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INCOME TAXES, PUBLIC FISCAL POLICY AND ECONOMIC GROWTH

Tomasz Wołowiec*, Tomasz Skica**, Galya Gercheva***

Abstract The main goal of this article is to find the relationship between public fiscal policy and economic growth. The article consist of afew parts. The first is an introduction, which creates the background for the analysis in the following sections. It shows the main point of view on public fiscal policy especially in the case of personal income tax and creates aframework for the analysis of the relationship between taxation and economic growth. The second part focuses on the relations between central government decisions on taxation and its influence on savings, investments and economic growth. In this part we will find selected analyses of the impact of taxes on economic growth based on the examples of OECD countries. Finally, the last part of the work is astudy on fiscal level and tax system structures and economic growth. In this part the authors checks two points of view on taxation. The first is that alow level tax burden is conducive to economic growth, and the second emphasizes negative consequences of decreasing budget tax revenues. The article shows both theoretical and empirical points of view on taxation and influence of government taxation decisions on the economy.

JEL Classification: H21, H24, H30, E62, F43
Keywords: personal income tax, corporate income tax, budgetary system, fiscal policy, economic growth

Received: 28.04.2014 Accepted: 24.10.2014

Introduction

A simple consequence of the fiscal function of income taxes is the direct influence on allocation of resources in an economy, as when the tax is paid, there is a definite flow of income between the taxpayer and the state. The fiscal function of income taxes is always related to the allocation of resources, as it decreases the incomes of households and enterprises, which limits their possibility of investing, consuming and saving. The allocation effects of income taxes can be various and depend on such factors as: tax rates, capacity of tax scales, subject and base of taxation, scope and scale of tax reliefs and exemptions, distribution of the tax burden and the way and mode of collecting taxes. Income tax is also a social category, and due to the directness and individuality of taxation, some economic goals achieved through income taxes may encounter social barriers, expressed in social unrest accompanying, for example, an increasing tax burden or changes in some elements of income tax construction. In market economy conditions the reaction of entities on imposed taxes (or a decreasing/increasing tax burden) is of vital importance. Each reaction depends on the strength and direction of the tax's influence on changes to demand and supply of a particular production factor in the market, as well as on the length of time in which the tax's influence on the market will become visible and on changes to structures of particular markets (Musgrave & Musgrave, 1984, p. 268). The analysis of income tax influence on allocation of resources requires analysis

* Ph. D., Tomasz Wołowiec, University of Economics and Innovation in Lublin, ul. Projektowa 4, 20-209 Lublin, Vice Mayor of the Krynica-Zdrój Commune, wolowiectomek@gmail.com.
** Ph. D., Tomasz Skica, Chair of Finance, University of Information Technology and Management (UITM) in Rzeszow, Director of Research and Science at the Institute for Financial Research and Analysis (IFRA), University of Information Technology and Management, ul. Sucharskiego 2, 35-225 Rzeszów, tskica@wsiz.rzeszow.pl.
*** Prof. Dr. Sc., Galya Gercheva, Varna Free University, Bulgaria, Varna Free University „Chernorizets Hrabar" Located at Chayka Resort, Varna, Bulgaria, 9007, rector@vfu.bg.

of two issues: who is the taxpayer and who is the payer of the tax and what is the subject of taxation (Owsiak, 1997, p. 170). Taxation of individuals and economic activity is associated with the following choice:

1) tax may be imposed on households and companies,
2) the subject of taxation may be production factors and goods and services,
3) tax may be imposed on the seller, the buyer or the purchaser of production factors, goods or services,
4) the tax may burden the taxpayer's income or expenses,
5) the subject of taxation may be: revenue, income, assets, or consumption (Kaleta, 1985, p. 110-121).

Each of these solutions exerts specific influence on allocation of resources in an economy, due to the various reactions of production factors to taxation. Through income taxes we achieve a correction of taxpayers' incomes. Redistribution of national product is conducted between taxpayers and public legal entities. Redistribution of income also affects the level of social and economic life, by protection of a minimum income level, taking into account family, social and other aspects in taxation. Specialist literature also offers an approach in which the scope of the redistribution function coincides with the scope of the fiscal function (Gail, 1992, p. 13-24). This thesis is related to the assumption that the redistribution function of taxes is unilateral, and consists in taking the means from the budget. The actual redistribution takes place only when these budget means are allocated for appropriate goals. This is a controversial approach which is hard to accept. Taking into account the whole spectrum of tools, such as tax reliefs, a system of progressive taxation that can be used in taxation policy, we can construct taxes so that, if needed, they are low for some taxpayers and high for others. In this way the state may achieve its fiscal policy goals or, more broadly, economic policy goals. The problem here may be the answer to the question of whether income taxes perform well the function of redistributing income among various income groups of taxpayers and what is the cost of this tax function. Taxation lowers net income, so it can reduce the income level of affluent groups of taxpayers. Income taxes alone, even the most progressive ones, will not increase the incomes of poor or average income groups. A similar problem appears with tax reliefs as tools of redistributing income. If we lower the income tax, the net income of each taxpayer will increase, but this effect will be more beneficial for affluent taxpayers, as in their case, a relatively larger part of their income is taxed. Increasing the tax-free amount will give the same absolute amount of benefit to all taxpayers who are above the new tax threshold. Such action will bring relatively smaller benefits to richer taxpayers. In each case people below the lower tax threshold will not get any benefits, as they do not pay income tax, so the poorest groups of income taxpayers will not benefit from its decrease. In the case of indirect taxes, which are strongly digressive, poor taxpayers will benefit from them more, so a better redistribution effect can be achieved by lowering taxes on those goods and services which are most frequently consumed by lower income groups of society.

