MEASUREMENT OF EFFECTIVENESS OF PERSONAL INCOME TAX IN THE TAX SYSTEM OF THE CZECH REPUBLIC

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Abstract


This article deals with the issues of effectiveness of personal income tax in the Czech Republic. The personal income tax in the Czech Republic, referred to as the tax on income of natural persons, represents a significant part of the public budget revenue (23.35% of all tax revenues in 2012). One of the principles of a good tax system is the principle of its effectiveness. The effectiveness of a particular tax is measured by various methods. The theory distinguishes between two types of costs expended on the collection of taxes, i.e. administrative costs (direct or indirect) and excessive tax burden. In the case of direct administrative costs the measurement compares the total volume of a particular tax revenue with the costs of its collection. The amount of the tax levied is thus not a net income of the public budget, due to the fact that it must be reduced by the costs of the public sector which are necessary for obtaining such amount.

In this contribution we shall focus on the measurement of direct administrative costs. The measurement of effectiveness of income tax on natural persons is performed with the use of the full-time equivalent (FTE) method, which is based on the classification of revenue authorities' staff according to their jobs and on the determination of conversion coefficients in order to identify costs related to the collection of a particular tax.

A separate part of the article deals with measurements of tax system effectiveness in the international scope. We cite an important international study, “Paying Taxes 2013: The Global Picture”, annually prepared by the World Bank and PricewaterhouseCoopers, which analyses demands of tax systems in different countries of the world.

Keywords: tax on income of natural persons, income taxes, tax effectiveness, public budget

INTRODUCTION

Personal income tax (in the Czech Republic referred to as the tax on income of natural persons) is perceived as an unpopular tax by most of the society, due to its direct impact on 99% of economically active population. However, from the perspective of the public budget it is the tax with the highest collection rate, and thus forms a cornerstone of modern tax systems. In the Czech Republic, collection of tax on income of natural persons amounted to CZK 136,289 million and represented 23.35% of total tax revenues in 2012. Therefore, the personal income tax is the most important tax thanks to its comprehensive nature, high productivity and economic effectiveness. It is considered a universal tax, levied on all taxable incomes of natural persons. According to Hamerníková, Maaytová et al. (2007), the theory requires that this tax be sufficiently profitable (and fulfil the fiscal function of taxes) and at the same time function as an instrument for redistribution of income from the wealthy to the needy (redistribution function) and channel taxpayers' behaviour in the desirable direction: e.g. motivate them to contribute to humanitarian organizations.
The income tax on natural persons is one of direct taxes in the Czech Republic. According to international classification of taxes under the OECD methodology it occupies the first place, which testifies to its importance. Taxation of individual incomes should correspond to requirements whose fulfillment the tax levy expects. Široký (2008) summarizes the requirements put on a good tax system and individual taxes in four basic principles, namely the principle of efficiency, administrative simplicity, flexibility and fairness, and highlights particularly the principle of efficiency and fairness. Names of the principles may vary in the literature, such as Peková (2008), but remain mostly content and semantically almost identical, see for example, Musgrave and Musgrave (1994).

The subject of this paper is just to measure the effectiveness of collection of personal income tax as one of the primary principles of good tax systems. Tax collection means, for the individual participants in the whole process of collection and administration of taxes, real harm representing to taxpayers payment of taxes and other costs caused by the tax system, which must spend during fulfillment of their tax liabilities. By collection of tax, the actual state (tax authority), does not gain net income, which would correspond to a total collection of taxes, but tax revenues are reduced by the amount of costs necessary to the functioning of the entire system of tax collection and administration. This creates a clear disproportion between the amount of collected tax and the amount, which can be used by public budget for public interest. The aim is, of course, to seek to minimize the difference between these two angles of look at the collected amount of tax. The purpose of good fiscal policy of the state, as part of national economic policy, is the effort for efficiency of collection of individual components making up the tax system of the state.

