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INCOME TAXATION VERSUS MANAGERIAL DECISIONS

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Abstract

Taking rational decisions in a company, both current and strategic, requires knowing and taking into consideration the external conditions of the conducted activity. The accuracy of decisions made, as well as the ability to adjust to a changing external environment determines not only the effectiveness of the enterprise's operations, but also its ability to conduct further activity. The paper aims at demonstrating the influence of income tax on the activity of economic entities and also on the decisions taken by management. The article is composed of three complementary sections. The first one – the introduction – is an attempt at outlining the subject framework for the article and demonstrating potential areas in which the tax system affects the economy and the associated consequences. The second part provides an empirical analysis presenting possible variants (simulations) of declaring income and related management decisions taken in various time horizons and boundary conditions, reflecting the criteria of a resident. The third part of the paper comprises conclusions based on the results of conducted simulations, related to the influence of the income tax construction on financial decisions taken by enterprises and related consequences.

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Introduction

Taking rational decisions in a company, both current and strategic, requires knowing and taking into consideration the external conditions of the conducted activity. The accuracy of decisions made, as well as the ability to adjust to a changing external environment determines not only the effectiveness of the enterprise's operations, but also its ability to conduct further activity. In a proper business environment, the significance of feedback consists in adjusting reaction to the received information to the effects of actions. In company behavior, the effectiveness of feedback as a method of modifying management behavior aimed at improving effectiveness and efficiency depends on meeting some basic requirements: precision (objectivity) of information, directness – if feedback happens just after the event, its recipient realizes the relation between the attitude and result, and completeness – consisting in the possibility of taking into account all important relations (Penc, 2002, p. 411). Corporate existence in the long run depends on adjusting to a changing environment. Adaptation of activities taking place both inside the company and in all its contacts with the environment, can also be forced by fiscal policy of the economy (Wołowiec & Skica, 2013a; Schwellnus & Arnold, 2008; Hassett & Hubbard, 2002; Skonieczny, 2001). The tax system significantly influences the material and legal situation of households (through the level and nature of fiscal burden and taxation structure) and economic entities (being a cost element for companies and their owners) (Tanzi & Zee, 1998; Vartia, 2008; Galindo & Pombo, 2011; Wołowiec & Soboń, 2012; Wołowiec & Skica, 2013b). Thus business entities must take tax regulations into account in their decision-taking processes. Remembering that in a market economy the profit motive is a fundamental premise for economic development, tax legislators must be aware that only a part of gross domestic product may be (is) taken over by taxes without causing any negative financial or economic effects (Auerbach, 2006). Creators of a tax system should take into consideration the fact that each tax burden is treated by entities as lowering their current and future wealth status (Auerbach, 1993). If there are high tax rates, we can expect such effects as: weakened economic growth, development of a 'grey zone' economy, capital flow abroad and simultaneously limited inflow of capital from outside (Coshin, 1995; Engen & Skinner, 1996; Gail, 1992; Leach, 2003). Legal regulations providing frameworks for operations of economic entities and taxation of income and capital owned by households significantly influence market forces, consumption and investment expenses, development of enterprises and economic growth (Barro, 1992). The presented aspects of taxation define the areas in which we should consider economic consequences of tax solutions. Due to the complexity of this issue, it is necessary to conduct multi-dimensional analyses, which shuld not be limited to tax-budget relations. Taking into account the fact that the economy is a self-regulating system, apart from the budget aspect, the analyses of the shape of fiscal policy should also comprise the influence of taxes on all the above-mentioned areas, since taxation effects go beyond the sphere of public finance and affect each aspect of economic life (See: Bond & Channels, 2000; Cummins & Hassett, 1992; Musgrave R.A.& Musgrave P.B., 1984; Ganser, McLiesh, Ramalho & Shleifer, 2008)[4]. Taking the above into consideration, this article aims at analyzing the influence of the income tax system framework construction on managerial decisions taken by economic entities. Thus it belongs to the area of analyses which deal with market, not budget aspects of a tax system framework. The analyzed subject provides a lot of vital information illustrating, on the basis of examples and calculations included in the article, economic consequences of financial decisions in the area of taxes. The aim of the article is to demonstrate how objective conditions of the legislative environment of companies determine their decisions, and thus their expected and actually achieved financial results.

Effects of taxation

With reference to companies we can distinguish three elementary economic effects of taxation: those regarding liquidity, assets structure and organization. Personal and corporate income taxes mainly negatively influence entrepreneurs' liquidity, as they lead to a definite burden placed on the entrepreneur – taxpayer (See more in: Wołowiec & Skica, 2013)[5].

[4] See more in: The Economic Growth and Tax Reform Reconciliation Act of 2001 (EGTRRA), The Job Creation and Workers Assistance Act of 2002 (JCWAA) and The Job and Growth Tax Relief and Reconciliation Act of 2003 (JGTRRA).

[5] Indirect taxes (especially VAT) offer the possibility of passing the tax burden on to the consumer, therefore it is hard to formulate a clear opinion on negative influence of this taxation form on entrepreneurs' liquidity. For example imposing VAT on paid provision of advisory services negatively affects the entity's liquidity if the payment of the fees by the client is performed after the day when the tax obligation consisting in submitting a tax return form for a particular period originates. If the service and payment are made on the same day, then this positively influences financial liquidity until the day of settling VAT taxes with Tax Office.

