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OLENA IVASHKO
WSEI University in Lublin, Poland
ORCID iD: 0000-0003-2950-0474

ŁUKASZ WOJCIECHOWSKI
WSEI University in Lublin, Poland
ORCID iD: 0000-0002-9403-6412

ADAM ŻYCZKOWSKI
Alcide De Gasperi University of Euroregional Economy in Józefów, Poland
ORCID iD: 0000-0001-6131-7990

JACEK WITKOWSKI
Lublin University of Technology, Poland
ORCID iD: 0000-0002-8330-4573

INCOME TAXES AND STABILITY AND STIMULATION FUNCTIONS OF PUBLIC POLICY

PODATEK DOCHODOWY A STABILIZACYJNA I STYMULACYJNA FUNKCJA POLITYKI EKONOMICZNEJ

Abstract

The stabilisation function of the state's finances encompasses measures aimed, inter alia, at achieving and maintaining a relatively high rate of economic growth, while limiting negative phenomena, i.e. high unemployment and inflation rates, mitigating business cycle fluctuations, stabilising the money market and making the most effective use of tangible factors of production. The role of the state in the economy and its influence on the behaviour of groups of economic units has undergone dynamic changes over the centuries, both with regard to the forms and scope of influence and the degree of interference of public authorities in the market mechanism.

Keywords: *fiscal policy, taxation policy, functions of taxes*

Streszczenie

Stabilizacyjna funkcja finansów pastwa obejmuje działania mające między innymi powodować osiągnięcie i utrzymanie relatywnie wysokiego tempa wzrostu gospodarczego, przy jednoczesnym ograniczaniu zjawisk negatywnych, tj. wysokiej stopy bezrobocia i inflacji, łagodzeniu wahań cyklu koniunkturalnego, stabilizację rynku pieniężnego oraz możliwie najbardziej efektywne wykorzystanie rzeczowych czynników produkcji. Rola państwa w gospodarce i jego wpływ na zachowanie się grup jednostek gospodarujących ulegała dynamicznym zmianom na przestrzeni wieków, zarówno odniesieniu do form i zakresu oddziaływania, jak i stopnia ingerencji władz publicznych w mechanizm rynkowy.

Słowa kluczowe: *polityka fiskalna, polityka podatkowa, funkcje podatków*

Introduction

The content of financial policy always consists in making some choices to be reached through finance management (including taxes) as well as methods and ways of achieving those goals. Financial policy of households and entities which operate micro-economically affects single management goals of particular consumers (households) and enterprises. Financial policy of the state achieves determined goals in three areas: stability of economy, allocation of production factors and redistribution of incomes. The implementation

of the financial police of the state in these three areas forms a foundation for distinguishing among three functions of the financial policy of the state, namely stabilization, allocation and redistribution functions. The implementation of these functions is achieved through the use of particular tools of fiscal and monetary policy. From the perspective of income taxes, fiscal policy is the basic tool for implementation of economic and social goals imposed on it. These goals are reflected in the construction of tax system, by determination of types and sizes of taxes burdening particular categories of taxpayers (including income taxes), but also by defining precise principles for tax constructions – determining their object and subject scope, tax base, ways of calculating it, tax rates and scales and the system of tax reliefs and exemptions (seldom – tax increases). The implementation of the goals of the state financial policy is based both on their qualitative determination and also by detailed definition of their subject and object scope, principles of assessment depending on various subject features of payers, exemptions, reliefs, etc. It can be said that the process of gathering public income allows us to create and apply various tools for implementation of the goals of the state's financial policy (Wołowiec, Wolak 2009, p.12-20).

The state's financial policy tools also realize all functions of financial policy, that is its stability, allocation and redistribution functions. For example, if personal income tax is based on progressive rates (growing with increasing tax base), then as an instrument of the state's financial policy, it will automatically perform the stability function (such way of taxing personal incomes will decrease global demand and, as a result the speed of economic growth), the allocation function (the collected incomes from this tax will increase the scale of generating public wealth) and redistribution function (progression will decrease more the disposable incomes in more affluent families than poor households). There are no instruments of the state's financial policy that would affect only global demand (they would implement the stability function of financial policy) and would simultaneously be neutral from the point of view of its allocation or redistribution functions. This means that changes or reforms of financial policy (its particular elements) make it necessary to analyze each instrument (including income taxes) from the perspective of its effects on: economic condition (stability function), structure of private and

public sectors (allocation function) or the level of affluence and differences in disposable incomes in households (redistribution function).