**MATERIALS AND METHODS**

The aim of the contribution is to measure direct administrative costs of taxation concerning tax on income of natural persons. Individual calculations are based on the defined method of full-time equivalent. Input data necessary for the examination of direct administrative costs of income tax on natural persons are the amount of collection of this tax and costs of tax administration in the Czech Republic divided into current expenses and investments. Another relevant figure is the number of employees of the administrative authority, classified according to job descriptions. The timeline for the analysis of direct administrative costs from 2005 to 2012 was chosen intentionally for the following reason: Outcomes of this contribution follow the study of Pudil et al. (2004) and complement the timeline of measurement of direct administrative costs concerning the income tax on natural persons up to the present.

Source data on the collection of taxes and overall expenses of tax administration were obtained from annual reports published by the Czech Ministry of Finance and its General Financial Directorate. Information from research studies, conducted both in the Czech Republic and within international comparisons in this field, which extends the text also on the international level of measuring administrative costs of taxation, are also presented when processing this paper. Another important source of information is the internal materials of the Ministry of Finance of the Czech Republic, which are provided for the preparation of this paper (data on the number of staff of local tax authorities). The text used standard methods of scientific work, basic mathematical and statistical methods.

**RESULTS AND DISCUSSION**

It cannot therefore be consider only own collection in terms of profitability of personal income tax, but it is also necessary to quantify the efficiency of collection, because the functioning of any tax system bears costs (expenses) on current and investment activities of individual tax authorities. According to Andrlík (2010a) costs of tax authorities reduce the amount of tax collection, that's what the state (public budget) finally gets by tax collection. These costs are known as direct costs of tax authority. In addition to these costs, there are also costs for taxpayers known as compliance costs of taxation and excessive tax burden, which arises in connection with a violation of conditions for efficient use of resources. Kubátová (2010) states, those taxes, in their essence, present a transfer of funds from citizens and businesses to public budgets. The problem of the whole public sector is its tendency to inefficiency. Efficiency of administration of tax collection, which have to ensure not only smooth stable revenues of public budgets, including sanctions against tax debtors, but also respect for justice and fairness in relation to the taxpayers and payers of individual taxes significantly affect tax revenue (income) to public budgets. The actual transfer however does not go without additional costs, which have a negative effect and causes inefficiency. Costs are so inseparably connected with the administration of taxes, there would not be even costs without the existence of taxes. According to David (2009) a relevant indicator in the evaluation of taxes must always be the cost of their collection. It is not therefore questionable how to reduce cost, but rather how to compress it to a minimum level. The aim of modern tax systems is to reduce inefficiencies in the lowest possible level. Historically, Adam Smith (2001) already presented requirement for efficiency of the tax system in his tax canons or Musgrave and Musgrave (1994) in formulating their requirements for a good
tax system. Tax theories distinguish in connection with tax costs:
• direct and indirect administrative costs,
• excessive tax burden.

Pudil et al. (2004) also address in detail examination of the administrative costs of taxation. They define the following aspects of assessing administrative costs of taxation:
• time perspective,
• aspect of impact on the relevant economic sector,
• aspect of impact on the appropriate government level,
• aspect of type of office of public administration, where costs arise,
• chronology of creation of tax expense (an analogy with the continuity of each component of the budgetary process),
• aspect of the structure of administrative costs.