Both personal and corporate income[6] taxes are 'expenses' which are not costs of obtaining revenue and they lower company liquidity. Company liquidity is affected by the way of determining the tax base alone. Taxable revenues from the conducted economic activity are due revenues, even if they have not been obtained yet, while payments received for deliveries of goods and services to be performed in the next tax years do not constitute taxable revenue in a year in which they have been obtained. This means that usually revenues and costs are determined on the basis of the accrual method. The appearance of dues from, for example sales on installment basis leads to the appearance of revenue on the day the invoice was drawn, not later than on the last day of the month in which the goods were delivered. The appearance of due revenue leads to the origin of tax obligation, usually in the form of down-payments during the tax year, even though the taxpayer has not received the payment yet. With reference to revenues from interests, exchange rate differences determined on tax principles and compenstions and contractual penalties, the legislator usually adopts the cash rule of revenue origin. This means that the revenue and the obligation to pay tax appear at the moment of receiving the payment. Also, personal tax returns do not lead to improved liquidity, as tax return (inflow) is preceded by too high liquidity of tax (expense), which causes negative effects in liquidity. Company liquidity is also affected by the way of calculating irrecoverable claims in costs of obtaining revenue. These claims are a tax cost only at the moment of obtaining a confirmation (decision) that they that they are irrecoverable, issued by the enforcement organ, or a court decision to reject the motion for bankruptcy or for discontinuing bankruptcy proceedings covering liquidation of assets. Taking into account the fact that the process of documenting irrecoverable claims may last several months, this may generate a negative interest effect, resulting from the length of time between the day of paying tax on due revenue and the day of accepting the claim as tax costs and lowering the size of the tax burden. Also the process of making the claim causes some additional (non-tax) payments (expenses on the proceedings, enforcement and others) (See more in: Kudert & Jarmoży, 2007; Sokołowski, 1995; Hundsdoerfer& Jamroży, 1999). On the other hand, an entrepreneur has depreciation write-offs at their 'disposal', that is tax costs affecting a lower tax basis, which are not tax expenses. Taxpayers may make depreciation write-offs on fixed assets and intangible assets following allowed methods and depreciation rates. Postponing tax payments is possible through: using the digressive method, one-off depreciation write-offs, increasing depreciation rates, determining individual depreciation rates and choosing the method of valuation for homogenous, material elements of current assets (FIFO, LIFO, weighted average). In many legislations reserves and updating write-offs are treated as tax costs which do not cause tax appearance[7].

The size of tax expenses is also affected by activities related to balance sheet events[8]. Transferring or increasing tax costs takes place within the possibilities offered to the taxpayer in form of the right to choose or decide, for instance what method of fixed assets depreciation to choose. The taxpayer may also have some freedom in determining the costs of generating fixed assets, depending on the adopted method of cost calculation(Cienkowski & Wołowiec, 2014). Restructuring activities in an enterprise also influences liquidity in the area of income taxation. The selling of an enterprise generates disclosure of

[6] In the case of a definite burden placed on the taxpayer (entrepreneur) through personal income tax, we must jointly take into account the tax and various contributions for social purposes, obtaining a list of complementary incomes placing the burden on work (tax wedge – labor costs). The use of the term "labor costs – tax wedge – labor taxation" is justified for two reasons. Firstly, we should remember that in some countries we have various forms of financing social allowances, both on the basis of general taxes (budget financing) and in the form of contributions, based on social insurance funds (non-budget financing). In most countries the tax wedge imposed on work and related to the total employment costs covered by the employer is nearly flat. This is due to the fact that a progressive tax scale (progressive tax scale may be a 1% scale, but reflecting various tax preferences, including tax-free amounts and differentiated costs of obtaining revenue) was combined with digressive contributions. Regardless of the amount of work, taxes and contributions totally constitute a similar surcharge (calculated as percentage).

[7] In many OECD countries an interesting instrument is the creation of reserves on retirement benefits. If the partner has an employment contract with the company, then, within the remuneration, the company may also grant an employee retirement benefits paid out (with interest) after the employment relationship is terminated. If tax law treats reserves for retirement benefits as tax costs, there is an effect of postponing taxation. The company increases reserves, showing costs of obtaining revenue, while the recipient of retirement benefit taxes it only at the moment of receiving it. So retirement benefits may be greatly financed from tax savings of a capital company (assuming that the period of employment is long enough).

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quiet reserves included in the assets of the sold enterprise and growth of company value, which is translated into taxation of income generated as a result of the sale. Taxation of quiet reserves may be a factor limiting such transactions (the so-called *asset deal*). It is possible to avoid paying taxes on the day of selling the company by contributing the company as a monetary contribution, which postpones taxation until the shares obtain in return for contribution in kind are sold[9]. Reliefs of this type can be divided into:

1) facilities in payment which do not lower the amount of paid tax,

2) decreasing the amount of paid tax and exemptions from payment of tax.

This can be illustrated with the following example showing the influence of taxation and transfer of tax payments on maintaining liquidity. An individual entrepreneur is going to purchase household appliances worth PLN 40 000at the end of the year. In the four-year planning period we expect annual positive cash flows from economic activity (before taxation) in the amount of PLN 100 000. Surpluses of financial means can be put in the enterprise at the return rate of 10%. In simplified form, cash flows, decreased by the depreciation write-offs (of the appliances bought in last December), calculated at the linear method (25% x PLN 120 000) equal taxable income. Income is subject to 19% taxation while consumption expenses of the entrepreneur – taxpayer (in the private sphere) amount to PLN 50 000annually. Financing investment expense is not possible – assuming that expenses (including tax payments) are made at the end of the year (see Table 1).

Table 1. Financing investment expense made at the end of the year

Financial positions	Expense made at the end of the year
Cash flow CF	100 000 PLN
Depreciation D	30 000 PLN
Interest revenue IP	0
Taxable income TP	70 000 PLN
Income tax T = 19%	13 300 PLN
Consumption expenses CE	90 000 PLN
Deficit: CF – T – CE	- 3 300 PLN

Source: Own work

The taxpayer – entrepreneur does not have sufficient means for financing the purchase of household appliances in the first year. Since external financing (such as a bank loan) is out of the question due to the costs of obtaining it, the taxpayer may use internal financing through the policy of showing incomes. The taxpayer chooses the digressive method of making depreciation write-offs, calculated on general principles (increasing depreciation by 2.0 ratio). Tax costs are increased in the first year and decreased in the fourth year (see Table 2).

