NAUKI O FINANSACH FINANCIAL SCIENCES 1(6) • 2011
ISSN 2080-5993

Krzysztof Biernacki
Wrocław University of Economics

VALUES OF INCOME AND TURNOVER TAX RATES AND EFFECTIVE TAX BURDENS BORNE BY CONSUMERS

Summary: Every transaction is burdened with income tax and turnover tax, which are complementary to each other. Thus, the total tax burden should be perceived as a sum of them. The complementary relation is for many tax-specialists the main reason of existence of the progressive scale in income taxes. The regressive nature of the tax rates in VAT is to minimise the negative impact of this progression. This paper, however, shows that calculations do not sustain these assumptions. The taxpayers do not spend all their income, and therefore the compensation of the regressive scale of the VAT rates works to a certain amount. Above this limit, the income tax progression substantially increases the effective rate of taxation. Drawing on the present calculations, it may be concluded that the progression of income taxes cannot be justified by the complementary character of VAT.

Keywords: taxes, income taxes, value added tax.

1. Introduction

The tax system in Poland is established as three main groups of taxes which are based on turnover, income (including, for simplification purposes, also revenue) as well as property. The characteristic feature of the turnover and income taxes is their complementarity, where each transaction is charged with both turnover tax as well as income tax. As a consequence, the analysis of the tax-related burdens of consumers in Poland cannot be one-sided, as it requires consideration of at least two of the aforementioned taxes.

The two-sided approach to burdens borne by consumers, as involving income tax and the common turnover tax, namely the goods and services tax (VAT), makes it legitimate to form a hypothesis about the reasonableness of the progressive scale of income tax, which is to be compensated with a regressive scale of VAT. While the progression in income tax is contingent upon the annual income of the taxpayer, VAT regression, on the other hand, entails the existence of low VAT rates applicable to essential goods (such as food products) and some higher ones applied to other goods. This paper reviews the presented hypothesis based on the existing legal regulations and statistical data as well as the adopted model of income structure with consumers in Poland. As a result of the falsification method applied following Lipsey [1990], the final conclusions refer to the reasonableness of progression within the income tax system binding in Poland.

2. Income tax and VAT – calculation methods

Income tax in Poland may be split into corporate income tax[1] as well as personal income tax[2]. Comparing the wording of Art. 1 and 1a of the CIT Act and Art. 1 of the PIT Act with the definition of a consumer set forth in Art. 22[1] of the CC[3], it may be clearly stated that the main interest is to further focus exclusively on personal income tax, as this is the only tax that is levied on the consumer in his normative meaning.

The key component of personal income tax is the way of its structuring. In contrast to corporate income tax, this tax is levied on the incomes earned from different sources relevant for this tax, and not on the entire increment in the property of an entrepreneur [Gomułowicz and Małecki 2004, p. 536]. Tables 1 and 2 present the financial consequences of the adopted method.

Table 1. Income tax calculation for two sources of income

1		2	
Revenue	= 100	Revenue	= 100
Tax-deductible cost	= 50	Tax-deductible cost	= 50
Income	= (100 – 50) = 50	Income	= (100 – 50) = 50
Tax rate	= 20%	Tax rate	= 20%
Tax due	= 10	Tax due	= 10
Total tax due	= 10 + 10 = 20		

Source: Author's own compilation.

According to the calculation presented in Table 1, it is the joint income that is subject to taxation, regardless of the number of the sources of income, provided that for each source the revenue exceeds the tax-deductible (revenue earning) costs. At the same time, as presented in Table 2, if one of the sources generates a loss, the tax is to be paid exclusively on the income earned from the income-generating

[1] As regulated under the Corporate Income Tax Act of 15 February 1992 (Journal of Laws No. 21 item 86, as amended, hereafter: the CIT Act).

[2] As regulated under the Personal Income Tax Act of 26 July 1991 (Journal of Laws No. 80 item 350, as amended, hereafter: the PIT Act).

[3] Under the Act of 23 April 1964 on the Civil Code (Journal of Laws No. 16 item 93, as amended, hereafter: the CC), the stipulated regulation is of the following wording: "A natural person performing a legal act not directly related to the person's business or professional activity is deemed a consumer".

