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THE EFFECT OF CHANGES IN PERSONAL INCOME TAX SYSTEM ON TAX BURDEN IN HUNGARY, BETWEEN 2002 AND 2011

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***Abstract*—**Nature and amount of taxes and other charges, the structure of the tax system may significantly affect the competitiveness of national economies. Countries with higher tax rates may get into in a less favourable competitive situation compared to countries with lower tax rates. However, the maintaining the budgetary discipline and avoiding an excessive government deficit may restrictively affect the endeavour to decrease tax burden. The nature and extent of taxes on labour income and para-fiscal contributions have changed in Hungary over the examined period (between 2002 and 2011). The progressive taxation on labour income was replaced by the flat income tax rate (16%) in 2011. The study examines the impact of changed personal income tax system on the tax burden of labour income.

***Keywords*—**educational level, flat tax rate, implicit tax rate, tax burden.

I. INTRODUCTION

THE competitiveness of economies and the profitability of domestic and foreign investment are greatly affected by the taxes levied on capital and the extent and nature of taxes levied on labour of which can be significant tax burden on the economic operators. The high tax burden may result in decrease of labour supply, individual's incentives to legal work and employment within legal framework. Under higher employer's tax liabilities, the labour cost is higher too. It may result in more expensive labour cost and the reduction in competitiveness. Due to the change of the progressive system of personal income tax to the flat income taxation, taxation may become more simplified and transparent, increase willingness to pay taxes, especially if the amount of tax exemptions and tax allowances are decreased or eliminated. To reach favourable development it is very important to decrease the amount of other dues such as employer and employee social security contributions and contributions to the Unemployment Fund, especially if the percentages share of other dues on labour is significant in tax liabilities before the tax system changes. The main goal of this paper is to examine the amount of tax burden on labour and to analyze the effect of the newly introduced flat tax rate on tax burden. We calculate the implicit tax rates (*ITR*s) by educational level and age in Hungary between 2000 and 2011.

II. TAX BURDEN ON LABOUR INCOME

The personal income tax system was introduced in Hungary in 1988. The nature of the personal taxation was progressive between 1997 and 2010. The three tax brackets introduced in 1999 were replaced by two personal income tax brackets in 2005. This two-bracket tax system remained valid for six years with annually changing tax rates and limits of tax brackets (except for 2008), as shown in Fig. 1. and Fig. 2.

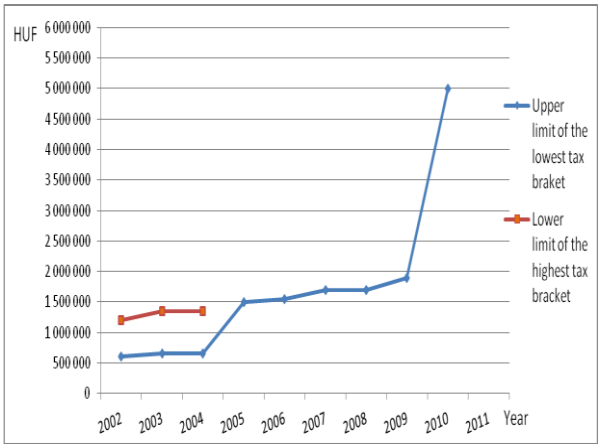

Fig. 1. Limits of the personal income tax brackets in Hungary between 2002 and 2011 (HUF) [1].

Personal income tax systems have been characterized by simplification among OECD countries. OECD countries have moved towards a reduction in top statutory personal income tax rates, inclusive of surtaxes and sub-central income taxes [2]. The OECD-wide average top statutory personal income tax rates decreased substantially in each of the last three decades, between 1980 and 2010 [2]. Among the 22 OECD countries for which data are available for 1981, 2 of them (Italy (32) and Spain (30)) had 30 or more (non-zero) income tax

brackets, 3 of them had more than 20 tax brackets and 9 other countries had 10 or more brackets [2].

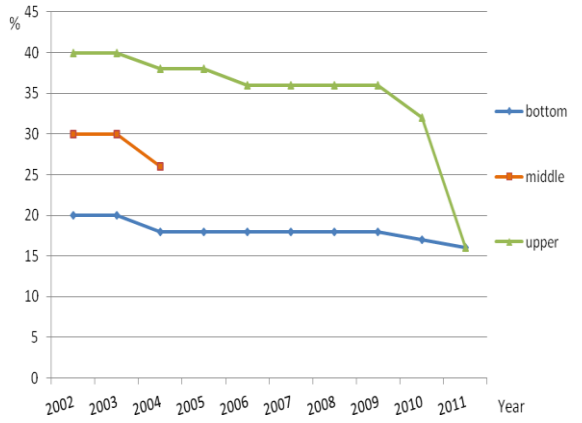

Fig. 2. The personal income tax rates in Hungary between 2002 and 2011 (%) [1].