Table 2. Internal financing through the policy of showing incomes

Financial positions	1st year	2nd year	3rd year	4th year
Cash flow CF	100 000 PLN	100 000 PLN	100 000 PLN	100 000 PLN
Depreciation D	60 000 PLN	30 000 PLN	30 000 PLN	(0 PLN)
Interest revenue IP	0	240	3 689	3 969
Taxable income TP	40 000 PLN	70 240 PLN	73 689 PLN	103 969 PLN
Income tax T = 19%	7 600 PLN	13 343 PLN	14 001 PLN	19 754 PLN
Consumption expenses CE	90 000 PLN	50 000 PLN	50 000 PLN	50 000 PLN
Deficit: CF – T – CE	2 400 PLN	36 894 PLN	39 699 PLN	34 215 PLN

Source: Own work

[9] See Revealing quiet reserves in asset elements takes place, for example: as a result of company division, if the acquired assets are not an organized part of a company.

Transferring tax payments in time as a result of increasing depreciation costs in the first year allows us to preserve sufficient financial liquidity. Another way of showing incomes may be earlier documentation of unrecoverable claims or exemption from debt (the so-called policy of showing income), as well as an attempt at assigning investment expense to the company assets.

THE POLICY OF SHOWING INCOME

The policy of showing income (in the case of residents) allows us to move in time taxable incomes in order to minimize the discounted value of the income tax, due to the periodical nature of tax payments. We should assume that there are no relations between paid income taxes and other non-tax cash flows[10].

Within the policy of showing income we can discern activities aimed at shaping the actual state and its interpretation. Shaping the actual state, an entrepreneur may take up actions leading to the appearance of some future events, thus changing the actual state circumstances. Within the interpretation of the actual state, activities may concern the right to present past factual states in the balance account and at the same time they may provoke different tax effects. The effect of the policy of showing income is the implementation of the process of moving incomes (paid income tax) in time, which may result in the tax rate effect, interest effect or progression effect. Tax rate effect is the consequence of changes to tax rates or scales. For example, if the rate(s) of personal income tax are supposed to (may) be lowered in the next tax year, it is rational to move some (all) incomes to the next tax year. Interest effects depend on the applied means within the policy of showing income. In a situation where incomes are moved due to interpretation of an actual state, there are differences in tax burden, leading to temporary tax savings. Tax savings may be put on a deposit account generating a tax interest effect. In the case of moving incomes in the shaping of an actual state effect, there might also be differences in tax burden, leading to temporary tax savings. Generated savings may also be put in a bank deposit account and generate the tax interest effect.

Moreover, regardless of the tax aspect, there might be visible a non-tax interest effect. So, if the taxpayer arranges delivery of goods in the new tax year rather than in the current one, the payment for goods will be postponed by one month and particular income will be postponed by a year (assuming that the taxpayer uses the down-payment form of settling taxes). Such behavior shapes two contradictory effects. On the one hand, there is a delay of income tax payment for a year, and taking into account particular tax rate(s) and market interest rate, we experience a tax interest effect – the discounted value of tax payment is decreased. On the other hand, postponing payment for goods results in appearance of the negative non-tax interest effect in the shape of decreased current net value before taxation[11].

With moved incomes, the progression effect will only appear in the case of progressive tax scales used in constructing income taxes. With the implementation of the policy of showing income using the means of interpretation of the actual state, only the tax interest effect will be visible. As discounted value of tax payments decreases as we move forward the payment of tax, the taxpayer should aim at delaying the moment of showing the whole (part) of taxable income. Comparing discounted tax rates for particular periods, we should break down (dispose of) income so that it is taxed in periods with the lowest discounted tax rate. Using the shaping of the actual state we achieve the same effect (with proportional rates), the only difference being that apart from the tax interest effect, there will also be a non-tax interest effect.

The policy of showing incomes in a progressive tax scale makes it necessary to take into account, apart from the interest effect, also the progression effect. The strategic choice must be preceded with the analysis of the type and course of progression scale, reflecting the so-called "bumps" at the end of a particular range, which is show in the figure below.

In implementing the policy of showing income with gradual progression, we should consider the same strategy which is optimal with proportional rates, but in each analyzed period we should take into account numerous (discounted) extreme rates[12].

[10] In the case of optimization (decreasing) paid income taxes may influence changes of other – non-tax – cash flows (for example size of net revenue from hotel services sale), the goal of minimizing discounted value of tax payments is not always balanced with maximization of current net value. So limiting only to minimization of income taxation could lead to resignation from generating income.

[11] In In a situation where negative non-tax interest effect exceeds tax interest effect (taking into account current net value before taxation) the taxpayer should not postpone the date of goods delivery.

[12] Extreme tax rate (known as border rate) can be written down as d Tpdof [I] : d I. If the taxpayer wants to know the proper (actual) tax rate applicable to additional income growth, they must establish the extreme (border) tax rate. The derivative of the function of the rate(s) to tax base (as a variable) is an extreme function of tax scale. Average (real) tax rate is the quotient of tax obligation (calculated at relevant rates) and tax base: Tpdof [I] : I.

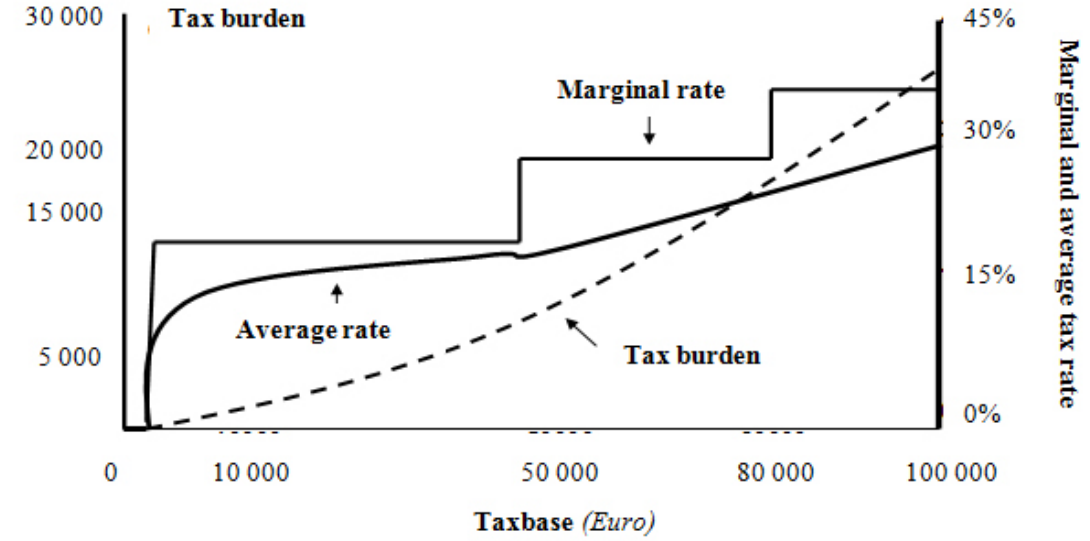

Figure 1. Example of personal income tax scale, assuming four tax rates and taxation base expressed in euro (calculations of tax burden, average and extreme rates – hypothetical)

