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**ECONOMIC EFFECTS OF TAXATION BY INCOME TAXES
IN EUROPEAN UNION MEMBER STATES
(OUTLINE OF THE PROBLEM)**

**EKONOMICZNE SKUTKI OPODATKOWANIA PODATKAMI
DOCHODOWYMI W PAŃSTWACH CZŁONKOWSKICH
UNII EUROPEJSKIEJ (ZARYS PROBLEMU)**

Abstract

Public discussions concerning tax system reforms are dominated by the view that lowering taxes is the only panacea for stimulating economic growth. 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 GDP growth rate (27 EU countries, data 2000-2018). A relationship that is particularly examined is the correlation between the level of fiscal burden in personal income tax and economic growth rate. Considerably less attention is paid in various analyses to the influence of the structure of budget tax revenues on economic growth.

Keywords: *income taxation, fiscal policy, economic growth*

Streszczenie

Przeprowadzona analiza zależności między trzema rodzajami podatków a wzrostem gospodarczym w Polsce i krajach UE w latach 2000-2018 wskazuje na następujące. Po pierwsze istnieje statystycznie istotny związek między opodatkowaniem a wzrostem gospodarczym w badanym okresie, po drugie istnieje statystycznie istotny, ujemny związek między udziałem składek na ubezpieczenie społeczne do PKB a wzrostem gospodarczym, po trzecie istnieje statystycznie istotny, ujemny związek między udziałem podatków bezpośrednich do PKB a wzrostem gospodarczym, ale słabszy niż w przypadku składek na ubezpieczenie społeczne i po czwarte istnieje statystycznie istotny, dodatni związek pomiędzy wpływami z podatków pośrednich a wzrostem gospodarczym. Przeprowadzona w pracy analiza statystyczna wykazała statystycznie istotny, ujemny wpływ opodatkowania podatkami bezpośrednimi i składkami na ubezpieczenie społeczne na wzrost gospodarczy w prezentowanych krajach.

Słowa kluczowe: *podatki dochodowe, polityka fiskalna, wzrost gospodarczy*

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Statement of the problem in general outlook and its connection with important scientific and practical tasks.

Fiscal policy refers to the use of government spending and tax policies to influence economic conditions, including demand for goods and services, employment, inflation and economic growth. The logic behind this approach is that when people pay lower taxes, they have more money to spend or invest, which fuels higher demand. That demand leads firms to hire more, decreasing unemployment and to compete more fiercely for labor. In turn, this serves to raise wages and provide consumers with more income to spend and invest. A virtuous cycle. Rather than lowering taxes, the government might seek economic expansion through increases in spending. By building more highways, for example, it could increase employment, pushing up demand and growth. Expansionary fiscal policy is usually characterized by deficit spending, when government expenditures exceed receipts from taxes and other sources. In practice, deficit spending tends to result from a combination of tax cuts and higher spending. The central government uses tax policy to generate revenue and places the burden where it believes it will have the least effect. However, the "flypaper theory" of taxation (the belief that the burden of the tax sticks to where the government places the tax), often proves to be incorrect. Reducing taxes, therefore, pushes out the aggregate demand curve as consumers demand more goods and services with their higher disposable incomes. Supply side tax cuts are aimed to stimulate capital formation. If successful, the cuts will shift both aggregate demand and aggregate supply because the price level for a supply of goods will be reduced, which often leads to an increase in demand for those goods. It's a common belief that reducing marginal tax

rates would spur economic growth. The idea is that lower tax rates will give people more after-tax income that could be used to buy more goods and services. This is a demand-side argument to support a tax reduction as an expansionary fiscal stimulus. Further, reduced tax rates could boost saving and investment, which would increase the productive capacity of the economy and productivity. Cutting taxes reduces government revenues, at least in the short term, creates either a budget deficit, or increased sovereign debt. The natural countermeasure would be to cut spending. However, critics of tax cuts would then argue that the tax cut is helping the rich at the expense of the poor, because the services that would likely get cut, is beneficial to the poor. Proponents argue that by putting money back in consumer's pockets spending will increase, hence the economy will grow and wages will rise. At the end of the day, the outcome depends on where the cuts are made (www.investopedia.com/articles/07/tax_cuts.asp).

Income taxes and stability and stimulation functions of public policy. 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

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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.