Each action of the state in economic policy leads to redistribution of income or wealth. The basic tool for leveling off incomes is budget policy. The influence of budget policy depends mostly on the type and structure of budget incomes and expenditures. For example, from the point of view of redistribution, more important than the size of taxes (though this is important, as assuming *ceteris paribus* it influences employment levels and consequently many aspects of income division) is their type and structure. In the case of types of taxation forms, direct taxes influence income and wealth division differently than indirect taxes. As for the structure, it is vital to know the due tax and/or paid tax for each range of the tax scale. Using the common criterion of the course of the function of the average and extreme tax or tax flexibility in relation to the taxation base, we can distinguish proportional (flat), progressive and regressive taxes[1]. The tax is flat when along the growth of the taxation base, the rate of average tax and extreme tax are equal ($T1 = t1 \times Y$, where t1 is the extreme and average tax rate, and Y is the taxation base) or when tax flexibility against the taxation base $\varepsilon (t1, Y)$ equals zero. Taxes are progressive when along the growth of the taxation base the extreme tax rate is higher than the average tax rate or when the flexibility of the average tax against the taxation base $\varepsilon (t1, Y)$ is above zero. Progressive tax may assume three basic forms (See: Figure 1):

1) with tax-free amount $T2 = - K + t2 \times Y$, where K is the tax-free amount for all entities obtaining income Y >

1 Average tax rate is the quotient of the total value of tax revenues and the taxation base. Extreme (marginal) tax rate is the quotient of increase in the value of tax revenues and increase in value of the taxation base.

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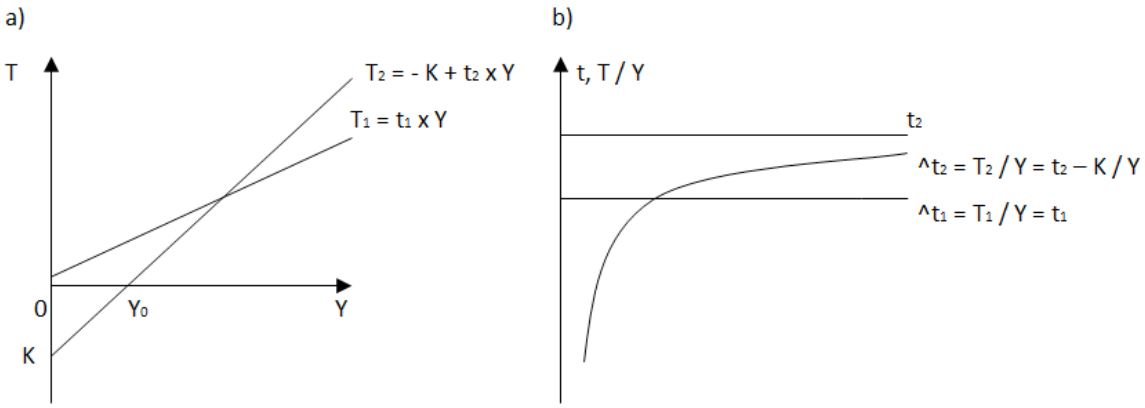
Y0 = K / t2, and t2 is the extreme higher than average tax rate which equals T2 / Y = - K / Y + t2.,

2) with continuous progressiveness, when the extreme tax rate grows along with the taxation base continuously: T3 = t2 x Y + t3 x Y2,

3) with tax thresholds, when the extreme tax rate grows in a non-continuous way, changeable in various income brackets. Assuming that we have three income brackets from 0 to Y0, from Y0 to Y1 and from Y1 to Y2, for income equaling = Y2, the size of the tax burden will reach: T4 = t0 x Y0 + t1 x (Y1-Y0) + t2 x (Y2-Y1), whereas t2 > t1 >t0. If Y1 < Y2, to T4 = t0 x Y0 + t1 (Y1 – Y0) + t2 (Y – Y1), analogically for Y ≤ Y1.

Figure 1: Budget incomes from flat tax T1 (a) and progressive tax with tax-free amount T2 average tax rates (b)



Source: own elaboration.

Taxes are regressive when together with growth of the taxation base, the size of paid taxes grows more slowly than income or if average tax flexibility against the taxation base ε (t1, Y) is below zero. Regression may be direct or indirect. Indirect regression takes place when the fall in average tax rate is accompanied by a fixed level of extreme tax. In the case of direct regression – a fall in average tax goes along with a fall in extreme tax.

Tax progressiveness can be expressed more generally with reference to each type of tax. When T is the value of tax paid by a particular household and Y the value of the taxation base for this household, then we can determine whether a given tax (or the whole tax system) is progressive, flat o regressive, if T/Y respectively: increases, stays the same (is proportional) or decreases with the growth of Y. Redistribution through budget policy may also be conducted through money transfers (remitting financial means) and non-monetary means (providing goods and services or donations for particular goods and services by the state).