Among the 22 OECD countries for which data are available for 1981, 2 of them (Italy (32) and Spain (30)) had 30 or more (non-zero) income tax brackets, 3 of them had more than 20 tax brackets and 9 other countries had 10 or more brackets [2]. In contrast, for the year 2010 only 2 of the 34 OECD countries had 10 or more tax brackets and 3 countries established a single personal income tax – the Czech Republic, Estonia and the Slovak Republic [2]. The flat income tax system with the 16% tax rate was introduced in Hungary in 2011. Out of the 26 OECD countries for which data are available for 1990 and 2000, 10 countries had fewer brackets in 2000 than in 1990, and 7 countries (Finland, Iceland, Mexico, the Netherlands, New Zealand, the United Kingdom and the United States) enhanced the number of tax brackets [2]. The number of tax brackets remained unchanged in 9 countries (Belgium, Canada, Denmark, Germany, Israel, Japan, Portugal, Norway and Switzerland) between 1990 and 2000 [2].

Beside of the simplification of the schedules of personal income tax, the tax rates of the highest tax brackets decreased too. The average top statutory rates across OECD countries was 46.5% in 2000, and it declined by 4.8 percentage points to 41.7% in 2010, as shown in Fig. 3. [2].

Beside the personal income tax payment obligations, the para-fiscal payments also belong to the tax payment obligations on labour income such as the employer's and employee's social security contributions. In that case, if we take into account the work related income taxes, tax reduction and para-fiscal charges, then the highest value of difference between top statutory tax rates and all-in tax rates was in Hungary (25.6 percentage points) in 2010, as shown in Fig. 4. [2].

Flat personal income tax can be found in several member countries of the European Union such as in the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Romania, and the Slovak Republic.

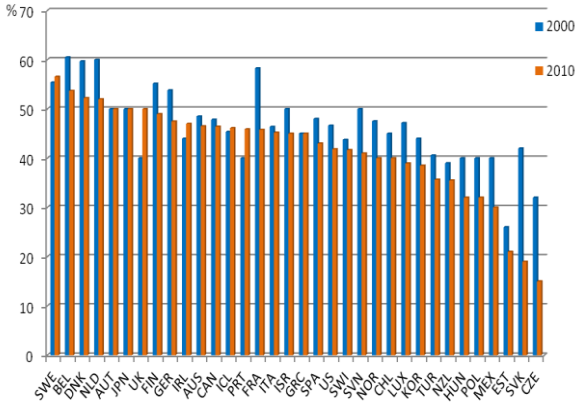

Fig. 3. Top combined statutory personal income tax rates in 2000 and 2010 (OECD countries) (%). [2]

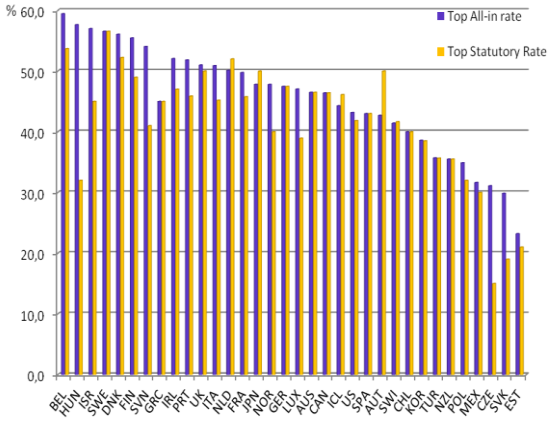

Fig. 4. Top combined statutory and all-in tax rates on wage, income, 2010 (OECD countries) (%) [2]. "The top "all-in" tax rate is the marginal personal tax rate paid by households on the first currency unit of taxable income subject to the top statutory tax rate. The top statutory tax rate is the top combined statutory personal income tax rate in the tax rate schedule" [2].

III. THE APPLIED CALCULATION METHOD

The tax burden on earned income can be measured by several indicators such as average tax rates, effective tax rates, marginal effective tax rates and implicit tax rates [3]-[5]. The ITRs give a measure of the effective average tax burden on different types of economic income or activities. The ITRs are generally determined on labour, consumption, capital, business income and corporate income [6]. The ITRs are generally quantifiable by the aggregate tax revenues as a percentage of the potential tax base.