Table 2. Income tax calculation for two sources of income, where one source generates a loss

1		2	
Revenue	= 100	Revenue	= 100
Tax-deductible cost	= 200	Tax-deductible cost	= 50
Income (loss)	(100 – 200) = –100	Income	= (100 – 50) = 50
Tax rate	= 20%	Tax rate	= 20%
Tax due	= 0	Tax due	= 10
Total tax due	= 0 + 10 = 10		

Source: Author's own compilation.

source. Such a loss will decrease the income from the loss-generating source in the subsequent settlement periods. Calculation of the corporate income tax is different in that the revenues are summed up and then decreased by the tax-deductible costs related to the same (Art. 7 item 1 of the CIT Act). In such a case, the loss presented in Table 2 is to reduce the income earned from other sources.

Although the term of the sources of income has not been defined by the legislator, the wording of Art. 10 of the PIT Act provides for their enumerative catalogue. Therefore, it may be assumed that the source of income is a specified legal relationship, under which the taxpayer earns revenue [cf Schmidt 1997, pp. 32-42]. The consumer, in the adopted understanding, may earn revenue exclusively from the sources determined in Art. 10 item 1 sub-items 1 and 2 of the PIT Act. In view of the wording of Art. 22 items 2 and 9 of the PIT Act, according to which the costs of the enumerated sources are determined as an amount- or percent-based lump sum, an income subject

Table 3. Standard settlement of the goods and services tax

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Stage of sale	Net price	Added value	Gross price (10 % tax rate)	Input VAT	Output VAT	VAT due
1st stage Taxpayer A	100	100	110	–	10	10
2nd stage Taxpayer B	200	100	220	10	20	10
3rd stage Taxpayer C	300	100	330	20	30	10
4th stage Taxpayer D	350	50	385	30	35	5
5th stage Taxpayer E	400	50	440	35	40	5
		400				40

Source: [Litwińczuk 2006, p. 19].

to taxation will always be the case, as it will not be possible to recognise a loss since Art. 22 item 10 of the PIT Act is a regulation failing to be applied in practice. Moreover, while earning income from the enumerated sources, the taxpayer will always be subject to a progressive taxation. Therefore, if the consumer is accepted as subject to income tax assessment, the possibilities to apply special regulations, which exclude tax progression, cease to exist.

Due to its nature, VAT is charged to the final purchaser of the goods or services [Michalik 2005, p. 10], who is in the main the consumer, though the practice often shows that the actual costs of this tax are borne by the entity which effects one stage of goods or services sale. Table 3 presents the standard VAT settlement.

Apart from the consumer who purchases the product for the price of 440 [j], it is possible that the taxpayers A-E carry the actual cost of VAT, provided that one of the following conditions is met:

- The legal regulations exclude the possibility to deduct the total input VAT (cf. the wording of Art. 86 and 88 of the VAT Act[4]). In such a case, the taxpayer may increase the final price of the goods or services under sale by the non-deducted input VAT in order to escape its burden. In such a situation, however, the so-called “tax cascade” takes place.
- The purchaser has failed to pay for the goods or services. Due to the invoice-based settlement method adopted for VAT, which corresponds to the accrual method applied in accounting, if the payment is missing, the entrepreneur has to incur on his own the costs of the output tax which has not been provided for by the contractor but yet paid to the tax office, in the amount not decreased by the input VAT. In this respect, the taxpayers are entitled, under legal regulations, to make relevant corrections (cf Art. 89a and 89b of the VAT Act).

The two aforementioned conditions should be assumed to be an exemption from the rule, according to which the final cost due to VAT is to be borne by the final purchaser (consumer). The following part leaves aside the possibility for one of the aforementioned conditions to appear.

3. Model of joint taxation of incomes and expenses of consumers

Prior to analysing the consumers’ burdens due to the joint taxation with income tax as well as VAT, it should be underlined that this issue has its coverage with the professional literature on this matter. In one of the most recent publications elaborating on this issue [Żyżyński 2009, pp. 210-211], progression is justified, on the one hand, with complementarity of income tax and VAT, and on the other hand, with the rule of decreasing benefits [Żyżyński 2009, p. 208]. Leaving aside the analysis of the second justification, the first one has not been, however, reviewed on the basis of the calculations derived from the regulations that apply to the Polish tax system.

[4] Goods and Services Act of 11 March 2004 (Journal of Laws No. 54 item 535, as amended, hereafter: the VAT Act).

A further analysis assumed three scenarios of taxation of incomes earned by private persons who are consumers: the strongly progressive scale, binding in 1997, progressive scale based on the rates applicable in 2010, as well as the scale based on 19% tax rate. Tables 4 and 5 present the rules for tax burden calculation for each of the aforementioned scenarios.