Public fiscal policy and economic growth

Quality of public finances in this context refers to the structure of taxation and public spending as well as mechanisms to maintain a high level of efficiency in public spending, such as effective expenditure rules. The purpose of this chapter is to shed light on the possible best ways to redirect public expenditure towards "productive" items and to ensure that tax structures strengthen economic growth. A variety of studies have addressed the issue of the effect of fiscal policy on economic growth, mostly using an aggregate approach, looking at the impact of total government revenue or expenditure, as a percent of GDP, on growth (See: Skica, Pomianek, Pater & Tarnawska, 2009; Skica, 2011). These studies often fail to identify channels through which fiscal policy has an effect on growth, which is the central question. Much less is known about whether and how the composition of revenue or expenditure affects a country's growth rate.

Figure 1: Budget incomes from flat tax T1 (a) and progressive tax with tax-free amount T2 average tax rates (b)

Theoretical aggregation	*Functional classifications*
Part 1. Taxation	
Distortionary taxation	Taxation on income and profit Social security contributions Taxation on payroll and manpower Taxation on property
Non-distortionary taxation	Taxation on domestic goods and services
Other revenues	Taxation on international trade Non-tax revenues Other tax revenues
Part 2. Expenditure	
Productive expenditures	General public services expenditure Defense expenditure* Educational expenditure Health expenditure Housing expenditure Transport and communication expenditure
Unproductive expenditures	Social security and welfare expenditure Expenditure on recreation Expenditure on economic services
Other expenditures	Other expenditure (unclassified)

*R.J. Barro finds that current expenditures less education and defense expenditure is associated with lower per-capita growth (Barro, 1990; Barro, 1991).

Source: Kneller, Bleaney and Gemmell, 1999, p. 171-190.

In the case of taxation a number of authors have studied how the total tax revenue in relation to GDP, i.e., the average tax rate, affects growth. An empirical study conducted by Marsden, based on a cross-sectional analysis of 20 countries, is a good example of this kind of analysis (an aggregated approach) (Marsden, 1990, p. 23-34). In this study the countries were split into pairs, with each pair having similar *per capita* income, but different levels of taxation. The selected countries were compared on the basis of lower and higher levels of taxation and their influence on growth rates over the period 1970-1979. In all cases, the countries that imposed a lower effective average tax burden on their populations achieved substantially higher rates of GDP growth than did their more highly taxed counterparts. The average annual rate of GDP growth was 7.3% in the low-tax group and 1.1% in the high-tax group. The average tax/GDP ratio in the low-tax group increased from 13.3% in 1970 to 15.2% in 1979, while it rose from 21% to 23.9% in the high-tax group during the same period. Moreover, fiscal incentives provided by low-tax countries shifted resources from less to more productive sectors, thus raising the overall efficiency of resource utilization. Many other studies find a significant negative effect of tax revenue on GDP growth (compare: Engen & Skinner, 1996; Cashin, 1995, p. 237-269; Fölster & Henrekson, 1997). Yet, the size of the effect differs considerably. Other studies cannot find a relationship, be it positive or negative. Again, no study so far has shown a positive relationship between high taxation and growth.

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Table 2: Selected analyses of the impact of taxes on economic growth on the example of OECD countries

Study	*Research area*	*Impact of taxation on growth*	*Extent of impact*
Cashin (1995)	23 OECD countries 1971-1988	negative	1pp of GDP increase in taxes/GDP ratio lowers production per employee by 2%
Engen & Skinner (1996)	USA, sample from OECD countries	negative	2.5pp increase in taxes/GDP ratio reduces economic growth by 0.2-0.3%
Leibfritz, Thornton & Bibbee (1997)	OECD countries 1965-1995	negative	10pp increase in taxes/GDP ratio lowers GDP growth by 0.5-1%
OECD (1997)	Model Quest	negative	1% GDP increase of personal income tax lowers GDP growth by 2.4% compared to base scenario
Bleaney, Gemmell & Kneller (1999)	17 OECD countries 1970-1994.	negative	1% of GDP increase of distorting* tax revenues/ GDP lowers GDP growth *per capita* by 0.4pp
Fölster & Henrekson (2001)	Sample of the most affluent countries of OECD and outside OECD 1970-1995	negative	10pp increase of taxes/ GDP lowers GDP growth by about 1%.
Bassanini & Scarpetta (2001)	21 OECD countries 1971-1998	negative	1pp increase in taxes/GDP lowers GDP growth/*per capita* by about 0.3-0.6%.
PricewaterhouseCoopers (2003)	18 OECD countries 1970-1999	negative	1pp GDP increase of in direct taxation/GDP lowers GDP growth by 0.2-0.4%

*distorting tax revenue = revenue from taxes on income and profit, social security contribution, tax on payroll, tax on property.

Source: Leach, 2003.

Clearly, in practice, almost all taxes are distortionary to some degree and the key issue in the search for a long-run growth effect of various taxes is whether these distortions can be expected to be substantial or minor with respect to the main determinants of growth, such as investments and technical progress. It is shown that the effects of taxation on growth depend crucially on the elasticity of the labor supply, the specification of the leisure activity as well as the structure of human capital accumulation, and its tax treatment. Stokey N., and Rebelo S. show that large growth effects of fiscal policy occur when depreciation rates are implausibly large and/or when the uncompensated labor elasticity is implausibly high (Stokey & Rebelo, 1995, p. 519-550).