Stability function of state finances

Stability function of state finances covers activities aimed at achieving and maintaining relatively high rate of economic growth while limiting negative phenomena, such as high unemployment rate and inflation, reducing fluctuations of an economic cycle, stability of monetary market and the most effective use of material production factors.

The role of the state in economy and its influence on behavior of groups of individuals running economic activities has changed through the ages, both with reference to forms and scope of influence and the degree of public authorities' interference in market mechanism, beginning from the mercantilism, laisser-faire, interventionism based on views of J.M. Keynes to neo-liberal and neo-classical theories. In interventionism public investment is of key importance, as it leads to increased global demand and to full employment. In principle public investment should be made in socially and economically useful areas which do not cause direct supply effects (they do not compete then with private investment and do not lead to *pushing private investment by public investment*). Such investment – according to Keynes – may even be financed at the cost of increased budget deficit, as it leads to creation of public debt but does not disturb the functioning of basic market mechanisms. The task of fiscal policy tools boils down to decreasing the amplitude of fluctuations in economic cycle by using taxes and public expenditure thus slowing down the expansion of economy in periods of too high growth and stimulating economic activity in periods of weak economy. Taxes are the main tool of this policy, they lower the income level and reduce private expenditure on individual consumption as well as they influence the level of production, investment and employment. State expenditure shapes the size of global demand (Gordon, 2011). We can divide fiscal policy into its active and passive variations in using tax instruments in order to achieve the goal of stabilizing economy and other social and economic goals. In active fiscal

policy we use changes of rates, level and principles of taxation depending on the phase of economic cycle. Passive policy uses methods of automatic stabilizers (for example progressive taxation of population incomes) deliberately incorporated into the tax system (Markowski, 1989). Active fiscal policy leads to increased share of public expenditure in national product, which is criticized by representatives of liberalism. The problem of active fiscal policy is that decisions concerning changes in particular fiscal instruments require changes to tax law and other legal acts. This accounts for considerable delays in the implementation of fiscal policy instruments, which may weaken the effectiveness of intervention policy as well as its use due to ever-changing economic situation (Wojtyna, 1990). Some public expenditure may act on their own, automatically influencing global demand and in this way they exert stabilizing influence on economy (Winiecki, 1981).

Among automatic economic stabilizers we can distinguish, first of all, income taxes, indirect taxes (on consumption goods) and various social benefits. Automatic stabilizers decrease the susceptibility of economy to shocks by inbuilt *flexibility* of tax system. For example, progressive taxation of population incomes causes that in periods of recession decline in population incomes generates even greater (due to progressive nature of rates) decline of tax income for the budget. The disposable income for households decreases more slowly than gross income, therefore global demand fall is smaller than we could expect judging from national product decline. The automation of tax system slows down the production, employment and national product decline. In times of boom and increasing incomes of households tax income for the budget grows even faster than population incomes. Then taxes automatically slow down population demand, counteracting the appearance of inflation pressure. The disadvantages of taxes as automatic stabilizers consist in the fact that affecting global demand, taxes may decrease the fluctuations of economic cycle only in a short period of time, and they do not create conditions for changing the current economic situation. Their job is to maintain the current level of economic activity, so they do not create conditions for sustainable growth, which requires the same speed of growth for production capacities, employment and effective demand (Samuleson & Nordhouse, 2010).

Stabilizing role of taxes

The nature of stabilizing role of taxes can be presented on the example of a macro-economic model of market economy, which shows behavior of consumers, investors, public sector and abroad as recipients as well as companies as suppliers of goods and services on the market. This model helps explain mutual relations of global demand and supply and resulting fluctuations of economic cycle. Establishing algebraically conditions for equilibrium of a macro-economic model of open economy, equations of IS function and IM function are equations of interest rates. Therefore in order to preserve general equilibrium, interest rate of IS function, providing balance in the real sector of economy, should be leveled with interest rate of IM function, providing balance in monetary sector. These interest rates could be written down in the following way: $R(d + n) = a + e + g + G - Y[1 - b(1 - t) + m]$,

thus:

$$R = \frac{a + e + g + G - Y[1 - b(1 - t) + m]}{d + n}$$

R – interest rate; a – fixed amount of consumption brought forward from previous periods; e – size of investment outlay, brought forward from previous periods; g – value of net exports from previous period; Y – GDP; m – ratio of extreme proneness to import; n – ratio of susceptibility of net exports to interest rate; t – rate of net fiscal burden; G – public expenditure on purchasing goods and services; b – ratio of proneness to consumption.