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 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, *laissez-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

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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. 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 (Kropiwnicki 1976, p. 143-144). 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; Markowski 1989; Winięcki 1981). Some public expenditure may act on their own, automatically influencing global demand and in this way they exert stabilizing influence on economy. 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 (Patrzałek 2015). 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. Apart from this the effect of automatic stabilizers can be seen in a tendency for budget deficit in periods of recession and budget surplus in periods of boom. In these conditions aiming at tying annual government expenditure with annual income would not be advisable and would lead to resignation from many automatic economic stabilizers.

The nature of stabilizing role of taxes can be presented on the example of a macro-

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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:

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

Where 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:

$R = (k/h) Y - (1/h) M$ (k – ratio of liquidity preferences; h – ratio of money demand susceptibility to interest rate; M – amount (supply) of money). Comparing the right sides of these equations we have:

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

h establishing Y we have:

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

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 (Gaspar, Gupta, Mulas-Granados, 2017). 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.

Keynes' theory. 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 (Niskanen 1988; Feldstein 1994; Bieńkowski & Radło 2006; Filipowicz 1995; Bossak 2008; Belka 1991). 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 Laffer, Lester C. Thurow and Jude Wanniski. They started with an assumption that the crisis 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. 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. Keynes economics assumes im-

plicitate 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.

In its foundation, the theory of supply economics ("tax stimuli economics") has three basic statements. The first fundamental statement of the supply economics is that high extreme rates of personal income taxation may decrease the willingness to work and thus limit global supply. Lower extreme tax rates should encourage individuals to take up additional work and encourage enterprises to increase demand for work, as the revenue from after taxation grows. Therefore lowering extreme tax rates should increase both work supply and demand for it. If we lower the price of work after taxation, we will increase employment in economy. The second assumption is that high extreme tax rates weaken the inclination for investment in education and improvement of skills related to one's profession and they may encourage investors to prefer foreign investments, assuming that tax rates are lower. So high tax rates may lower revenue from investment after taxation, lowering the resource of human and fixed capital, lower the speed of productivity growth, negatively influencing economic growth in future periods. The third assumption is that high extreme tax rates encourage taxpayers to move to the grey area, "to invest" in ways of minimizing the

amount of paid taxes (seeking reliefs, gaps in law, ways of concealing income, etc).

The theory of supply economics has many opponents who criticize it severely. One of the most serious objections concerns the claim that lower rates of income tax encourage taxpayers to increase their work time effectively. Critics believe that high extreme tax rates do not necessarily decrease the inclination to replace leisure time with working time. In fact, they may increase the amount of time allocated for work, so lowering income tax rates could lower production. There is empirical data questioning the size and speed of adjustment as well as direction in which lower income tax influences stimuli to work. Critics do not agree with the statement that decreases of tax rates always lead to increasing tax revenues. These revenues may increase or decrease, depending on type and scale of reactions of investors, savers and employees. At the bottom of all controversies there is the so-called Laffer's curve – a theoretical concept which illustrates the relation between the tax rate and budget revenue from taxes. The size of tax revenue at tax rate equaling 0% is zero. According to Laffer's theory, further increases of tax rates cause smaller increases of tax revenues until we reach the moment in which further growth of the rate will bring about lowering of total value of tax revenues. If the tax rate reaches $t = 100\%$, revenues once again will equal zero. The point at Laffer's curve reflecting the rate maximizing tax revenues is called the saturation point. Laffer based his concept on the following assumptions: at tax rate of 0%, taxpayers do not pay any taxes, therefore budget does not record any tax revenue while tax rate growth brings about two contrasting effects: growing share of state budget in economic entities' incomes and decrease of taxable income declared by

economic entities. The latter effect of increasing tax rate is explained by Laffer in the following way:

- Declining motivation to take up work and economic activity – limiting benefits obtained by economic entities from their work results in limiting their activities in this area.
- Increased inclination of economic entities to hide their incomes and to enter the grey zone – at higher tax rate economic entities achieve greater benefits from not paying taxes, which encourages them to do so.
- Increased inclination, especially of large enterprises, to change location of their economic activity, move their all or some production means abroad, to so-called tax havens.

At the taxation level $t = 100\%$, there are no stimuli to work or conduct taxable economic activity. Without motivation to work or conduct business, entities stop operating and do not generate any incomes (or generate them in grey zone). In this way the subject of taxation ceases to exist and related revenues have null value.