The influence of income taxes on demand and supply

In the macro-economic perspective, income taxes influence the shaping of demand, supply, and equilibrium in the market of a specific good as well as decisions made by producers, consumers and investors. Imposing or increasing tax on a particular good will lead to decline of its sale revenue, consequent decline of demand for it and decline in its net price. Increased gross price is covered partly by the seller and partly by the buyer. The proportions of their participation in covering the increased price depend on such economic conditions as demand and supply and the possibility the seller (producer) has to affect the level and structure of their own costs. In strict rigidity of

demand, the whole burden of imposing (increasing) income tax will be covered by the buyer. If supply is rigid, imposing or increasing taxation will not cause changes to the gross price of a particular product, but its net price will change by the amount of imposed (increased) tax. The entire tax burden will be covered then by the seller. If demand for a given product is infinitely flexible, the consequence of imposing or increasing the tax would be seen in limitation of this supply at increased gross prices until the balance is achieved as determined by the buyers' willingness to pay a higher price. So the less flexible the demand and supply, the smaller income tax's influence on a particular type of economic activity, as imposing (increasing) taxation does not provoke any significant changes to allocation of resources. The higher the flexibility, the greater the influence on allocation of resources (Owsiak, 2000, p. 172-175).

Income tax affects the price of a taxed product and price growth influences the market situation. Increasing tax rates may lead to a situation in which the taxpayer's gross taxable income remains unchanged – then their net income after taxation decreases or the taxpayer manages to increase gross income, and in this way their net income after taxation does not change. In the first case increased taxation may translate into either declining direct consumption or declining savings. Lower consumption leads to decreased revenues from direct taxation unless the growth of income tax rates is accompanied by growth of indirect tax rates. This, however, may cause further decline in consumption or decline in savings and capital supply.

Influence of income taxes on savings and investment

In a market economy allocation decisions are more or less related to money savings of entities. The inclination of the entities to save depends on both interest rates on bank deposits and on inflation, as well as on the taxation rate of capital incomes (money savings). Also the inclination of economic entities to invest is affected by incomes from invested capital. A high burden placed on capital incomes may limit their extreme productivity, causing investments to be allocated in preferentially taxed sectors, but of lower productivity, which leads to distortion of investment decisions[2].

Undoubtedly, high (progressive) income taxation limits private investment by reducing that part of income that could be allocated to investment, leaving taxpayers with the means that are sufficient only for consumption. Some researchers (Young, 1994, p. 112; Young, 1990, p. 255) are of a different opinion, claiming that progressive income tax does not lower the attractiveness of risked investments compared with risk-free investments for two reasons. Firstly, taxation reduces the general level of a taxpayer's income, so their attitude to risk may change. This effect is observed regardless of the form and method of income taxation and depends only on the size of the tax, that is the scale of decreasing income after taxation. Whether income tax decreases or increases risk-taking depends on the shape of its usefulness function. Secondly, as claimed by Young – high effective income taxation decreases the scope of expected income after taxation, which encourages entities to take risks[3]. Obviously, Young's assumptions may seem slightly controversial, as high effective rates of income taxation, through reduction of a taxpayer's income, do not have to encourage them to increase risk. Moreover, Young adopts a simplifying assumption that taxpayers do not differ in their degree of aversion to risk, thanks to which he states that a non-negative tax scale is indifferent to risk only when it compensates absolute or proportional sacrifice [4]. If U(x) presents usefulness for income x at no taxation, and t = f(x) is a tax scale, then V(x) = U(x – t) is the usefulness

2 Some researchers imply that there is a statistically significant influence of income taxes on investment. Investment flexibility against capital costs equals 0.25-1.0. In the USA decline of tax revenues of 1 billion dollars was accompanied by increase of expenditure on R&D by 2 billion dollars. In relevant literature we can notice suggestions that resignation from a capital tax and introduction of a consumption tax leads to the situation in which investment decisions are not disturbed by tax policy. At the inflation rate of 3%, financing investment half with debt and half with new shares, and switching from a capital tax to a consumption tax, we observe investment growth of 10% while the increase of social wealth stemming from lowering capital taxes equals 25 cents per dollar, for one dollar of decrease. Low inflation is the best incentive for investment, as it lowers the costs of capital (high inflation translates into a growing interest rate, decreases profits at stock exchanges and discourages from investing in companies which raise their capital). A combination of anti-inflation monetary policy and switching from income tax to consumption tax significantly stimulates investment. Research suggests the high flexibility of a capital resource against its cost in the long term (see more in: Hall, 1993; Judd, 1987, p. 675 – 709).

3 H. P. Young claims that both these effects cooperate with each other in a complex way, and their net influence on the taxpayer's behavior depends on the progressiveness and size of income taxation and aversion to risk (compare: Young, 1994, p. 112).

4 Taxpayers differ in degree of risk aversion, so there is no tax function that could be neutral to each taxpayer.

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of the taxpayer to income after taxation. A tax scale is neutral to risk if the taxpayer makes the same choices with or without taxation. As the usefulness of *von Neumann-Morgenstern* is determined for positive linear transformation, it is identical with the statement that $V(x) = U(x - t) = AU(x) - B$ for $A > 0$. If $A = 1$, then $U(x) - U(x - t) = B$, which means that t compensates absolute sacrifice. In a situation where $A \neq 1$, and $b = B(1 - A)$, then $[U(x - t) + b] / [U(x) + b] = A$. As assumed $t \geq 0$, and U is increasing, so $A < 1$. Therefore tax compensates the sacrifice rate at the rate of $1 - A$ (compare: Young, 1994, p. 112; Young, 1990, p. 255). It should be observed that the above argument has some weaknesses. First of all, the usefulness function cannot be assessed individually for each taxpayer, therefore we should not "average" individual decisions of taxpayers. Moreover, the degree of aversion to risk varies, which significantly influences the division of social roles and social division of work as well as consumption and investment decisions made by taxpayers.