This equation (equation of the function investment – savings IS) indicates the size of interest rate which ensures leveling investment with savings in conditions determined by other functions and independent variable G of the macro-economic model of market economy. The algebraic presentation of the function liquidity – money LM, which indicates the value of interest rate ensuring balance between money demand and supply can be written down as (Wołowiec 2003):

$R = (k/h)\,Y - (1/h)\,M$.

Comparing the right sides of these equations we have:

$$\frac{a + e + g + G - Y\,[1 - b\,(1 - t) + m]}{d + n} = \frac{Yk}{h} - \frac{M}{h}$$ establishing Y we have:

$$Y = \frac{x\,a + e + g + G + [M\,(d + n) / h]}{1 - b\,(1 - t) + m + [k\,(d + n) / h]}$$

k – ratio of liquidity preferences; h – ratio of money demand susceptibility to interest rate; M – amount (supply) of money.

The above equation presents the size of global demand at which all economy equilibrium conditions are met, determined by income and expenditure identity, consumption function, investment function, net exports function and money demand function at given parameters of this function (a, e, d, d, n, b, m, t, k, h) and sizes of independent variables (G and M). In this equation we also included decision-related instruments of fiscal policy, which, through shaping global demand, are to ensure stable and sustainable economic growth and appropriate use of its production potential. These instruments include public expenditure on purchasing goods and services (G) and rate of net fiscal burden (t). It must be remembered that the rate of net fiscal burden in the equation is used in its aggregated form, as its size – in relation to GDP – is composed of all obligatory payments for public funds (taxes, fees, health and social insurance contributions, etc) lowered by – also in relation to GDP – monetary payments from public to private sector. Each of these elements of net burden rate, within the implementation of stabilizing function of state policy can be used separately, depending on the evaluation of usefulness of detailed instruments of fiscal policy. The effectiveness of instruments of stabilizing fiscal policy measured with their income effect depends on sensitivity of investment demand, net exports and demand on interest rate. The effectiveness of the analyzed instruments cannot be questioned, as it results from mathematical relations in the model, not from assumptions of a particular economic theory. We may only question the reality of income effects of the stabilizing financial policy (Filipowicz, 1992). Supporters of classical economic views argue that income effects of the implementation of stabilizing function

of state finance are only nominal, so domestic product growth is a result of inflation growth of prices. Supporters of Keynes assume that in conditions of sub-optimal use of economic potential of the country, increasing global demand within fiscal policy of stability brings real effects in shape of increased volume of goods and services constituting GDP, without inflation rate of prices, while inflation pressure may appear, but only when there is surplus of global demand over supply., defined as optimal use of production capacities (economic potential of the country).

Supply side economics

Keynes' theory met its opposition being a reaction to the economic crisis of 1970s – the so-called supply side economics, assuming that lowered border tax rates and tax reliefs will provide citizens with appropriate stimuli (stimulators) to work, save and invest. The supply economics proposes macro-economic (market) approach to macro-economic problems, it favors global supply management over global demand management and long-term economic growth over short-term fluctuations (Bieńkowski 1995). It is focused on basic indicators of global supply: the size of resources, their quality and prices, technology conditions, predicted inflation rate and all institutional factors affecting productivity, such as main income taxes, related labor cost burdens, scale, scope and nature of tax stimuli and various regulating activities of the state. Supply economic was developed by: Robert Mundell, Arthur Laufer, Lester C. Thurow and Jude Wanniski (Niskanen 1988, Bieńkowski, Radło 2006). They started with an assumption that the crisi troubling the American economy was caused by excessive intervention of the state. They claimed that intervention activities of the state would not overcome the crisis and would only disturb the functioning of the market mechanism (Bossak 2008, Belka 1991). Instead of modifying the market economy, we should return to capitalism described by Adam Smith and Jean B Say, that is to market economy and high accumulation driven by savings. Supporters of supply economics critically evaluated tax policy which, in their opinion, lowered the economic activeness of Americans. In economy, they saw greater significance in supply

of goods than their demand. They searched for motives of human activity in economy. As the only motive they accepted was the height of paid taxes and argued that the border rate of income taxation in the USA was too high, they postulated reducing both personal and corporate income taxes. They claimed that lower taxes will make American economy more dynamic. They proved that by influence in micro-economic sphere such macro-economic goals as: GDP growth, lower unemployment rate and lower inflation rate can be achieved.