We are still witnessing disputes concerning the real economic effects that could be observed after lowering taxes and endless speculations concerning what really caused these effects. We should also remember that in a situation when global demand exceeds global supply, lowering tax rates may contribute to increased inflation and budget deficit. There is also a risk that reductions of tax rates may be asymmetric and lead to excessive social disproportions. A large majority of economists believe that lowering taxes in the USA in 1980s was accompanied with increasing budget deficit. This was a strong argument of Laffer's concept opponents, however, its supporters tried to prove that revenues increased and bigger budget deficit was caused by even greater

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growth of budget expenditure. Some opponents of Laffer accepted the argument concerning increased revenues, but attributed it to general GDP growth, as its speed was similar to that in other decades of the 20th century. Statistics confirm unequivocally the redistribution effect that took place in 1980s in the USA. In 1981, the share of 10% best-earning Americans in tax revenues amounted to 48%, while in 1988 it was

as much as 57.2%. However, economists differ considerably as to what caused this phenomenon. Opponents of supply economics school argued that the increased share of affluent people in tax revenues could be linked to their fears whether favorable rates would be maintained in the long run and to the speculation effect.

Analysis of latest research where the solution of the problem was initiated.

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 & Musgrave 1984, p. 268; Owsiak 2000, p. 170). 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 (Kaleta 1985, p. 110-121):

- 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) tax may burden the taxpayer's incomes or expenses;
- 5) 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 (Gajl 1992, p. 13-24). 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 better redistribution effect can be achieved by lowering taxes on those goods and services which are most frequently consumed by lower groups of society (Clements, de Mooij, Gupta, Keen, 2015).

Each activity of the state in economic policy sphere 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 goals more important than the size of taxes (though it is important, as assuming *ceteris paribus* it influences employment level and consequently many aspects of income division) is their type and structure. In 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 function of the average and extreme tax or tax flexibility in relation to taxation base, we can distinguish proportional (flat), progressive and regressive tax. The tax is flat when along the growth of 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 taxation base) or when tax flexibility against taxation base $\varepsilon(t1, Y)$ equals zero. Taxes are progressive when along the growth of taxation base extreme tax rate is higher than average tax rate or when flexibility of average tax against taxation base $\varepsilon(t1, Y)$ is above zero. Progressive tax may assume three basic forms:

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

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obtaining income
 $Y > Y_0 = K / t_2$, and t_2 is extreme tax rate, higher than average tax rate which equals $T_2 / Y = - K / Y + t_2$;

2) with continuous progressiveness, when extreme tax rate grows along with taxation base continuously:

$$T_3 = t_2 \times Y + t_3 \times Y_2$$

3) with tax thresholds, when extreme tax rate grows in a non-continuous way, changeable in various income brackets. Assuming that we have three income brackets from 0 to Y_0 , from Y_0 to Y_1 and from Y_1 to Y_2 , for income equaling $= Y_2$, the size of tax burden will reach: $T_4 = t_0 \times Y_0 + t_1 \times (Y_1 - Y_0) + t_2 \times (Y_2 - Y_1)$, whereas $t_2 > t_1 > t_0$. If $Y_1 < Y_2$, to $T_4 = t_0 \times Y_0 + t_1 (Y_1 - Y_0) + t_2 (Y - Y_1)$, analogically for $Y \leq Y_1$.

Taxes are regressive when together with growth of taxation base, the size of paid taxes grows more slowly than income or if average tax flexibility against taxation base $\varepsilon(t_1, Y)$ is below zero. Regression may be direct or indirect. Indirect regression takes place when the fall in average tax rate is accompanied with fixed level of extreme tax. In case of direct regression – fall in average tax goes along with fall in extreme tax.

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 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 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 (Hall 1993; Judd 1987, p. 675-709). 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 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 (Young 1994, p. 112; Young 1991, p. 255). 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. 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 (Young 1994, p. 112).