Substitution and income effects – real return on savings rate after tax versus savings supply

In classic economic theory the size of household savings is influenced by the rate of return on savings, which constitute "unconsumed" income. Savings are a result of choosing a particular structure of consumption in time by households by comparing the subjective value of current consumption against future consumption (discount rate) to market interest rate determining the degree of increasing future consumption as a result of resignation from current consumption (interest rate). Taxation of capital incomes (interests on bank deposits, bonds, units of investment funds, dividends from company shares) decreases the effective return rate, thus lowering the benefits savings bring. In consequence, we could expect a decline in the savings level (substitution effect), but we also experience an income effect – a decline of effective return on the savings rate which translates into lowering the households' wealth level. This may lead to limiting of the current and the future consumption. Limitation of current consumption may lead to an increasing savings level.

The effect of real net rate decline as a result of taxing incomes on savings is not clearly determined due to substitution and income effects. Economic research shows that in the long term the substitution effect is stronger than the income effect and decline in net return rate coincides with decline in the savings supply [5].

Statistical analysis conducted on a group of 20 OECD countries for the years 1970 – 1994 confirms the negative relation of households savings rate not only to the size of the budget deficit, unemployment rate, current account deficit, demographic structure but also to the size of personal income tax. Econometric equations have the following form (see: Formula 1).

5 The results of savings flexibility estimation conducted on the basis of data from OECD countries do not confirm a strong correlation between real interest rate and savings supply, which undoubtedly may be affected by liberalization of financial markets, and the scale of international capital flow. The panel survey in 21 OECD countries showed that taxation of capital incomes causes a slight but statistically significant drop in savings (elimination of capital income tax, whose average rate is 40% leads to increase of savings by 0.5% GDP). (compare: Tanzi & Zee, 1998).

Formula 1: Relations between households savings and the size of the budget deficit, unemployment rate, current account deficit, demographic structure and the size of personal income tax

$$x = 1{,}13\ r - 0{,}44\ a65 - 0{,}17\ db + 0{,}74\ ob \text{ and;}$$
$$x = -0{,}32\ PIT - 0{,}19\ ur$$

Where:
x – household savings rate in %;
r – GDP growth rate;
a65 – share of people aged 64+ in total population number;
db – share of budget deficit in GDP;
ob – share of surplus of current balance in trading with other countries in GDP;
ur – unemployment rate.

All coefficients of variables are statistically significant. The negative influence of high personal income taxes on the household savings rate was also confirmed in research by M. Feldstein, who proved that an extreme tendency for consumption from retained company incomes equals around 2/3 of an extreme tendency

for consumption from personal incomes. This means that companies generate higher savings than households [6].

Disposable income versus size of savings

If in the long term decreased taxation of incomes from work and savings leads an increased budget deficit, then households (taxpayers) expect that income taxes will grow in the future. Taxpayers will save part of additional disposable income obtained as a result of decreased personal income, aiming at leveling distribution of consumption expenses in time. Assuming altruism between generations we will achieve the same effect regardless of whether income taxes will grow during the lifespan of a household or whether tax growth will affect their descendants. In this case we have substitution between savings of public and private sectors, but the surveys of EU and American economies did not confirm full substitution of public savings with private savings [7].

Income taxation versus the social security system and savings supply

Progressive taxation of incomes may lead to decline in savings. The hypothesis of life cycle assumes that every household aims at balancing their expenditure within its life span, so in the beginning they increase their debt in order to increase current consumption, expecting higher incomes in future that would allow them to pay off the past debt. Households also expect their incomes to decline at the end of their life, which accounts for the fact that they save part of their income in order to consume it after they retire. We can notice that the lowest inclination to savings is demonstrated by households who are not professionally active (the retired), slightly higher – by households in the initial stage of the life cycle, and the highest – the most affluent households in the maturity stage of their life cycle.

Progressive taxation of incomes mostly burdens incomes of households with extreme inclination for saving. These households transfer part of their income to households from the initial and final stage of the life cycle (supporting children and parents with transfers). This provokes a conflict between an egalitarian tax policy and solutions aimed at stimulating households' savings level. An important role in the analysis of this process is the warranty the state gives that social and retirement allowances will be paid (financed by quasi income taxes – contributions which place a burden on labor), as the existence of such a warranty system eliminates uncertainty connected with unfavorable incidents which may happen to households and somehow limits the inclination (need) for saving. In a situation where social transfers come from current revenues of the public sector, we may experience a decline in aggregated savings and weakening of possibilities for financing investment [8]. It seems vital then to limit financing of retirement allowances from current public revenues. Research conducted by Feldstein M.S., and Samwick A., indicates that the change of the social security system for the system financed by funds may in the long run increase US GDP by 5% (Feldstein & Samwick, 1996). Taking into account differences in extreme inclinations to saving between households with varied incomes, we can notice that limited access to capital (loans) is experienced by households with low income, which means that they have to finance the purchase of durable goods from their own means. Limitations in access to loans combined with a high level of income taxation limit consumption expenses of households and may simultaneously increase savings at a particular distribution of incomes.