Source: Own work

Taking managerial decisions, the taxpayer should first move income to the period with the lowest discounted tax rate and then to the period with the next lowest discounted tax rate, and so on. If the taxable income movements are realized not as a result of the means of interpretation of the actual state, but as a result of shaping the actual state, then the taxpayer must of shaping the actual state, then the taxpayer must consider the non-tax interest effect. The activity consists then in maximizing the difference between discounted (beneficial) tax effect and discounted (detrimental) tax effect.

Figure 2 clearly shows how the progression effect works, while taking into the analysis the tax interest effect leads to the conclusion that taxable incomes should not be distributed equally into particular periods, but they should be shown in the first years in a slightly lower amount, and then increasingly – in the consecutive years. The optimum will be reached when discounted extreme rates are equally high in each period. They can be calculated using the system of linear equations.

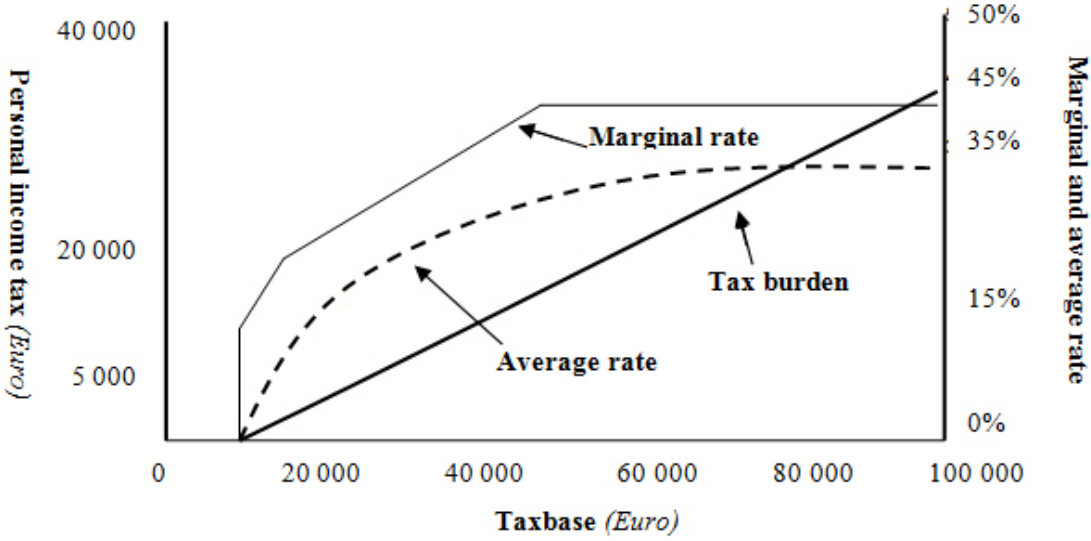

Figure 2. Example of continuous progression in personal income tax, assuming four tax rates and tax base expressed in euro (calculations of tax burden, average and extreme rates – hypothetical)

Source: Own work

Managerial decisions

Taxation also affects the profitability of a particular method or structure of financing the company. Due to the fact that particular forms of financing are treated differently as far as taxes are concerned, we should take into account the tax effects of financial decisions. From the point of view of managerial decisions, the income tax burden should reflect the following findings.

1) The method of taxing the remuneration of a partner in a capital partnership (it is more beneficial from the tax point of view to pay interests on a loan than the dividend). The method of taxing the remuneration of a partner in a personal partnership. From the tax perspective it is more beneficial to pay remuneration in form of shares in profit instead of interest on a loan. Financing from borrowed capital coming from a partner is disadvantageous for financing from own capital, as there is no legal possibility of deducting interest when establishing the income of a partner-lender (regardless of whether the partner is an individual or a legal entity).

2) Income taxes affect company financial liquidity, which is evidenced in the comparison of the possibility of preserving continuity of financial liquidity by delaying in time tax payment, using principles of linear and digressive depreciation.

3) Essential elements of the policy of showing incomes are: tax rate effect, tax interest effect, non-tax interest effect and progression effect.

4) Depending on the course of tax scale, it is desirable to implement two different strategies within the policy of showing incomes. When using the means of actual state interpretation, the goal may be to minimize discounted value of tax payments, while using the means of shaping the actual state, the goal is maximization of NPV after taxation.

5) Analyzing progressive tax rates (continuous progression), it is important to seek equality of discounted extreme rates in all analyzed periods. With reference to proportional rates and graded progression, it is vital to compare discounted extreme rates in particular periods and to move incomes to the periods (or time ranges) with the lowest discounted extreme rates.

6) Obviously, with graded progression (contrary to continuous progression), we might not have the optimal discounted extreme rate, and optimization criteria may not be applicable in the form of leveling discounted extreme tax rates.

Taking managerial decisions we should be aware that in income tax putting incomes forward to future years cannot always be optimal due to both the progression effect in progressive scales and the non-tax interest effect in proportional scales.