Table 4. Tax scale binding in 1997 (strong progression)

Tax base in PLN		Tax due
over	under and at	
	20 868	20% tax base less PLN 278.20
20 868	41 736	PLN 3 895.40 + 32% surplus over PLN 20 868
41 736		PLN 10 573.16 + 44% surplus over PLN 41 736

Source: [PIT Act 1997, Art. 27].

Table 5. Tax scale binding in 2010

Tax base in PLN		Tax due
over	under and at	
	85 528	18% less the amount decreasing the tax by PLN 556.02
85 528		PLN 14 839.02 + 32% surplus over PLN 85 528

Source: [PIT Act 2009, Art. 27].

To compare the outcomes of each of the three methods of taxation, four scenarios for consumer's income and expense structure have been adopted and put together in Table 6.

Table 6. Structure of incomes and expenses for 4 consumers per month and per annum (in PLN)

	A	**B**	**C**	**D**
Monthly remuneration (gross)	2 500	4 500	10 000	50 000
Annual remuneration (gross)	30 000	54 000	120 000	600 000
VAT:				
Purchase of food products (monthly)	1 500	2 000	2 500	3 500
Purchase of food products (annually)	18 000	24 000	36 000	42 000

Source: Author's own compilation.

The gross remuneration of each of the consumers is decreased exclusively by the amount of the income tax. Calculations do not include contributions to the social and health insurance. Therefore, the gross amount is, for example in the case of an employment contract, the final cost for the employer. Tax-deductible costs have not been accounted for either, as according to Art. 22 item 2 of the PIT Act, the value of the costs for a contract of employment has been determined as an amount-based lump sum, the maximum value of which does not exceed the amount of PLN 2 502.56 per annum (Art. 22 item 2 sub-item 4 of the PIT Act). As a consequence, such a cost does not materially affect the final amount of the taxable income.

The distinction made in the purchase of food products and purchase of other goods is justified with different VAT rates. To the first group, 7% VAT rate applies (binding till the end of 2010), whereas 22% VAT rate (binding till the end of 2011)[5] is relevant for the other group. The share of food products in the total value of consumers' expenses is based on the assumption of a decreasing share of the expenses for essential goods when the global income increases.

Due to the relatively high incomes of taxpayers C and D, it has been assumed that they are in the capacity to accumulate some of their incomes in the form of savings. For simplification purposes, it has been presumed that the consumers deposit their surpluses exclusively at the bank in a form of deposits at the nominal interest of 5% and with annual capitalisation of the interest. The tax on such interest totals 19% of the amount left at the disposal of the taxpayer by the bank.

Both the values of other goods purchased as well as savings are limited by the net value of the financial means left upon treatment with income tax. Therefore, those amounts differ, depending on the given taxation model.

Based on the aforementioned presumptions, the amounts of the paid income and turnover taxes as well as the tax on savings are presented in Table 7, 8 and 9, respectively.

Table 7. Income upon treatment with proportional, progressive and strongly progressive tax per annum and per month (in PLN)

	A	B	C	D
Proportional tax	5 700	10 260	22 800	114 000
Net income (annual)	24 300	43 740	97 200	486 000
Net income (monthly)	2 025	3 645	8 100	40 500
Income tax	4 844	9 164	25 870	179 470
Net income (annual)	25 156	44 836	94 130	420 530
Net income (monthly)	2 096	3 736	7 844	35 044
Progressive tax (strong progression)	6 818	15 969	45 009	256 209
Net income (annual)	23 182	38 031	74 991	343 791
Net income (monthly)	1 932	3 169	6 249	28 649

Source: Author's own compilation.

[5] According to the standpoint of the Government, as from 1 January 2011, these rates are to increase up to 8% and 23%, respectively. At the moment of compilation of this paper, no pertinent legal regulations exist.

Table 7 presents a monthly net income to compare with the gross income amount. The comparison of those values with the corresponding amounts disclosed in Table 6 reveals a strong influence exerted by the given taxation method on the final income left at the taxpayer's disposal.

Table 8. Paid amount of VAT due to purchase of food products and other goods (in PLN)

	A	B	C	D
VAT paid:				
At the proportional income tax rate				
Food products purchased (annually)	1 260	1 680	2 100	2 940
Other goods purchased (annually)	1 386	4 343	10 560	52 800
At the progressive income tax rate				
Food products purchased (annually)	1 260	1 680	2 100	2 940
Other goods purchased (annually)	1 574	4 584	10 560	52 800
At the progressive tax rate (strong progression)				
Food products purchased (annually)	1 260	1 680	2 100	2 940
Other goods purchased (annually)	1 140	3 087	9 240	52 800

Source: Author's own compilation.