Taxation and substitution between household savings and company savings

If households treat retained profits of owned companies as their own savings, then the level of corporate income taxation may significantly

6 In open economy conditions, a relatively low and declining inclination to save does not have to be a factor that limits the size of investment and the pace of economic growth, due to the progressing process of import and export of capital between different social and economic systems. Therefore personal income tax (in conditions of significant openness of economies and free flow of capital) does not have to stimulate the inclination to save and invest (unless the lawmakers use various tax reliefs and exemptions). It may be not the personal income taxation but the behavioral hypothesis which emphasizes the limited rationality and self-control of loan-takers that partially explains the declining saving trend in most OECD countries.

7 Correlation ratio evolves below one, some deviations concern only special cases (quick budget deficit growth, substitution between public and private savings in retirement and the social security sector).

8 In most OECD countries revenue from social insurance contributions is higher than revenue from personal income tax in the structure of budget tax revenues (at both regional and central levels). A visible trend is quick growth of contribution share in the structure of budget tax revenues and hiding the increased personal income tax burden by increasing the retirement contribution burden (the so-called "tax wedge").

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influence household savings. Households may save more when companies retain less profit and save less when companies retain more profit. In a situation where extreme inclination for savings of households which own major shares in company profits is above the average population's inclination, the growth of the tax burden on profits (incomes) of legal persons, combined with lowered personal income tax may lead to decline in the aggregate savings of the private sector (Nojszewska & Rojek, 2003, p. 153). Summing up, we can state that a growing taxation of incomes from savings may lead to a decline of aggregate savings stimulating investment objectives, mainly through lowering disposable income, lowering return on the savings rate and transfer of income between households with varied inclinations for saving.

Capital income tax wedge versus cost of capital

A vital factor affecting the size of investment is the cost of capital which depends on the interest rate (see: Gordon & Dietz, 2006; Auerbach, 2005; Auerbach & Hassett, 2006; Auerbach, 2006, p. 399-420). Taxation of incomes from investment or savings increases the difference between the return on the savings rate before personal income tax and the return on the investment rate after taxation. It is a specific tax wedge between savings supply and capital demand which generates decline of net return on the savings rate and increase of gross return on the investment rate and, as a result, decline of investment outlay [9]. Analyzing the influence of investment income we should concentrate on effective tax rates, as very often lowering nominal (statutory) rates does not have to stimulate investment growth if the accompanying changes to tax law (elimination of reliefs) lead to growth of the real tax burden.

Fiscal level and tax system structure vs. economic growth

As far as the influence of fiscal level and tax system structure on economic growth is concerned, we often encounter opposing views. They can be roughly divided into two groups. The first believes that a low level of tax burden is conducive to economic growth, therefore it is beneficial to lower real tax rates. The structure of a tax system is neglected, what really matters is the general level of the tax rate (the share of taxes in GDP) and rates of the fiscal burden (the share of all fiscal burdens in GDP). Reduction of budget revenues will be set off after some time with higher tax revenues resulting from an economic boom. If such a set off does not fully succeed, we will witness another effect of lowered taxes, namely decreasing participation of the state budget in GDP redistribution. The liberal school representatives claim that it is a positive phenomenon, as expenses of private entities are more effective from the economic growth perspective than public expenses. The second group questions the direct influence of low taxes on economic growth, emphasizing the negative consequences of decreasing budget tax revenues. Poor financing of some branches of the economy (infrastructure, administration, education, etc.), hampers the economic growth rate. Advocates of the above view also point out that the possibly positive effects of lowering taxes appear only after a few years, while the budget experiences instant losses.

Public discussions concerning tax system reforms are dominated by the view that lowering taxes is the only panacea for stimulating economic growth (see: Skica, Wołowiec & Reśko, 2012). But is this really so? To be able to answer this question we need to examine how the level of fiscal burden and structure of budget tax revenues are correlated with the GDP growth rate.

A relationship that is particularly examined is the correlation between the level of fiscal burden in personal income tax and the economic growth rate. Considerably less attention is paid in various analyses to the influence of the structure of budget tax revenues on economic growth.

Below we will present the relationships between the fiscalism level[10] (the relationship between tax revenues from PIT and social insurance contributions to average annual GDP growth rate, calculated in line with purchasing power parity per inhabitant) and the

9 Complicating tax law by various tax reliefs and exemptions, principles of depreciation write-offs, evaluation of stocks, deduction of exchange rate profits and losses, leads to the disappearance of a simple relationship between gross return on the investment rate and net return on the savings rate, determined by statutory tax rates.

10 By state fiscalism we understand redistribution of gross value added (together with debt). In analyses of the level of fiscalism three indicators can be distinguished: state expenditure rate – being a relationship of expenditure to GDP, narrower measures are offered by: tax rate, that is the relationship between taxes and GDP, and fiscal burden rate, being a relationship between taxes and other non-tax burdens related to labor costs and GDP.

structure of the tax system, and the economic growth rate for 27 EU countries for 1991-2012 [11].

Using the notion of fiscalism we should also include all kinds of social insurance contributions and their derivatives in our research, as they also burden personal incomes and determine labor costs for employers[12]. Examining income tax in isolation from the obligatory burden related to social insurance may lead to the drawing of wrong conclusions. Social security systems are financed from various sources. These can be both premiums paid by taxpayers and direct financing from the state budget (premiums are then included in general taxes).