It shows six possible aspects of examining administrative costs. In another investigation, the text will in detail deal with the exploration of administrative costs according to impacts on the relevant economic sector. Within this perspective, the administrative costs will be classified in administrative costs which will be carried only by the public sector (referred to as direct administrative costs) and administrative costs, which affect the private sector (indirect administrative costs). Direct administrative costs include costs for the identification and collection of tax, which cannot be performed without personnel and equipment. Typical direct administrative costs are state costs for administration of applied tax system, records of taxpayers, collection itself of tax liabilities and, finally, for control of compliance with legal standards. Monitoring compliance with legal norms is related in particular to detecting those taxpayers who deliberately seek ways to avoid paying taxes – on the edge of the law “by legal or illegal manner”. Direct administrative costs are increased especially with the higher complexity of the tax system of particular country resulting from a large number of different taxes, from the number of tax rates, from application of various exemptions or exceptions for certain groups of taxpayers and ultimately from frequency of advance payments or payments of tax liability itself. Kubátová (2010) states that direct administrative costs often tend to grow excessively and she sees causes in fact, that the public sector is not controlled by the market, which would force it to the efficient allocation of resources (she says that it is providing services in the tax field without direct competition). Stiglitz (1997) deals with the identification of specific causes of inefficiency of public sector and defines two basic causes of inefficiency. He says that the public sector does not have to worry about bankruptcy and competition. Musgrave and Musgrave (1994) suggest that these activities represent an important public good, and like all public goods, they should be ensured effectively and also they point out that required quality of this public good should be offered at minimal cost. The authors also define the criteria for effective tax administration to which open possible discussion:
• to determine the appropriate techniques and administrative procedures (involvement of greater amount of computer technology leads to a reduction in costs),
• to determine appropriate procedures for tax audits (determining how deep tax inspection should go to, frequency of tax audits and the resulting assessment of additional collection with costs),
• to determine whether to ensure compliance of tax laws by taxpayers by higher frequency of inspections and thereby to increase probability of disclosure of tax evasion or to ensure compliance of tax laws by setting high penalties (second introduced procedure is certainly less expensive),
• to decide how complex the tax system will be, the more complex tax system, the faster grow in direct and indirect administrative costs,
• to chosen system of tax collection. It is obvious that a centralized system of collection of tax liabilities will be less expensive than a decentralized system, which leads to duplication of the administrative apparatus.

Indirect administrative costs are associated with additional costs of private sector, which carry a burden of the tax burden, known as compliance costs of taxation. They represent the cost of taxpayer, for example for filling in tax returns or payment of given operation to tax advisors, records of supporting documents for the correct determination of taxes, study of tax laws, etc.:
• costs of taxpayers (time, fees to external suppliers, staff costs, technical equipment, space, etc.),
• costs resulting from the collection of taxes earlier than there is the economic transaction (cash flow costs). This situation occurs only when the entity responsible for administering the tax, has to pay this tax, without obtaining actually tax base until the moment of payment (e.g. collection of tax liability in the case of VAT),
• “psychic costs”, which in some cases may reach significant values. These costs can also be seen in the direct administrative costs.

Kubátová (2010) observes that quantifying these costs is difficult or even impossible. The reason is that these costs cannot be somehow statistically monitored and it is possible to only estimate how much time taxpayers spend over the fulfillment of their tax liabilities. Even in this case is certainly true that the costs increase with the complexity of the tax system. Musgrave and Musgrave (1994) report that the compliance costs of taxation at income tax, according to research conducted in the U.S. brought an estimate, that indirect administrative costs represent approximately 7% of the volume of collected taxes. An important international study annually processed by the World
Bank and PricewaterhouseCoopers deals with complexity of tax systems. PricewaterhouseCoopers (2013) states that according to the study “Paying Taxes 2013: The Global Picture”, assessing the demands of tax payment and overall tax burden, the tax system of the Czech Republic is time-consuming. A typical Czech taxpayer has to make 8 payments a year in average (in 2011 it was 8 payments as well, whereas in 2010 an average taxpayer had to make 12 payments) and he/she spends 413 hours a year completing tax returns and meeting all the tax duties. This criterion of international comparison has markedly improved if compared with year 2011: The original 557 hours have been reduced by 144 hours (the difference between years 2011 and 2010 was 56 hours less). We may say with certainty that the trend is positive and the Czech Republic is likely to achieve even better results thanks to year-on-year changes within the international comparison. The time spent over tax duties ranks the Czech Republic on the 169th place out of the 183 monitored world countries. Within the European Union, the Czech Republic occupies the second to last position (26th), with only Bulgaria being worse (the average time spent over tax duties in the EU is 184 per year). The main reasons for the high time demands in the Czech Republic and Bulgaria consist in the complexity of labour taxation – represented by payroll tax and related social security and health insurance. Fig. 1 illustrates time demands of tax systems in the European Union member states and EFTA countries, ranging from the least to the most time-consuming tax system.