Non-resident taxpayer and the policy of showing incomes

Taking managerial decisions, it is important to assess the applicability of presented methods to the analysis of the policy of showing incomes in EU countries by taxing of non-residents. If an individual has an unlimited tax obligation in country A and additionally obtains income in country B (country of residence) as well as in country A (source country), incomes obtained in B (in accordance with the agreement to avoid double taxation) are excluded from taxation in , preserving the effect of tax progression. The foundations of the analysis cover two the period of two tax years (Y1 and Y2). Incomes obtained in country B (A1 x I + A2 x I) are taxed with income tax, applying methods of exclusion in country A, while incomes obtained in country A are taxed with income tax in accordance with the rules applied in this country. The taxpayer should try to minimize the discounted value of tax payments in the period of two tax years by optimal breakdown of income (I) into its sources located in two countries (A and B) and into two periods: I = I (Y1) + I (Y2) = (A1 + A2 + B1 + B2) x I. Optimization criteria: Ω (1): discounted value of tax payments = ∑ (PITB + PITA x 1 /(1 + r) = min. Assumptions look as follow:

(1) (A1 + A2 + B1 + B2) = 1;

(2) (A1, A2, B1, B2) ≥ 0;

(3) constant tax rates and interest rate in the period of two analyzed years;

(4) comparable principles of determining income tax in A and B countries;

(5) complete divisibility of income tax (I) into settling periods and both countries,

(6) not taking into account other additions to income taxes in both countries (such as crisis, solidarity, church additions, etc.).

1) Assuming one settlement period and assuming there is no progression (no progression effect) with reference to the exclusion method in A, total income (I) should be divided into income obtained in country A and country B in the way that minimizes the amount of tax obligation.

Thus the optimization criterion can be written down as:

Ω (2): PIT = PITB [A1 I] + PITA [B1 I] = min., assuming that (A1 + B1) = 1, so:

Ω (2): PIT = PITB [A1 I] + PITA [B1 I] = min., assuming that (A1 + B1) = 1, so:

Thus the share of income from sources located in B should be increased (decreased) until the extreme tax rate for the income obtained in B is lower (higher) than the extreme tax rate used for the income obtained in A.

The extreme unit of income should be shown in a country with lower border tax rate, no matter whether it is proportional, continuously progressive or graded progressive. Making managerial decisions, we should show incomes in country A until the extreme tax rate in A levels the tax rate in B, and the remaining part of income should be taxed in B.

2) The assumption that the exclusion method works with the progression effect. Progression effect in income taxation accounts for the fact that tax rate related to taxable incomes in the taxpayer's residence state is determined with reference to joint income of a taxpayer, including exempted foreign incomes.

The average tax rate in residence state A is fixed for 0 < B1 I <I, as it is calculated for given total income I. Taking into account progression, the optimization criterion can be determined as:

Ω (3): PIT = PITB [A1 I] + (PITA [I] / I) x B1 A1 = min., assuming that: (A1 + B1) = 1

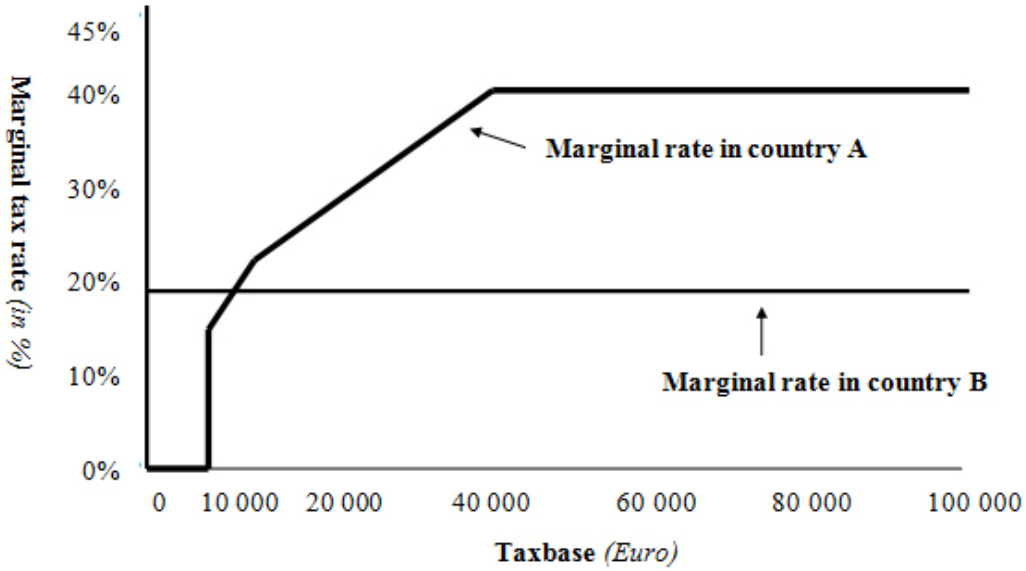

Figure 3. Example function of extreme tax rate in countries A and B
Source: Own work

From the optimization criterion formulated in this way we can draw a conclusion that the share in income in country B should be increased (decreased) until the extreme tax rate for the income generated in B is lower (higher) than average tax rate in B, calculated for total income. Analyzing an optimal situation, we do not compare extreme tax rates, but extreme rate for country B and average rate for country A. An optimal way of showing incomes is shown by mixed average function and extreme tax function in residence of state A.

Analyzing the above figure we can notice two areas. In the first area the tax burden on income (I) in country A is lower than if it is shown in B, or in both countries. The second area shows that in case of total income, it is optimal to obtain it from sources located in B. So, when analyzing one period (for one settlement period), and taking into account the progression effect, we can state that as long as the average tax rate for total income in residence state is lower than extreme tax rate in B, income should be shown in country A. In other situations the whole income should be shown in B.