Keynes economics assumes *implicite* that there is positive correlation between taxation rates and the sum of budget incomes from tax. Lower tax rates will lead to lower tax revenues, which will improve global possibilities of spending, stimulating via increased demand the size of production and employment. The supply economics, on the other hand emphasizes the influence of tax rates on the size of the supply of manufactured goods and services. Therefore many macro-economic problems should be solved through limiting barriers and stimulating production, inclination to work, save and invest in production activity (McConnel, 2005).

As the concept of Laffer's curve offers conclusions that it is possible to lower tax rates and increase budget revenues at the same time, the curve is often used by supporters of economic liberalism to justify the idea of lowering taxes. It should be emphasized that although the concept of Laffer's curve in particular economic conditions justifies lowering taxes in order to increase budget revenues, it does not offer any clear solutions. Quoting Laffer's curve would require to indicate that the current tax rate is higher than the rate corresponding to the saturation rate, as only in such conditions lowering tax rate will increase revenues from those taxes. Thus the concept of Laffer's curve does not offer justification for lowering tax rates in every situation. Establishing *ex ante* the rate that maximizes state's tax revenues is extremely complex and connected with numerous difficulties (some economist seriously doubt whether it is possible at all to establish it unequivocally). The only sure way is the *ex post* analysis, that is empirical examination of reaction between the height of tax revenues and tax rate changes.

Income taxes and allocation and distribution functions of tax policy

A simple consequence of the fiscal function of income taxes is direct influence on allocation of resources in 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: height of tax rates, capacity of tax scales, subject and base of taxation, scope and scale of tax reliefs and exemptions, the way of distributing tax burden and the way and mode of collecting taxes. Income tax is also a social category, and due to its directness and individuality of taxation, some economic goals achieved through income taxes may encounter social barriers, expressed in social unrest accompanying, for example increasing the burden level or changes in some elements of income tax construction. In market economy conditions the reaction of entities on imposed taxes (or decreasing/increasing tax burden) is of vital importance. Each reaction depends on the strength and direction of tax 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 tax influence on the market will become visible and on changes to structures of particular markets (Musgrave 1984, p. 268). The analysis of income tax influence on allocation of resources requires analyzing two issues: who is the taxpayer and who is the payer of the tax and what is the subject of taxation. Taxation of individuals and economic activity is associated with the following choice (Owsiak 2008, p. 170):

1. tax may be imposed on households and companies and the subject of taxation may be production factors and goods and services;
2. tax may be imposed on the seller, the buyer or the purchaser of production factors, goods or services and tax may burden the taxpayer's incomes or expenses;
3. the subject of taxation may be: revenue, income, assets, consumption.

Each of these solutions exerts specific influence on allocation of resources in economy, due to various reaction of production factors to taxation. Through income taxes we achieve correction of taxpayers' incomes. Redistribution of national product is conducted between taxpayers and public law entities. Redistribution of income also affects the level of social and economic life, by protection of minimum income level, taking into account family, social and other aspects in taxation. Specialist literature also offers an approach in which the scope of redistribution function coincides with the scope of fiscal function. This thesis is related to the assumption that 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, 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 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 income tax, 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 case of indirect taxes, which are strongly digressive, poor taxpayers will benefit from them more, so a batter redistribution effect can be achieved by lowering taxes on those goods and services which are most frequently consumed by lower groups of society (Krajewska, 2012).

Income taxation, public fiscal policy and economic growth

The quality of public finances in this context refers to the structure of taxation and public spending as well as mechanisms applied to maintain a high level of efficiency of public spending, such as effective expenditure rules. The purpose of this chapter is to shed light on the best possible ways of redirecting public expenditure towards *productive* items and ensuring that tax structures strengthen the economic growth.

A variety of studies have addressed the issue of effect of fiscal policy on economic growth, most of them applied aggregate approach and looked at the impact of total government revenue or expenditure, as percent of GDP, on growth. Such studies often fail to identify channels through which fiscal policy affects growth, which is the central question. Little do we know about whether and how the composition of revenue or expenditure affects a country's growth rate.

