduced inequality in all years,

for household 202 income distribution remains almost the same in gross incomes; taxes and insurance premia have reduced inequality in all years, but less for high income households.

Analysis shows that taxes and insurance premia had less significant role in redistribution for households 201 and 202 and main driver of net income changes has been changes in gross incomes. Tax reforms between years 2005–2009 also did not significantly impact of taxes on redistribution of incomes.

Results from previous research also on Lorenz curves show (Vítek and Pavel, 2012) that benefit systems have generally greater impacts on the total net income than systems of personal income taxation and insurance premia and their importance is greater in the first two to three quintiles. For high-income households (the last quintile or decile), they do not have a direct redistribution impact (but they have an indirect one).

**b) Impact of taxes on Gini coefficients**

Other approach how to measure the impact of taxes on distribution of incomes is the Gini coefficient (GC) for the selected households. In this part, we will analyse the impact of taxes in the year 2006, when came into effect the so-called Sobotka tax reform, and the year 2008, when the tax system was reformed once again (reforms of the government of M. Topolánek). As in the previous section, we will take into account only the gross income before taxes and benefits (P0) and an effect of the income tax (including tax bonuses) and premia paid by an employee or a self-employed person (P1). Gini coefficient is the ratio between the actual surface of the Lorenz curve and the straight line of distribution, and the area under the actual Lorenz curve.

Decreasing Gini coefficient means that taxes reduced the inequality in distribution of the gross income and brought the Lorenz curve closer to the straight line distribution. In theory, taxes and insurance premia should rather reduce the Gini coefficient since they possess a built-in elements that support the redistribution. However, cancellation of progressive rates of personal income taxes since 2008 and the introduction of ceilings on insurance premia in the same year should reduce the progressivity. Benefit systems should also reduce the value of Gini coefficients, especially if benefits are provided mainly or exclusively to low-income groups.

The impacts of the tax policy on (re)distribution of incomes demonstrate the following charts of Gini coefficients. Each chart contains for the given year all monitored households and for each of them are in each year plotted two points: for the gross income before taxes and benefits, the point P0 (plain line) and for the income after taxation, the point P1 (dotted line).
From the results for selected years (especially 2006 and 2008) it can be highlighted that:

- for all households any years 2005–2007 taxes did not change GC significantly, but taxes had different direction of influence,
- for households 111 a 112 an years 2008 and 2009 taxes significantly increased its influence, but for households 111 and year 2008 paradoxically taxes increased GC for ATI (in other cases decreased),
- taxes have decreased GC for ATI for all households in 2009.

Analyses and previous research (Vítek and Pavel, 2012; Vítek, 2012) show that the key redistribution factor is distribution of gross incomes among households. The tax (and also benefit) system corrects this distribution only slightly. It could be concluded that influence of the tax reform in 2005 has been insignificant and influence of the tax reform in 2008 has been much stronger, especially for households 111 a partly for households 112 (in year 2008).
Following chart shows development of average GC for years 2005–2009 and selected households (111, 112, 201, 202). As one can see, main driver of the GC in years 2005–2008 had been change of gross income. However, the tax reform of the right government in 2008 influenced average GC for ATI substantially and has decreased it.

The last two charts present annual percentage changes of the GC: chart 11 contains data for gross incomes, chart 12 data for incomes after taxes and premia. The results show, that the tax reform in year 2005 rather increased inequality (GCs after tax have mostly increased) and the tax reform in year 2008 affected distribution of incomes in the same direction (with the exception of households 112).

RESULTS AND DISCUSSION

The analysis presented in this paper concentrated on the impact of the Czech tax and social insurance systems on distribution of incomes. Results for Lorenz curves show that taxes and insurance premia had less significant role in redistribution for households 201 and 202 and main driver of net income changes has been changes in gross incomes. Tax reforms between years 2005–2009 also did not changed significantly impact of taxes on redistribution of incomes.

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Results from previous research also on Lorenz curves show (Vítek and Pavel, 2012) that benefit systems have generally greater impacts on the total net income than systems of personal income taxation and insurance premia and their importance is greater in the first two to three quintiles. For high-income households (the last quintile or decile), they do not have a direct redistribution impact (but they have an indirect one).

It was not conducted similar research in the Czech Republic for this period and therefore we cannot compare the results with other studies. For different households and years one could find similar analyses in Vitek and Pavel (2012) and Vítek (2012). However, we come to the same conclusion as the Večerník (2006): personal income tax reforms affect overall redistribution only to a limited degree.
SUMMARY

The paper deals with the distributive effects of taxes during last years in the Czech Republic. Using EU-SILC data for selected types of households, the paper assesses changes in the distribution of gross incomes and effects of the changes in taxes on the distribution of incomes after taxes. The analysis is carried out on different types of households. The analysis is performed using Lorenz curves and Gini coefficients. Results for Lorenz curves show that taxes and insurance premia had less significant role in redistribution for households 201 and 202 and main driver of net income changes has been changes in gross incomes. Tax reforms between years 2005–2009 also did not changed significantly impact of taxes on redistribution of incomes.

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