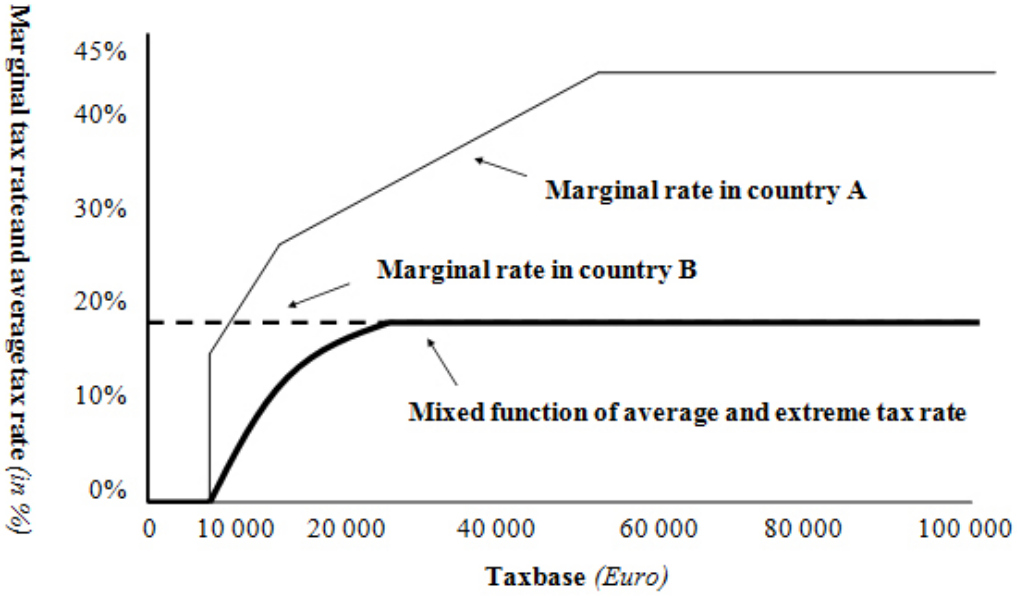

Figure 4. Mixed function of extreme and average tax rates in countries A and B
Source: Own work

From a mixed function of average and extreme tax rate we can derive the mixed function of extreme tax rates (see: Figure 5). Although the figure shows that the extreme tax rate in A in the range 10 000 – 26 000 euro is higher than extreme tax rate in B, the incomes from this hypothetical range should be shown only in country A, due to the fact that benefits resulting from lower (in B) extreme tax rate are offset by the progression effect, that is application of average tax rate determined for total incomes to previous incomes from sources in country A. Making managerial decisions, the mixed function of extreme tax rates allows us to optimize income taxation regarding two countries and two planning periods.

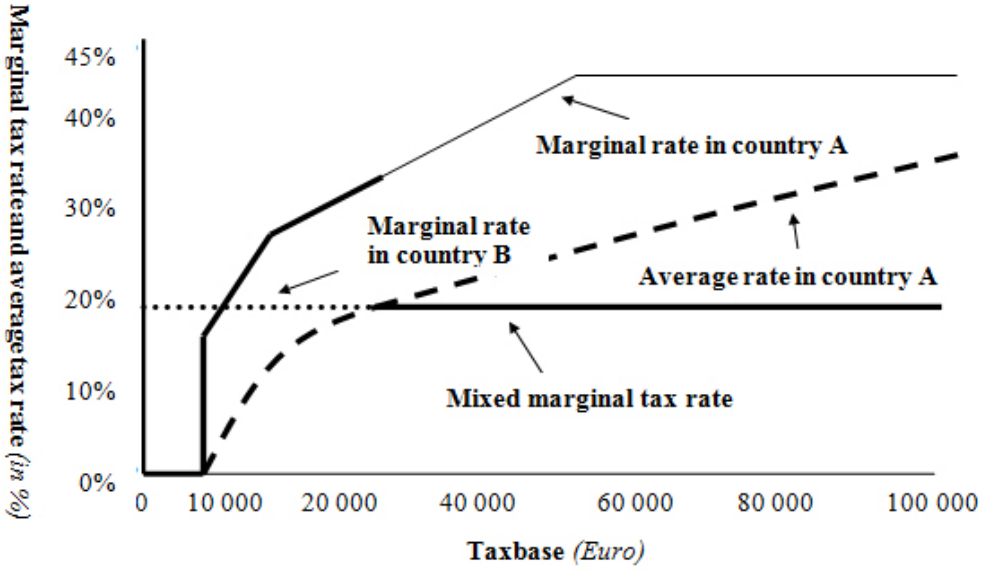

Figure 5. Mixed function of extreme tax rates in countries A and B
Source: Own work

TWO-PERIOD ANALYSIS OF DECISION OPTIMIZATION DOUBLE PROBLEM

In the analysis of two periods (two-period analysis of decision optimization double problem) at the first stage of planning we assume that there are no limits to division of total income (I) between source country B and residence country (A) or between tax years Y1 and Y2). Two effects result from such a model, namely:

(1) there is a possibility of neutralizing the progression effect by appropriate division of total income. Such division takes place in a situation where in a given settlement period there are no home and foreign incomes appearing simultaneously.

(2) it is necessary to take into account interest effect in the analysis, which requires extension of optimization criterion:

Ω (4): discounted value of tax payments =
∑{PITB [Ax I] +PITA [(Ax + Bx) I] / [(Ax + Bx) I] x Bx I} x 1 /(1 + r) = min, assuming that: (A1 + A2 + B1 + B2) = 1.

The problem of optimization (a double one) consists in the fact that when making managerial decisions, we should determine optimal division of incomes obtained in country B, understood as shifting incomes forward. At the same time it is essential to make a time-optimal division of incomes in residence state A by leveling discounted extreme rates. We must also take into account interrelations resulting from retaining progression effect. When taking decisions we can indicate the general concept of solving the problem of which country to choose to show income (territorial problem) and to consider the analyzed periods, using one of two approaches:

1) firstly, for each settlement period, we should determine the mixed function of extreme tax rates, presenting an optimal way of showing your income in this period;

2) secondly, we should level discounted extreme tax rates of both functions.

Assuming limitations to income division, the problem of optimizing managerial decisions could be solved slightly differently (see: Figure 6).