Using Pearson's correlation coefficient we can analyze the power and direction of relationships between the level of fiscalism and average annual GDP growth rate. The coefficient sign informs us of the correlation direction, while its absolute value – of the relationship power[13]. The obtained value of linear correlation coefficient rxy = -0.56 denotes the existence of a statistically negative relationship between two variables. The determination coefficient obtained on the basis of Pearson's correlation coefficient allows us to state that the average annual economic growth rate in 27 examined countries in 31% of cases is explained with an average level of fiscalism. The analysis of the above data allows us to state that an increase of the level of fiscalism by 1% leads to a decreased economic growth rate *per capita* by 0.14%.

On the basis of the above results of the survey we can state that countries with a high level of fiscalism generate a lower economic growth rate. In the ten-year period of research not all countries were characterized by a negative relationship between changes to fiscalism and GDP growth rate presented annually. We could form a thesis that only in the long term can we notice a negative influence of the level of fiscalism on economic growth dynamics and rate.

Adopting an assumption that income tax lowers incentives to work by reducing the remuneration level, decreasing the size of income tax will increase incentives to work and to increase one's income. This is a partly justified view as taxpayers, as a result of decreasing net income by increasing taxes, may be motivated to work in order to satisfy their consumption needs. Moreover, increasing net income through lowering taxes may lead to quicker satisfaction of taxpayers' consumption needs and a lower willingness to take up additional activities in order to increase one's income. Therefore, the effect of lowering the taxation level may be a slower GDP growth rate, as reducing tax rate levels improves taxpayers' material situation and, as a result, decreases labor supply. We should also remember that in a situation of 'saturation' of the tax system with various investment reliefs, lowering taxes weakens their motivational effects.

The research shows that in a short period of time it is difficult to demonstrate the relationship between reduction of tax rates and GDP growth rate. Negative correlation means that the higher the level of extreme tax rates, the lower GDP growth. The obtained correlation coefficients are statistically insignificant, so small that there is no reason to reject the hypothesis concerning the existence of a relationship between the level of extreme rates in a short period of time. These results do not confirm the theoretical postulates of the economics of supply school. Its advocates argue that reduction of extreme tax rates in income tax leads to lower labor costs, stimulating consumption and production, and, as a result, shifting the global supply curve so that the demand and supply equilibrium point determines a higher level of GDP and lower prices. This action is to lead to economic growth and a lowered inflation rate. These activities may result in an increased trade deficit caused by growing demand for consumption and investment goods and an increased capital surplus due to inflow of foreign capital and decreased outflow of domestic capital abroad.

Apart from the influence of the level of fiscalism on economic growth, of vital importance is also the analysis of the structure of budget tax revenues

11 The notion of tax and quasi-tax incomes (social insurance contributions and their derivatives) correspond to the term of tax revenue used in OECD terminology (See: Revenue Statistics of OECD Member Countries 1965 – 2012, (2013), Paris: OECD).

12 R. J. Barro defines summary tax burden in relation to GDP as the taxation rate. He lists here PIT, CIT, indirect taxes, property taxes and social insurance premiums (See: Barro, 1990; Barro, 1991).

13 Correlation coefficient adopts the values from [-1;1] range. Absolute value of the coefficient indicates the power of correlation between two variables. The most correlated variables are those in which the coefficient value is close to 1 or -1, the least correlated ones are those with coefficient close to 0 (positive or negative). The correlation coefficient sign shows the direction in which variables are correlated. If it is positive, we talk of positive correlation between variables. This means that an increase (decrease) of the value of one variable is accompanied by an increase (decrease) in the value of the other variable. If it is negative (the so-called negative correlation of variables), it means that the growth (fall) in the value of one variable is accompanied by the fall (growth) of the other variable.

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(together with quasi-taxes). It will allow us to answer the question of how particular types of fiscal revenues influence the GDP growth dynamics. We analyzed three tax groups. The first is composed of income taxes (PIT, CIT and taxes on capital gains), the second – social insurance contributions and their derivatives, while the third – incomes from work (jointly PIT and social insurance contributions with their derivatives[14]. Isolating the fourth group is justified by the fact that social performance may be financed with general taxes or from premiums outside the budget, in the form of a burden classified as social insurance.

Analyzing the influence of income tax share in fiscal revenues on the GDP growth rate we obtain the Pearson's linear correlation coefficient at the level of rxy = 0.12. The obtained value of the coefficient means that there is no statistically significant relationship between income tax share in fiscal revenues and average annual GDP growth rate. Similar results are obtained when analyzing the discussed relationship annually in particular years (with an exception of the Netherlands). Examining the power and direction of the correlation between PIT and CIT separately and average annual economic growth rate, we also obtain statistically insignificant relationships. The obtained correlation coefficients equal, respectively rxy = 0.05 and rxy = 0.37. Thus the income tax share in the structure of budget fiscal revenues does not significantly affect economic growth dynamics (either in the short run or in the long run). Determining the power and direction of the relationship between social insurance contributions share in total fiscal revenues and average annual GDP growth rate *per capita*, we obtain the correlation coefficient rxy = -0,44. This result confirms the existence of a negative relationship between the analyzed variables. The power of the relationship does not qualify it as statistically significant, therefore the thesis of a negative influence of a high level of social insurance contribution burden on economic growth cannot be fully confirmed (see: Wołowiec & Skica, 2013).