According to the Eurostat examinations of Taxation trends in the European Union, ITR is defined as the following:

„The ITR on employed labour is defined as the sum of all direct and indirect taxes and employees' and employers' social contributions levied on employed labour income divided by the total compensation of

employees working in the economic territory increased. [7; p. 28]"

We calculated the ITRs on labour in a specific way, namely using by micro-economic approach in place of macroeconomic calculation. We determined tax liabilities for single persons without children instead of aggregates tax revenues. The implicit tax rate (ITR_j at j-th schooling level) is the ratio of personal income tax and other tax liabilities to the total compensation of employees (gross wages):

$$ITR_j = \frac{PIT_j + SSC_j^{employee} + OC_j^{employee}}{W_j^G} + \frac{SSC_j^{employer} + OC_j^{employer}}{W_j^G}. \quad (1)$$

where j is the schooling level, W_j^G is the taxable gross earning (pre-tax earnings) at j-th schooling level, personal income tax PIT_j is the personal income tax, $SSC_j^{employee}$ and $SSC_j^{employer}$ is employee's and employer social security contributions, $OC_j^{employee}$ and $OC_j^{employer}$ is employee's and employer other contributions such as employees and employers contribution to the unemployment fund.

Data of gross earnings by educational level and age group were provided by the Hungarian Ministry of Social Affairs and Labour. Taxes on gross earnings and other tax liabilities were calculated from gross earnings using data acquired under the Act on Personal Income Tax for the year in question [8].

Main elements of the ITR:

1) compensation of employees with wages and salaries,
2) employers' social security contribution,
3) employees' social security contribution
4) employer contribution to the unemployment fund,
5) employee contribution to the unemployment fund,
6) amount of tax credit,
7) less subsidies received by employer.

IV. Calculation Results

Our purpose is to examine the tax burden on individuals with different earnings. According to the human capital theory education can be seen as an investment into the individual's human capital, this means that earnings increase as individuals' educational attainment and years of working experience increase too. In this study, the individuals' earnings are differentiated according to highest completed educational level and age; i. e. individuals with higher education levels have larger earnings compared to individuals with lower educational levels.

On the basis of our calculation, the ITRs are significantly higher for individuals with university or college degree than for individuals with secondary or lower education between 2002 and 2010, as shown in Fig. 5., Fig. 6. and Fig. 7.

The ITR was the lowest for individuals having completed primary school studies, the value of the tax burden was different (between 56 and 59%) according to age in 2002. We have found the highest tax burden (72% - 75%) for individuals with university degrees in 2002. The ITR increased for individuals with university or college degrees until 2008 with temporary slightly decreases and finally reaching the 80%, as shown in Fig. 5. and Fig. 6.

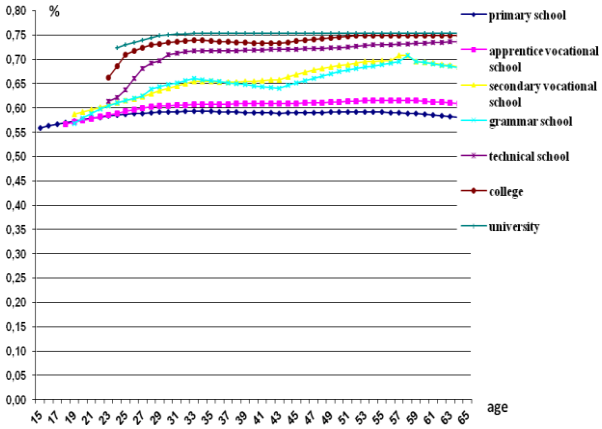

Fig. 5. Implicit tax rates on labour by educational level and age in Hungary, 2002 (in %)

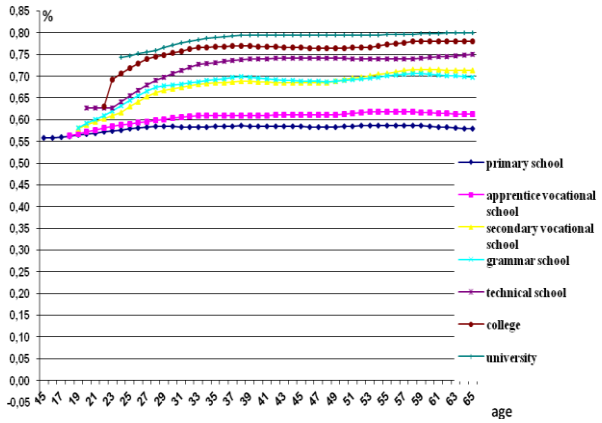

Fig. 6. Implicit tax rates on labour by educational level and age in Hungary, 2008 (in %)

After 2008, the tax burden decreased by more percentage points and one year before the introduction of the linear tax system (in 2010), the ITR was between 59% and 72% for individuals with university degree (and 58% and 66% for individuals with college degree). Compared to individuals having completed tertiary education similar changes characterized the development of tax burden of individuals with secondary or lower education. The ITR was the largest (72%) in 2007 for individuals with secondary school attainment.