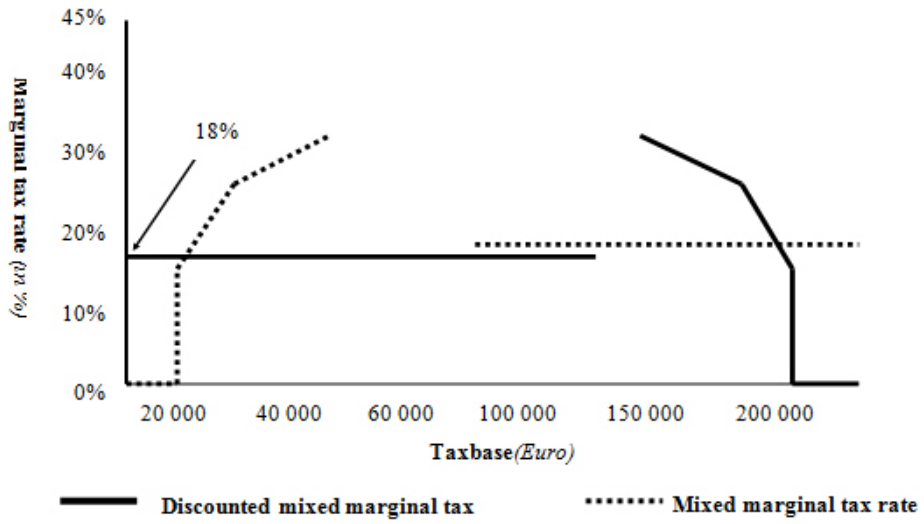

Figure 6. Hypothetical example of the analysis for the total income of 200 000 euro

Source: Own work

The above figure shows a graphic solution to the problem of optimization. The function presented with the broken line is the mixed function of extreme tax rates in tax year 1 (first period Y1). The function presented in black is the discounted mixed function of extreme tax rates in tax year 2 (second period Y2).

For the income I = 200,000 euro there are two local extreme values: EX1 and EX2. In EX1 total size of incomes was shifted to country B in order to show it in the second period (tax year). Discounted extreme tax rate is 0.18 x 1 / (1 + r).

In the first tax year in A incomes will be demonstrated in the amount which brings such amount of income so that the extreme tax rate of the final income unit was also 0,18 x 1 / (1 + r). Regarding EX2, leveled discounted extreme tax rates amount to 0.18, as total income was moved to country B, in order to show it for taxation in the first period – tax year, and the remaining part to be shown in country A in the second tax period to the extent in which the final income unit reaches the extreme tax rate of 18%. Of course, EX2 must be less beneficial than EX1. The above example was based on a specific case, assuming that income I = 200,000 euro. A question arises as to whether the analysis could be generalized (made more abstract). If income (I) was higher, the graph will stretch 'horizontally', but EX1 and EX2 will not change. If income was lower, the graph would shrink, showing another – the third – extreme value (EX3), which is show in Figure 7.

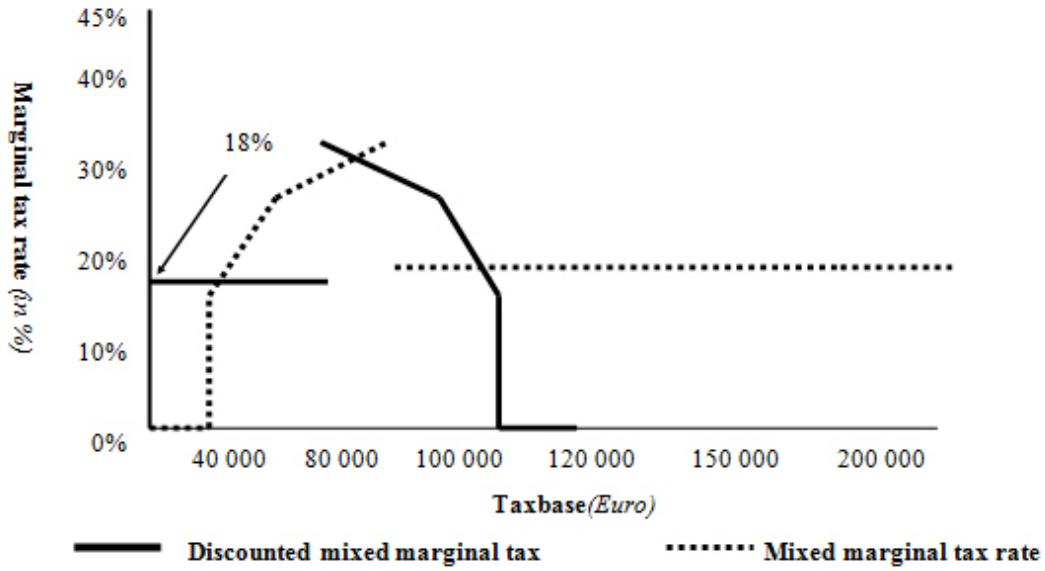

Figure 7. Hypothetical example of the analysis for the total income of 100 000 euro

Source: Own work

The third extreme value EX3 for total income denotes that income is shown only in country A. Analyzing the mixed function of extreme tax rates for the first tax year, we should notice that showing income in country A will be more beneficial – even though extreme tax rate is higher than in B – due to lower average tax rate, being the effect of progression. EX3 plays a vital role in relatively low income I < [58,600 euro x (1 + 1 / (1 + r)]. With high (very high) income, the optimum described by EX1 dominates. In a situation of a taxpayer with limited tax obligation in B, assuming two periods (two years) of the analysis and two countries)A and B), we can formulate the following conclusions:

1) EX2 (optimum) must be less beneficial than optimum EX1;

2) In the case of obtaining high total income, the most effective optimum (from the tax point of view) is optimum (extreme) EX1 and with relatively low income, extreme (optimum) EX3 is the best.

Specifying the original assumption that income can be freely divided into two tax years (planning periods) and two countries, we must adopt a time limit, thus adjusting the optimization criterion to reality:

$$\Omega(4): \text{discounted value of tax payments} = \sum\{ PITB [Ax\ I] + PITA [(Ax + Bx)\ I] / [(Ax + Bx)\ I] \times Bx\ I\} \times 1/(1 + r) = \min, \text{ assuming that:}$$
$$(A1 + B1) > 0\ \wedge\ (A2 + B2) > 0.$$

If in each tax year the taxpayer is obliged to show some minimum income, then limitations should be presented as the so-called forbidden areas, assuming: (A1 + B1) > 0,4 ^ (A2 + B2) > 0,8. Such an assumption means that the established optima (extreme points EX1, EX2 and EX3) can be found in a forbidden area, and then the best acceptable solution will be the boundary solution (see: Figure 8).

The example shows that extreme points (optima) EX1 and EX2 are in forbidden areas, so boundary values are acceptable minimums.