According to the neoclassical growth models of Solow (Solow 1956, p. 65-94) and Swan (Swan 1956, p. 334-361), the share of expenditure in output, or the composition of expenditure and revenue don't affect the long-run growth rate. In these models, tax and expenditure measures that influence the savings rate or the incentive to invest in physical or human capital ultimately affect the equilibrium factor ratios rather than the steady-state growth rate. Changes in government policy variable, while permanently changing the steady-state level of output per capita, are able to alter its growth only temporarily. This claim is supported by Evans and Karras (Evans, Karras, 1993, p. 149-155) and Sala-i-Martin (Sala-i-Martin 1995). As such, exogenous growth model has limited value for exploring the determinants of growth, which partly explains why interest in growth theory declined in 1960s and it did not revive until the development of endogenous growth theory almost 25 year later. On the contrary, in endogenous growth models, such as those proposed by Barro (Barro, 1990, p. 103-125), Lucas (Lucas 1998, p. 3-42), King and Rebelo (King, Rebelo 1990, p. 26-50), investment in human and physical capital does influence the steady-state growth rate, and consequently government policy changes may permanently change the growth rate of per capita output.

Since then the explosion of work on endogenous growth has generated a number of models that link fiscal policy and long-term growth, demonstrating various conditions under which the relation is robust. This point of view is presetting by Barro and Sala-i-Martin, also by Jones, Manuelli and Rossi (Jones, Manuelli, Rossi, 1993, p. 485-517), Devereux and Love (Devereux, Love, 1994, p. 509-536) and Stokey and Rebelo (Stokey, Rebelo, 1995, p. 519-550). These models highlight the distinction between productive or non-productive expenditures as well as distortionary or non-distortionary taxation.

Distortionary taxes (like personal taxation and capital taxation) in this context are those influencing the investment decisions (with respect to physical and/or human capital) and creating tax wedges on labor, and hence exerting effect on the rate of growth. Government expenditures are differentiated according to whether they are included as arguments in the private production function or not. For example, if there are externalities from investment in physical or human capital then government intervention to increase school enrolment or capital formation may boost growth and be welfare-improving (Kneller, Bleaney, Gemmell, 1990, p. 171-190). If they are, then they are classified as productive and hence have a direct effect upon the rate of growth. These models envisage that shifting taxation from distortionary towards non-distortionary forms has a growth-enhancing effect. On the other hand, switching expenditure from productive towards unproductive forms is growth-hindering. Non-distortionary tax-financed increases in productive expenditures are expected to have a positive impact on economic growth, whereas in case when non-productive expenditure are financed, scientists predict zero effect. Finally, non-productive (productive) expenditures financed by distortionary taxes have an ambiguously (unambiguously) negative growth effect.

Tax revenue, GDP and influences of growth

In case of taxation, various authors have studied how the total tax revenue in relation to GDP, i.e., the average tax rate, influences growth. Empirical study conducted by Marsden (Mardsen, 1990, p. 23-34), based on a cross-sectional analysis of 20 countries is a good example of this kind of analysis (aggregated

approach). 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 significantly higher rates of GDP growth than their more highly taxed counterparts enjoyed. The average annual rate of growth of GDP 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 moved resources from less to more productive sectors, contributing to better overall efficiency of resource utilization. Many other authors like Engen and Skinner (Enger, Skinaer, 1996), Cashin (Cashin, 1995, p. 237-269), Fölster and Henrekson find significant negative effect of tax revenue to GDP on growth. Yet, the size of the effect differs considerably (see below). Other studies cannot find any negative or positive relationship. Again, no study so far has shown positive relationship between high taxation and growth (Mooji, Nicodem, 2001, p. 134-260).

Clearly, in practice, almost all taxes are distortionary to some degree and the key issue in search for 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 investment work and technical progress. It has been demonstrated that the effects of taxation on growth depend crucially on the elasticity of labor supply, the specification of the leisure activity as well as the structure of the human capital accumulation, and its tax treatment. Stokey and Rebelo (Stokey, Rebelo, 1995, p. 519-550) 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.

Lucas (Lucas, 1990, p. 293-317), Pecorino (Pecorino, 1993, p. 251-271), and Stokey and Rebelo among others use simulations in order to quantify growth and welfare effects of tax reforms, such as, for example, a shift from income to consumption taxes or a lowering of capital income taxes. Although the quantitative growth and welfare effects identified by these studies differ considerably, they all reveal that it is consumption taxation rather than the