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

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the effective return rate, thus lowering the benefits savings bring. In consequence, we could expect decline in savings level (substitution effect), but we also experience income effect – decline of effective return on savings rate which translates into lowering the households' wealth level. This may lead to limiting the current and the future consumption. Limitation of current consumption may lead to 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 income effect and decline in net return rate coincides with decline in savings supply (Tanzi, Zee 1998). Statistical analysis conducted on a group of 20 OECD countries for years 1970 – 1994 confirms the negative relation of households savings rate not only to the size of budget deficit, unemployment rate, current account

deficit, demographic structure but also to the size of personal income tax. Econometric equations have the following form: $x = 1,13 r - 0,44 a65 - 0,17 db + 0,74 ob$ 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; b – 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 on a normal level. The negative influence of high personal income taxes on the household savings rate was also confirmed in research by Martin Feldstein, who proved that extreme tendency for consumption from retained company incomes equals around 2/3 of extreme tendency for consumption from personal incomes. This means that companies generate higher savings than households.

Aims of paper. Methods

The main goal of the article is to try to find an answer to the question how the level of the fiscal burden and the structure of the budget is correlated with GDP growth rate as an effect of fiscal policy tool (taxation). Additional goals of the article comprise: (1) assessment of the impact of taxation on the behavior of taxpayers and business entities and (2) analysis of taxation from the perspective of assessing taxation as a tool of fiscal policy. Methodological assumptions. The main research method was induction. It consists in developing general conclusions or determining some regularities on the basis of empirically stated phenomena or processes. It is the kind of reasoning on the basis of details on general properties of a phenomenon or an object. The application of this method requires an assumption that

only facts may constitute the basis for scientific reasoning. These facts are situations (economic, social, legal, organizational) that really took place. Induction methods cover various legal acts, analyses, experts' opinions, statistical data and scientific documents used in social research. Moreover, the paper uses two general research methods, namely analytic and synthetic methods, characterized by detailed presentation of the reality research. The analysis treats reality as a set of single, specific features and events. Following this research method, we break down the subject of our research into parts (fiscal burden) and examining each separately or we detect the elements of this object (fiscal burden and the structure of the budget is correlated with GDP growth). A downside of the analytic

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method is excessive exposure of details, which sometimes may lead to losing sight of the whole subject of our investigation. This hinders full and objective acquaintance with reality, which admittedly is a set of independent elements but also a set of parts closely related into an organic whole. The synthetic method consists in juxtaposing and presenting the fiscal burden and the structure of the budget is correlated with GDP growth in the holistic, final model of effective and efficient instrument of not only fiscal policy. This method treats reality as a combination of features. It is based on joining various notions (models, forms, tools) into one, and particular elements into the whole. Therefore its implementation consists in looking for common features of various phenomena and events and then putting them together into a homogenous whole. Thus the synthetic method surveys and determines the whole subject of research. Using the complex (hybrid) research approach, we also used the so-called

triangulation of data sources, that is comparison of information on fiscal burden from various tax systems, and theoretical triangulation – consisting in analyzing obtained data from the point of view of various theoretical concepts of tax and fiscal policy. The basic tools for conducting a wide-ranging analysis and evaluation of the fiscal burden and the structure of the budget is correlated with GDP growth will be the following research methods:

- a) comparative analysis of the fiscal burden and the structure of the budget many the European Union countries;
- b) functional analysis, applied in order to determine the cause and effect relationships of the examined influencing of the assessment of the impact of taxation on the behavior of taxpayers and business entities and analysis of taxation from the perspective of assessing taxation as a tool of fiscal policy.
- c) methods of statistical analysis of the examined problems and relationships.

Exposition of main material of research with complete substantiation of obtained scientific results. Discussion.

As far as the influence of fiscal level and tax system structure on economic growth is concerned, we often encounter opposite views on this subject. They can be roughly divided into two groups. The first one believes that 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 tax rate (share of taxes in GDP) and rates of fiscal burden (share of all fiscal burden in GDP). Reduction of budget revenues will be set off after some time with higher tax revenues resulting from economic boom. If such set off does not fully succeed, we will witness another effect of lowered taxes,

namely decreasing participation of 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 direct influence of low taxes on economic growth, emphasizing negative consequences of decreasing budget tax revenues. Poor financing of some branches of economy (infrastructure, administration, education, etc.), hampers the economic growth rate. Advocates of the above view also point out that possibly positive effects of lowering taxes appear only after a few years, while the

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budget experiences instant losses (Kumar, Ter-Minassian, 2007).