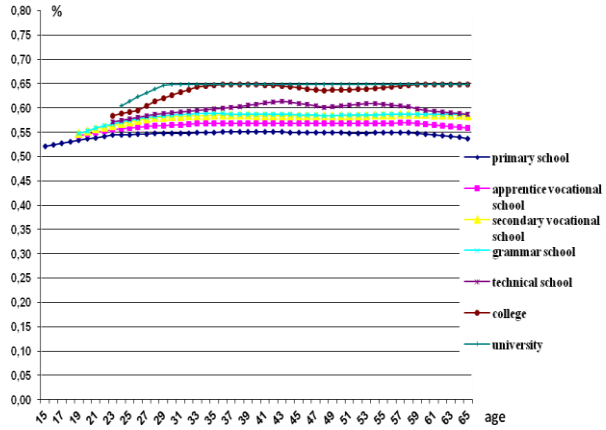

Fig. 7. Implicit tax rates on labour by educational level and age in Hungary, 2011 (in %)

In the case of proportional tax system, the ITR is constant if the other tax liabilities can be characterized by linear tax rate. The ITR under linear tax system is the following:

$$ITR_j = \frac{pit \cdot W_j^G + assc^{employee} \cdot W_j^G + assc^{employer} \cdot W_j^G}{W_j^G} = \quad (2)$$

$$= pit + assc^{employee} + assc^{employer}.$$

where *pit* is personal income tax rate, $assc^{employee}$ and $assc^{employer}$ mean all the para-fiscal charges, tax employee's and employer's tax liabilities (except for personal income taxes) such as health security contribution, pension security contribution, employer's and employee's contribution.

We can see on Fig. 7. that the ITRs are different by educational levels and age in 2011. The reason for the differences in *ITR's* is that the tax credit possibility on earned income remained in force in 2011. According to the Hungarian Act 1995 on Personal Income Tax, tax credit was calculated as 16 per cent of wage income earned increased by 27 per cent, with the monthly maximum of HUF 12 100 (yearly HUF 145 200) in 2011. The tax credit was fully adaptable to employees whose annual wage income (multiplied by 1.27) did not exceed HUF 2 750 000 and it was partly available (in gradually decreasing amounts) for annual income (multiplied by 1.27) of up to HUF 3 960 000.

The ITRs decreased relatively during the examined period, however, the total reductions in the values of examined tax burden in 2011 were mainly determined by the super grossing that is actual assessment of income. Super grossing was introduced in personal income taxation by the government in July of 2009. The super grossing remained valid during the introduction of linear personal income tax system. Super grossing means that the tax base had to be increase by 27 percent in 2011, the actual tax rate was 20.32 per cent ($0.16 \cdot 1.27$).

We can see on Fig. 5 and Fig. 7. that the amount of ITRs decreased by 10-12 percentage points for individuals with university or college degree between 2002 and 2011.

The tax burden (*ITR's*) decreased by 4 percentage points to 12 percentage points for secondary school graduates. The reduction in tax burden (*ITR's*) is the lowest extent for individuals whose highest completed level is primary school. Their ITR declined by 4 percentage point during the investigation period, as sown in Fig. 5. and Fig. 7.

V. Conclusion

Six Central and Eastern European countries adopted flat rate tax systems before 2011. The linear personal income tax system was introduced in Hungary in 2011 too. The main purpose was to reduce the tax burden and to simplify and make the tax system more transparent. In our study we examined the average tax burden by educational levels and age by calculating ITRs on labour income with micro-economic approach. Overall, the gap of the total tax as a percentage of gross earnings decreased for individuals with different wage income due to the introduction of flat tax personal income tax system. The gap of the ITRs for individuals with the lowest and highest educational levels who represent the individuals with lowest and highest gross earnings decreased from 16 percentage points to 8 - 10 percentage points depending on age between 2002 and 2011.

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