The first place was occupied by the United Arab Emirates with 12 hours a year (in 2011 the list was led by the Maldives with 0 hours a year) and the last country was Brazil with 2,600 hours per year. In the field of indirect administrative costs, research study entitled “Analysis of costs of private sector caused by tax system” from December 2008,

1: Time necessary for fulfillment of tax duties in the EU & EFTA
Source: PricewaterhouseCoopers (2013)
authors Pavel and Vítek (2008) is elaborated. This study is based on a research sample of enterprises and achieved results are applied to an entire sector. It notes that compliance costs of taxation are approximately 40 bln. CZK, i.e. 3.9% of the assessed tax, for whole Czech tax system.

Excessive tax burden is the cost arising from the loss of efficiency of functioning of the market mechanism due to the implementation of taxes. It is connected with distortion of taxes as it affects the behavior of the economically active population and gives rise to inefficiency in the economy, as a consequence of performed substitution. Smith (2001) in the fourth canon of taxation states that any tax should be thought through and developed so that residents pay as little as possible over how much tax actually brings to the Treasury and also notes that against the application of this principle of the tax system works, that tax may prevent business of population and can discourage population from devoting to certain types of professions that could feed and employ a lot of people. Because population must pay this tax, some sources, which would relieve them payment of tax, are decreasing or even destroying. From this perspective, factor causing inefficiencies in the tax system is just an excessive tax burden.

Kubátová (2010) states that any change in taxes affects the behavior of individuals who seek for the highest benefit and lowest tax burden and as a result of this behavior, they are trying to avoid tax liabilities. A specific legal instrument to tax avoidance is a substitution involving the replacement of production or consumption of newly taxed goods by untaxed good. A typical example of such behavior is the substitution of free time at the expense of labor. She stresses, however, that it is possible to avoid tax by changing behavior, but it is not possible to avoid damage caused by tax.

Musgrave and Musgrave (1994) observe that the effective tax policy should minimize excessive tax burden. The easiest way how to avoid this inefficiency is that the entire tax revenue will be based on the poll tax when everyone pays the same. This procedure would lead to removal of excessive tax burden, but it is unacceptable in terms of the principle of tax fairness. For this reason, fair taxation must reflect the taxation according to economic activity, but it necessarily distorts economic choices and it leads to excessive tax burden. Andrlík (2010c) and Kubátová (2010), however, believe that the poll tax considered as not causing distortion and not causing substitution is currently not entirely correct. Taxpayers can even avoid poll tax by moving out from tax jurisdiction where the tax is applied and excessive tax burden then represents e.g. nostalgia for his native country.

Tax theory seeks to find solutions, how to formulate tax system to ensure maximum efficiency of the tax system and thus minimize the impact of excessive tax burden. Stiglitz (1997) states that one of the possible approaches is the application of thesis applied in the theory of optimal taxation, which is called the second-best. The essence of this approach is thesis that the two small taxes are in terms of efficiency better than one big tax, because the excessive tax burden is growing faster than income. More specifically it notes that it increases with the square of growth of the tax. In terms of effectiveness, these two smaller taxes are always better than one big tax and they lead to lower overall excessive tax burden. Kubátová (2003) or Široký (2008) deal with specific relationship of excessive tax burden, such as the elasticity of supply and demand, and Pudil et al. (2004) deal with measurement issues of excessive tax burden.