Combining personal income tax and social insurance premiums into one group we obtain a category of incomes placing a burden on work. These performances are complementary and determine the so-called tax wedge, that is the labor costs (the difference between the labor cost – the pay costs for the entrepreneur and net pay – pay income), extremely vital for the willingness of entrepreneurs to create new jobs. Moreover, these terms are used interchangeably. Analyzing the span between the share of particular fiscal contributions in EU countries with their highest and lowest levels, we can notice that the span of PIT share in total fiscal revenues in the EU countries in 2012 amounted to roughly 39%, while in the case of social insurance contributions – 34%. In the case of a joint burden on work income, the span was 21%, therefore it is justified to analyze the total influence of contributions burdening labor costs on economic growth.

On the basis of the data below we obtained the correlation coefficient of rxy = -0.55, which denotes the existence of a statistically significant negative relationship between the share of work income burden in fiscal revenues and GDP growth rate. The coefficient of determination calculated on its basis tells us that the average economic growth pace in the examined years is explained in 29% of the situations by the share of work income burden in total fiscal revenues.

The obtained results allow us to state that an increase of average share of pay burden in total fiscal revenues of 1% accounts for a decline of GDP *per capita* by 0.11%. We can thus state that a high level of burden on income from labor negatively affects economic growth. High labor costs lower competitiveness of the national economy and increase the tendency to escape into the shadow economy and increased unemployment, which in turn hampers the economic growth.

Examining the relationship (for the years 1991-200) between average annual unemployment level (a dependent variable) and average share of contributions constituting a burden on labor costs we will notice a strong relationship, assuming a three-year delay of unemployment rate reaction. In this assumption the correlation coefficient is rxy = 0,96. An increase of 1% in average share of burden on pay in total fiscal revenues of EU countries, assuming a three-year delay, accounts for an increase of the average unemployment rate of 1.5%.

Summarizing, we need to remember that each increase of tax and quasi-tax burden may translate into a slower economic growth rate. The research shows that the most negative influence on economic

14 On the basis of tax classification developed by OECD and EUROSTAT. More on classification in: *Revenue Statistics of OECD Member Countries 1965 – 2012, (2013)*, Paris: OECD; *Structures of the taxation systems in the European Union 1995-2012*, (2013), Luxembourg: Eurostat.

growth, especially on unemployment level, is exerted by fiscal burden constituting the so-called labor costs. Interestingly, contrary to popular belief, the research did not find any correlation between the level of income tax burden on the economy and economic growth. The obtained research results do not allow us (without detailed micro-economic analyses, such as level of household affluence, their expense structures, price flexibility of demand, etc.), to propose a thesis that it would be more beneficial from the point of social and economic prosperity to increase the revenues from indirect taxation in the structure of tax budget revenues. Lowering the income tax burden requires redressing the balance with increased indirect taxes.

Conclusions

However, we should bear in mind that this may cause several negative consequences.

1) An increase of actual rates of tax on goods and services may lead to unfavorable allocation of production to goods of lower price flexibility of demand. Indirect taxes use customers' usefulness preferences in order to satisfy budget financial needs, but the structure of the economy shifts towards goods with low demand flexibility (basic goods). This may weaken the economic growth by shrinking the market for higher demand goods that stimulate the economy's competitiveness.
2) Price growth caused by increased rates of indirect taxes may lead to inflation processes. If consumption goods with low demand flexibility become more expensive, low flexibility will not cause decline in demand (or it will fall only slightly). Producers will increase their prices which will provoke the multiplier reaction of changes to other prices. Households burdened with higher prices of basic goods will limit their demand for more sophisticated goods, therefore their prices and production will decrease. Producers reduce production and the general price level is determined by goods with low price flexibility of demand.
3) High (increasing) rates of indirect taxes, through an increased level of prices and inflation effect, lead to decline in the society's real incomes, lower demand, decline in production and, as a result, a slower economic growth rate.
4) Price growth being the result of growing indirect tax rates, in the long run generates pressure on increasing salaries in order not to weaken global demand in an economy. This causes increased costs of salaries and other production factors (providers of these factors, by increasing the required price, compensate their costs by transferring the tax burden). Thus we experience the indirect burden of indirect taxes placed on enterprises.
5) Price growth, being the effect of increased burden of indirect taxes, leads to increased supply of money, according to the Irving Fischer equation of exchange. This may account for an imbalance in the monetary system.
6) Indirect taxes, placing a burden on consumption expenses, most negatively affect the incomes of poor households (in the case of New Member States such households generate 80% of global demand), which violates the principle of equity and equality of taxation.
7) In a situation where increased indirect taxation mostly concerns domestic rather than imported goods, this weakens the situation of domestic producers.
8) Increased indirect taxation of basic goods leads to social stratification by accumulating economic inequalities in domestic product distribution, especially in the case of a high share of household expenditure on basic goods (this is typical of NMS, according to Engel's law).

The evaluation of the influence of income taxes on taxpayers' behavior and, as a result, on economic growth, requires taking into account the whole external environment in which taxes are one of the major elements, though an element that does not function or determine economic growth independently. The environment may both hamper and stimulate economic growth as well as shape itself independent of taxpayers' intentions.

We can differentiate the following elements of the environment.

1) State of the market (prices and currency exchange rates, state and intensity of competition, payment bottlenecks, economic climate, etc.).
2) Social and material infrastructure (banking and insurance system, education, corruption, state of administration, system of justice, etc.).
3) Fiscal and monetary policy of a state (custom duties, public aid, height of the budget deficit, interest rates, taxes and tax reliefs, etc.).
4) Regulative and administrative influence of the state (legal regulations in particular sectors, labor market regulations, EU sanitary norms, norms shaping production quality, etc.).

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