Public discussions concerning tax system reforms are dominated by the view that lowering taxes is the only panacea for stimulating economic growth. 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 GDP growth rate. A relationship that is particularly examined is the correlation between the level of fiscal burden in personal income tax and 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 (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 burden related to labor costs and GDP) (relationship between tax revenues from PIT and social insurance contributions to average annual GDP growth rate, calculated in line with purchasing power parity per one inhabitant) and the structure of tax system, and the economic growth rate for 27 EU countries for 200-2018.

Using the notion of fiscalism we should also reflect all kinds of social insurance contributions and their derivatives in our research, as they also burden both personal incomes and determine labor costs for employers (Barro defines summary tax burden in relation to GDP as taxation rate. He lists here PIT, CIT, indirect taxes, property taxes and social insurance premiums). Examining income tax in isolation from obligatory

burden related to social insurance may lead to drawing wrong conclusions. Social security systems are financed from various sources. These can be both premiums paid by taxpayers and direct financing from 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. The obtained value of linear correlation coefficient $r_{xy} = -0.56$ denotes the existence of statistically negative relationship between two variables. The determination coefficient obtained on the basis of Pearson's correlation coefficient allows us to state that average annual economic growth rate in 27 examined countries in 31% of cases is explained with 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 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 high level of fiscalism generate lower economic growth rate. In the ten-year period of research not all countries are characterized by negative relationship between changes to fiscalism and GDP growth rate presented annually. We could form a thesis that only in the long term we can notice 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 incomes. 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

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satisfy their consumption needs. Moreover, increasing net income through lowering taxes may lead to quicker satisfaction of taxpayers' consumption needs and lower willingness to take up additional activities in order to increase one's incomes. Therefore, the effect of lowering taxation level may be 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 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, that is 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 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 determined higher level of GDP and lower prices. This action is to lead to economic growth and lowered inflation rate. These activities may result in increased trade deficit caused by growing demand for consumption and investment goods and 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 (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 one is composed of income taxes (PIT, CIT and taxes on capital gains), the second one – social insurance contributions and their derivatives, while the third one – incomes from work (jointly PIT and social insurance contributions with their derivatives). 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 form of burden classified as social insurance

Table 1. Share of fiscal revenues in GDP and budget tax revenues of selected EU countries in 2000-2018 (%).

Country	Share of fiscal revenues in GDP (in%)	Income taxes	Indirect taxes	Social insurance contributions	Other income
Austria	43.7	28.4	28.4	34.2	9.0
Belgium	45.6	39.2	25.4	30.9	4.5
Denmark	48.8	58.9	32.5	4.6	4.0
Finland	46.9	42.6	29.1	25.6	2.7
France	45.3	25.0	25.8	36.1	13.1
Greece	37.9	30.1	28.1	39.0	2.8
Spain	37.8	27.7	36.1	30.1	6.1
Netherlands	31.1	42.9	37.2	13.6	6.3
Ireland	42.0	33.2	28.4	28.5	9.9
Luxemburg	41.7	36.1	27.3	25.6	11.0
Germany	41.4	25.0	29.0	38.9	7.1
Portugal	34.5	30.0	39.9	25.7	4.4
Sweden	35.2	27.9	29.8	35.1	6.2
Great Britain	54.2	43.2	20.7	28.1	8.0
Italy	37.4	39.0	32.3	16.4	12.3

Source: own elaboration, on the basis of data from Revenue Statistics.

Table 2. Average share of income taxes in fiscal revenues of EU states and average annual GDP growth rate in 2000-2018.

Country	Share of tax incomes in fiscal revenues (in%)	Average annual GDP growth rate (in%)
Austria	26	4.80
Belgium	38	4.71
Denmark	57	5.82
Finland	41	4.32
France	20	3.27
Greece	19	6.10
Spain	29	5.12
Netherlands	28	5.15
Ireland	40	9.10
Germany	30	4.72
Portugal	27	6.51
Sweden	41	3.65
Great Britain	37	4.17
Italy	35	4.10

Source: own elaboration, on the basis of data from Revenue Statistics.

Analyzing the influence of income tax coefficient at the level of $r_{xy} = 0.12$. The obtained value of the coefficient means that we obtain the Pearson’s linear correlation there is no statistically significant relation-

ship 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 $r_{xy} = 0.05$ and $r_{xy} = 0.37$. 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 $r_{xy} = -0.45$. This result confirms the existence of negative relationship between the analyzed variables. The power of the relationship does not qualify it as statistically significant, therefore the thesis of negative influence of high level of social insurance contributions burden on economic growth cannot be fully confirmed.