taxation of factor incomes (human and physical capital) that induces fewer distortions. They demonstrate that a consumption tax involves only one fundamental distortion – it influences the choice between time spent in *productive* activities (labor and education) and in leisure time in favor of the latter, and therefore reduces the growth rate of the economy. This choice is affected in a similar fashion by income taxes, but these involve other distortions as well, reducing capital accumulation and growth. The choice between taxes within group of direct taxation is far from clear. Mendoza, Milesi-Ferretti , Asea (Mendoza, Milesi-Ferretti, Asea, 1997, p. 99-126) indicate that changes in labor income taxes might have stronger effects on growth than changes in capital income and consumption taxes. The estimations carried out by Daveri and Tabellini (Daveri, Tabellini, 1997, p. 1-49) and B. Heitger (Heitger, 2001) underscore the weight of tax burdens of private individuals. The first study proves that a 14% rise in personal tax in the EU countries in 1965 – 1995 led to a 3% reduction of the share of investment in GDP and slowed down annual economic growth by about 0.4%. The authors show the impact of higher labor taxation on the behavior of enterprises which, substituting capital for work, contribute to the decline of the end capital product and limit inclinations to invest. On the other hand, Leibfritz, Thorton and Bibbee (Leibfritz, Thorton, Bibbee, 1999) or Xu (Xu, 1998), prove that capital taxes in the long term lead to much greater disturbances than wage taxes or taxes on consumption. Some of the strongest and most recent empirical evidence that the tax structure affects economic growth is reported by Widmalm (Widmalm, 2001, p. 199-221). Using pooled cross-sectional data from 23 OECD countries, between 1965 and 1990, Wildmalm finds evidence that different taxes have different growth effects. What is more, the tax progressivity is bad for economic growth. Specifically, the proportion of tax revenue raised by taxing personal income (which includes also capital tax) has a negative correlation with economic growth. Results show that if an economy has a share of personal income tax of say 25% and another one has a share of 62%, the latter would be expected to have one percentage point lower annual growth, *ceteris paribus*. This result is robust to a rigorous sensitivity analysis.

There are more studies showing that a progressive income tax rate structure caused more damaging economic effects than a flatter rate tax schedule. Koester

and Kormendi (Koester, Kormendi, 1989, p. 367-386) isolated marginal tax effects from average tax effects. They found out that after controlling for average tax rates, increases in marginal tax rates had a negative effect on economic activity. In other words, reducing the progressivity of tax system, and at the same time allowing the government the same tax revenue (the same tax/GDP ratio), may lead to higher levels of national income. Many empirical studies confirm that high and increasing marginal tax rates disturb the formation of capital, constrain labor supply, retard economic growth whereas introducing a flat tax system will help to avoid many if not all the above costs.

The influence of income taxes on demand and supply

In macro-economic perspective, income taxes influence the shaping of demand, supply, equilibrium in the market of a specific good as well as on 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. 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 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 gross price of a particular product, but its net price will change by the amount of imposed (increased) tax. The whole 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 determined by the buyers' willingness to pay a higher price. So the less flexible demand and supply, the smaller income tax 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, 2008, 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 (Jensen, 2014). 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 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 taxation rate of capital incomes (money savings). Also the inclination of economic entities to invest is affected by incomes from invested capital. 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 (Judd, 1987, p. 675-709). Some researchers imply that there is 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 subject literature we can notice suggestions that resignation from capital tax and introduction of consumption tax leads to the situation in which investment decisions are not disturbed by tax policy. At the inflation at 3%, financing investment half with debt and half with new shares, and switching from capital tax to consumption tax, we observe investment growth of 10% while the increase of social

wealth stemming from lowering capital taxes equals 25 cents per each dollar, for one dollar of decrease. Low inflation is the best incentive for investment, as it lowers costs of capital (high inflation translates into growing interest rate, decreases profits at stock exchange 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 high flexibility of capital resource against its cost in the long term (Hall, 1993).

Undoubtedly, high (progressive) income taxation limits private investment by reducing 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) are of 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 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 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. 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 progressiveness and size of income taxation and aversion to risk. 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 non-negative tax scale is indifferent to risk only when it compensates absolute or proportional sacrifice. 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 of the taxpayer to income after taxation. Tax scale is neutral to risk if the taxpayer makes the same choices with and 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 when $A \neq 1$, 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 $1 - A$. 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.

Conslusions

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 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 life cycle (supporting children and parents with transfers). This provokes a conflict between 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 warranty system eliminates uncertainty

connected with unfavorable incidents which may happen to households and somehow limits the inclination (need) for saving.

If households treat retained profits of owned companies as their own savings, then the level of corporate income taxation may significantly influence household savings. Households may save more when companies retain less profit and save less when companies retain more profit. In a situation when extreme inclination for savings of households which own major shares in company profits is above the average population inclination, the growth of tax burden on profits (incomes) of legal persons, combined with lowered personal income tax may lead to decline in aggregate savings of private sector.

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