The amount of expenses for food products is presented for all taxpayers in Table 6 and is the same regardless of the taxation model, whereas the amount of expenses for other goods, as regards taxpayers A and B, constitutes a difference between the amount paid for the food products and the total income left at the disposal upon treatment with income tax (according to the data in Table 7). In the case of taxpayers C and D, the expenses for other goods are PLN 4000 and 20 000, respectively. An exception is provided for by taxpayer C treated with the strong progressive tax rate. In this case, the amount of the expenses has been limited up to PLN 3500, which is substantiated with a relatively small amount left at the disposal upon treatment with income tax. The difference, upon deducting the expenditures for food products and other goods from the income left at the disposal, makes up the value of savings,

Table 9. Tax on savings in case of taxpayers C and D with respect to the analysed taxation models (in PLN)

	A	B	C	D
Tax on savings				
At the proportional income tax rate			182	1 938
At the progressive income tax rate			153	1 316
At the progressive tax rate (strong progression)			28	587

Source: Author's own compilation.

which run from PLN 249 per month for taxpayer C, at the strongly progressive tax scale, to PLN 17 000 per month for taxpayer D, at the proportional tax rate. The amounts of the tax on savings are annually the following (see Table 9):

Table 10 presents the values being the result of summing up the total taxes paid by every taxpayer in the given income tax model.

Table 10. Total tax paid in the analysed taxation models (in PLN)

	A	B	C	D
Total tax paid at the proportional tax rate	8 346	16 283	35 642	171 678
Total tax paid at the progressive tax rate	7 678	15 428	38 683	236 526
Total tax paid at the strongly progressive tax rate	9 218	20 736	56 378	312 536

Source: Author's own compilation.

The data disclosed in Table 10 account for the year end, i.e. after the amounts of the income tax, VAT and, in the case of taxpayers C and D, also the tax on savings, are paid.

4. Values of effective tax burdens borne by consumers

Based on the absolute amount of the tax paid, as compared to the gross income of each of the taxpayers (cf Table 6), it is possible to measure the effective tax burdens borne by consumers and imposed by all types of taxes under analysis. Table 11 presents the respective calculations thereof.

Table 11. Effective tax rates at the analysed taxation models (in PLN)

	A	B	C	D
Effective tax rate at proportional taxation	27.82	30.15	29.70	28.61
Effective tax rate at progressive taxation	25.59	28.57	32.24	39.42
Effective tax rate at strongly progressive taxation	30.73	38.40	46.98	52.09

Source: Author's own compilation.

The analysis of the data in Table 11 points out, first of all, that the complementarity of income tax and VAT does not contribute to balancing the burdens borne by the consumers. At the proportional tax rates, effective taxation reaches the values 28-30%, whereas in the case of progressive tax rates, joint taxation is found to have a negative impact due to VAT, which "sharpens" treatment with progressive income tax in a way in which well-off individuals pay effectively a higher tax than low-income earners.

Substantiating the values of effective tax rates, it is necessary to refer separately to the proportional rate and the progressive rates of income tax. In the first case, joint taxation increases initially the tax burden, and then the effective tax rates are on a decrease. This phenomenon may be explained with the shrinking share of the luxury consumption with well-off individuals and the rising share of savings. Taking into account the fact that as a result of the applied proportional tax rate, well-off taxpayers have a relatively largest amount of financial means left at their disposal, they may, as a consequence, appropriate the surpluses to savings which are not VATable, where just the interest on such savings is subject to taxation at 19% rate. As a result, an increase in income with this group should contribute to a reduced rate of effective treatment with income taxes and VAT.

With progressive tax rates applied, the joint analysis of burdens due to income tax and VAT translates into progression. Moreover, the taxation is on a considerable increase at the transition from the lowest to the middle income (it is particularly visible at the strong progression and transition from taxpayer A to B, where the change of the effective tax rate is ca. 8 p.p.), whereas the increase between the middle and high income (i.e. between taxpayers C and D) is relatively smaller, as it equals only 5 p.p. Such a result, similarly to proportional taxation, is justified with a shrinking share of consumption in the budgets of the well-off taxpayers. Therefore, VAT paid by that group of taxpayers decreases.

Both for proportional and progressive tax rates, two additional aspects need to be underlined. First of all, income tax is strongly determinant for the final value of taxation. Drawing on the analysis of the data presented in Table 7 and while comparing the same with VAT paid (Table 8), it may be noticed that the impact of income tax on the final value of the tax burden borne by consumers is twice as much. As a result, taxpayers are more willing to minimise the burdens due to income tax than those VAT-related. Paradoxically, the binding legal regulations make it easy to take such actions through undertaking a business activity, which is subject to 19% tax, by a private person.