Table 3. Average share of social insurance contributions in fiscal revenues of EU countries and average annual GDP growth rate in 2000-2018.

Country	Share of contributions in fiscal revenues (in%)	Average annual GDP growth rate (in%)
Austria	34	4.80
Belgium	33	4.71
Denmark	3	5.82
Finland	25	4.32
France	41	3.27
Greece	30	6.10
Spain	36	5.12
Netherlands	39	5.15
Ireland	14	9.10
Germany	39	4.72
Portugal	26	6.51
Sweden	28	3.65
Great Britain	17	4.17
Italy	31	4.10

Source: own elaboration, on the basis of data from Revenue Statistics.

Combining personal income tax and social insurance premiums into one group we obtain a category of incomes placing 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 2018 amounted to roughly 39%, while in case of social insurance contributions – 34%. In case of joint burden on work income, the

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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 $r_{xy} = -0.55$, which denotes the existence of 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 speed in the examined years is explained in 29% by the share of work income burden in total fiscal revenues.

Table 4. Average total share of PIT and social insurance contributions in fiscal revenues of selected EU countries and average annual GDP growth rate in 2000-2018 and in relation to gross pay and labor costs in 2018.

Country	Total PIT and social contributions in fiscal revenues (in%)	Average annual GDP growth rate (in%)	Burdens in relation to gross pay (in%)	Burden in relation to labor costs (in %)
			PIT + employee's contribution = total	PIT + employee's contribution + employer's contribution = total
Austria	56	4.80	11 + 18 = 29	8 + 14 + 23 = 45
Belgium	64	4.71	27 + 14 = 41	21 + 11 + 24 = 55
Denmark	56	5.82	33 + 11 = 43	32 + 11 + 1 = 43
Finland	61	4.32	26 + 6 = 32	20 + 5 + 20 = 45
France	55	3.27	13 + 13 = 26	9 + 9 + 29 = 48
Greece	43	6.10	1 + 16 = 17	0 + 12 + 22 = 35
Spain	58	5.12	13 + 6 = 19	10 + 5 + 23 = 38
Netherlands	59	5.15	7 + 22 = 29	6 + 19 + 10 = 36
Ireland	45	9.10	11 + 5 = 16	10 + 4 + 10 = 24
Germany	66	4.72	21 + 21 = 42	17 + 17 + 17 = 51
Portugal	44	6.51	5 + 11 = 16	4 + 9 + 19 = 32
Sweden	64	3.65	23 + 7 = 30	18 + 5 + 25 = 48
Great Britain	45	4.17	16 + 8 = 24	14 + 7 + 8 = 30
Italy	57		19 + 9 = 28	14 + 7 + 25 = 46

Source: own elaboration, on the basis of data from Revenue Statistics.

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 high level of burden on income from labor negatively affects economic growth.

High labor costs lower competitiveness of national economy and increase the tendency to escape into shadow economy and increased unemployment, which in turn hampers the economic growth. Examining the relationship (for years 1991-2016) between average annual

unemployment level (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 $r_{xy} = 0,96$. 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 average unemployment rate of 1.5%.

Conclusions

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 growth, especially on unemployment level, is exerted by fiscal burden constituting the so-called labor costs. Interestingly, contrary to popular beliefs, the research did not any correlation between the level of income tax burden on 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 income tax burden requires re-dressing the balance with increased indirect taxes.

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 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 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 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, 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 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 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 of imbalance in the monetary system.
6. Indirect taxes, placing burden on consumption expenses, most negatively affect the incomes of poor households.
7. In a situation when increased indirect taxation mostly concerns home than imported goods, this weakens the situation of home producers.
8. Increased indirect taxation of basic goods leads to social stratification by accumulating economic inequalities in domestic product distribution, especially in case of 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 major elements, though an element that does not function or determine economic growth independently. We can differentiate the following elements of the environment: state of the market, social and material infrastructure, fiscal and monetary policy of a state and regulative and administrative influence of the state (legal regulations in particular sectors, labor market regulations, EU sanitary norms, shaping production quality, etc).

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