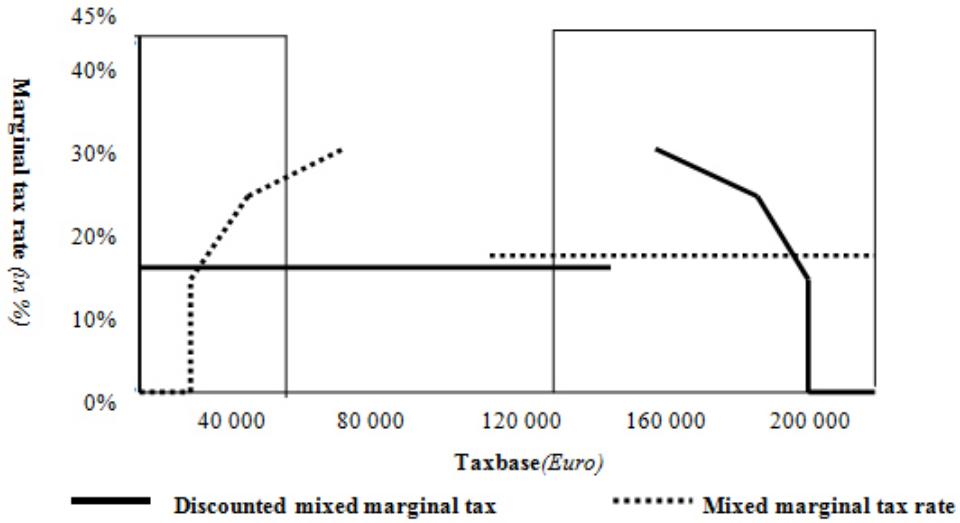

Figure 8. Solution at time limitation for showing income

Source: Own work

The example shows that extreme points (optima) EX1 and EX2 are in forbidden areas, so boundary values are acceptable minimums. Thus such a situation allows us to take managerial decisions consisting in moving total disposable income in the amount of 80 000 euro to the second tax year to be shown in country B. For the right boundary value, incomes – in full – should be moved to the first tax year to be shown in country B. Moreover, the second boundary value, due to the interest effect, is always less beneficial than the first one. Therefore the optimal breakdown of taxable income will consist in showing 40 000 euro in the first tax year in country A, and 160 000 euro in the second year in country B.

Using the method of inclusion with regard to non-resident income from sources located in country B, we should remember that in a situation where the average tax rate in B is lower than the rate in A, the tax calculated in B will be included in total towards the payment of tax in A, which means that the taxpayer will be burdened with the whole tax in country A. If the average rate in lower than the rate in A, then in this country limited inclusion of tax paid in B will take place, thus in A we will not have a tax obligation concerning income from sources located in B. So, in a situation where the average tax rate in a taxpayer's residence state (B) is lower than the rate in the state of income source (A), the whole income should be shown in the taxpayer's residence state.

Otherwise, the choice of the state does not have any significance for the decision, as in both cases the income will be taxed with a higher tax rate from the residence state.

Conclusions

Organizational effects of taxation can be analyzed in two aspects. Firstly, entrepreneurs must take organizational steps to ensure timely payment of tax obligations. They refer both to the activities related to one's own tax obligations (bookkeeping, making tax declarations or returns, supplying tax information) but also to the performance of the payer's functions related to transferring taxes collected at source. Secondly, we should take into consideration the fact that business decisions taken by entrepreneurs cause definite tax effects. Therefore taxes must be taken into account in management process, so we should create appropriate organizational conditions. The organizational problem can be solved in two ways:

1) by establishing one's own tax department or,
2) by using the services of an external tax advisor (tax *outsourcing*[13]).

The above solutions are non-exclusive, as they can be combined. Obviously, the choice is preceded by the cost and benefit analysis. Especially in small and medium-sized businesses, it is not profitable to keep their own bookkeeping and tax offices, as the costs of

[13] The essence of outsourcing is to commission some tasks and functions of an enterprise to an external entity, for example bookkeeping or tax or payroll service. The main reasons for this are: cost reduction, trying to improve one's competitive position, work specialization, concentrating on core functions and access to expertise.

organization and maintenance exceed the fees paid to the external service provider (Kanigowska & Wołowiec, 2007, p. 51 – 55). In the case of bookkeeping and tax outsourcing the main reasons are usually cost reductions and access to expertise. Reduction of costs not only means lower expenses (usually it costs less to hire the accounting agency than to employ a full-time specialist), but also the reduction of costs of applying tax law. The entrepreneur does not feel uncertain and is released from the unpleasant duty of checking and interpreting the law on his own (see: Skica, Wołowiec & Pavlov, 2014; Moody, 2002; Tran-Nam, Evans, Walpole & Ritchie, 2000; Evans, Ritchie, Tran-Nam & Walpole, 1997). The tax risk taken by the company also decreases. Tax risk can generally be understood as the risk of possible argument with tax organs. Depending on the attitude of a given enterprise, the risk can be pure or speculative . Pure risk brings only the possibility of incurring a loss, while speculative risk also offers the possibility of gaining some benefits (Williams, Smith & Young, 1998, p. 7). What is more, speculative risk is usually an outcome of a conscious decision – it is taken to gain something, the bigger the risk, the greater potential benefits (Compare: Michalski, 2004, p. 92).

Pure risk, on the other hand, refers to entering into conflict with tax organs when:

1) the activity of a company was unlawful, but this unlawfulness was not intentional (a mistake, ignorance, etc.),

2) the activity of a company was lawful (usually it is determined by the court or possibly a higher instance tax organ), but it was not considered as such by tax organs,

3) the activity of a company was lawful and was considered as such for some time by tax organs, but they changed their opinion and the conflict arose.

Both these risks describe potential reality, that is the possibility of entering into conflict with tax organs. Their realization is random, and this is the case of the so-called double randomness – we do not know the time of the event (conflict) and its depth, that is effects. These effects are mainly financial (arrears, financial penalties, etc.), though the company may also lose its credibility. What is important, is that these two types of risk are related to uncertainty, each – its different kind. Speculative risk is associated with uncertainty as to whether unlawful activity will be revealed, while pure risk – with uncertainty which is an inherent part of the tax system.

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