Secondly, it may as well be assumed that well-off individuals (falling under taxpayer D in the presented analyses) decide in the future to "consume" the savings, which will entail an obligation to pay VAT. This argument, with no doubt, speaks strongly for the necessity to increase VAT-related burdens with well-off taxpayers in the analysed model, as savings should be regarded exclusively as a form of deferred consumption [Broadway and Wildasin 2007, p. 84]. On the other hand, such a purchase may not always translate into payment of VAT at its highest rate. The purchase of a residential real estate, which is subject to 7% VAT, may serve as an example. Eventual rental of such a real estate is exempt from VAT, whereas the related income may be treated with 8.5% lump sum tax. As a consequence, these are the income-based and revenue-based taxes which are to finally shape the tax burdens of such a taxpayer.

5. Conclusions

The calculations presented in this article do not falsify the hypothesis, according to which treatment with a progressive income tax is, from the global perspective, balanced with regressive VAT rates. Such an assumption should hypothetically bring in "balance" between effective tax rates with individuals whose incomes are low and those whose incomes are high. The calculations provided point exclusively to the strong impact of VAT on groups of middle-income earners (i.e. taxpayers B and C in the analysed models). Such an impact translates into a significant growth in the effective tax burden with the group of the taxpayers referred to in practice as the "middle class", which is a consequence of spending the major part of expenses on consumption falling under the basic VAT rate, which, if combined with the progressive taxation, translates into an increased joint tax burden.

Therefore, it needs to be assumed that VAT does not balance the progression of income tax, and consequently, progression should not be analysed separately for compliance with principles of just taxation and the effective impact of the taxation system on the decisions made by the consumers. As a result, the basis of the analysis examining progression as a solution applicable to just one tax is to change.

The significant impact of income tax on the final rate of the effective tax burden borne by consumers leads to a conclusion that it is of particular interest of the taxpayers to optimise treatment with income tax. This means that they are going to pursue the existing income tax allowances and exemptions to the fullest extent possible. If accompanied with a trend to reduce income tax rates, this phenomenon may finally have a negative impact on the possibility to affect consumers' decisions by way of modifying the taxation system.

References

Art. 27 of the PIT Act in wording binding in 1997.

Art. 27 of the PIT Act in wording binding as from 1 January 2009.

Broadway R., Wildasin D. (2007), Opodatkowanie a oszczędności, [in:] M.P. Devereux (ed.), *Efektywność polityki podatkowej*, Wydawnictwo Sejmowe, Warszawa.

Gomułowicz A., Małecki J. (2004), *Podatki i prawo podatkowe*, LexisNexis, Warszawa.

Lipsey R.G. (1990), *Economics*, Harper and Row, New York.

Litwińczuk H. (2006), *Prawo podatkowe przedsiębiorców,* Dom Wydawniczy ABC, Warszawa.

Michalik T. (2005), *VAT. Komentarz*, Wydawnictwo CH Beck, Warszawa.

Schmidt L. (1997), *Einkommensteuergesetz. Kommentar*, Verlag CH Beck, Munich.

Żyżyński J. (2009), *Budżet i polityka podatkowa. Wybrane zagadnienia*, Wydawnictwo Naukowe PWN, Warszawa.

STAWKI PODATKÓW DOCHODOWYCH ORAZ OBROTOWYCH A EFEKTYWNE OPODATKOWANIE KONSUMENTÓW

Streszczenie: Istnienie w podatku dochodowym od osób fizycznych stawek progresywnych, w opinii wielu autorów, rekompensowane jest regresją w podatku od towarów i usług. W konsekwencji dochodzi do względnego zrównania obciążeń wszystkich podatników. Przedmiotowy artykuł weryfikuje tą hipotezę wskazując, iż regresja w podatku VAT nie zmniejsza istnienia progresji w podatku dochodowym. Wynika to z ograniczonego zakresu konsumpcji zarówno dóbr o charakterze podstawowym, jak też luksusowym. Wprowadzony od nadwyżki ponad wartość konsumpcji podatek od oszczędności nie ma istotnego wpływu na efektywne obciążenia podatników. W konsekwencji wskazać należy na konieczność weryfikacji uzasadnienia skali progresywnej w podatku dochodowym istnieniem stawek o charakterze regresywnym w podatku VAT.