The measurement of direct administrative costs, according to Pudil et al. (2004), in the case of the tax administration, can be performed using the method of recounted worker, which is based on the distribution of workers of local tax authorities according to their activities and the construction of conversion coefficients to identify costs associated with the collection of specific taxes. Methodology for calculating administrative costs can be expressed using simple equations and relationships. Defined relationships are given for calculation of direct administrative costs of personal income tax, but when editing indexes they are applicable to all taxes in the tax system in the Czech Republic. The distribution of employees of local tax authorities according to taxes and activities can be defined by:

\[
TE_{tu} = DE_{ret} + DE_{ed} + DE_{et} + DE_{rt} + DE_{it} + DE_{nt} + \\
+ DE_{e} + DE_{et} + DE_{nt} + DE_{nt} + IE_{tu} + IE_{st},
\]

where:

- \(TE_{tu}\) total number of employees of territorial financial authorities,
- \(DE_{ret}\) number of employees directly involved in the collection of personal income tax,
- \(DE_{ed}\) number of employees directly involved in collection of corporate income tax,
- \(DE_{et}\) number of employees directly involved in the collection of value added tax,
- \(DE_{st}\) number of employees directly involved in collection of excise duties,
- \(DE_{nt}\) number of employees directly involved in the collection of real estate tax,
- \(DE_{gt}\) number of employees directly involved in the collection of gift tax,
- \(DE_{rt}\) number of employees directly involved in the collection of real estate transfer tax,
- \(DE_{nt}\) number of employees directly involved in non-tax activities,
- \(IE_{tu}\) number of overhead employees of tax activities,
- \(IE_{st}\) number of overhead employees undifferentiated.
Conversion coefficients are used in order to determine the number of employees of tax authority involved in the collection of a specific tax liability. At first, coefficient $K_{1\text{pit}}$ is defined to determine the number of overhead employees of tax activities involved in the administration of personal income tax. Calculation of $K_{1\text{pit}}$ is given by the ratio of employees involved directly in the administration of personal income tax in comparison to employees involved directly in the administration of other taxes.

$$K_{1\text{pit}} = \frac{DE_{\text{pit}}}{DE_{\text{cit}} + DE_{\text{vat}} + DE_{\text{ed}} + DE_{\text{ret}} + DE_{\text{dn}} + DE_{\text{it}} + DE_{\text{gt}} + DE_{\text{rett}} + DE_{\text{rt}}}.$$  

(2)

Determination of number of employees who are involved in administration of personal income tax, including overhead employees of tax activity involved in collection of personal income tax ($PE_{\text{pit}}$) is defined by relation:

$$PE_{\text{pit}} = DE_{\text{pit}} + K_{1\text{pit}} \times IE_{\text{ta}}.$$  

(3)

Another coefficient is $K_{2\text{pit}}$, which is used to determine the number of overhead employees undifferentiated involved in the administration of personal income tax. $K_{2\text{pit}}$ coefficient is defined by relation which uses results calculated by relation (4):

$$K_{2\text{pit}} = \frac{PE_{\text{pit}}}{PE_{\text{cit}} + PE_{\text{vat}} + PE_{\text{ed}} + PE_{\text{ret}} + PE_{\text{it}} + PE_{\text{gt}} + PE_{\text{rett}} + PE_{\text{rt}} + DE_{\text{na}}}. $$

(4)

Determination of total number of employees who are involved in collection of personal income tax ($TE_{\text{pit}}$) is defined by relation:

$$TE_{\text{pit}} = PE_{\text{pit}} + K_{2\text{pit}} \times IE_{\text{o}}.$$  

(5)

The last designed coefficient is $K_{3\text{pit}}$, which expresses the ratio of the total number of employees involved in the collection of personal income tax compared to the total number of employees of local tax authorities and is used for conversion of costs attributable to personal income tax.

$$K_{3\text{pit}} = \frac{TE_{\text{pit}}}{TE_{\text{to}}}.$$  

(6)

Total costs on personal income tax ($TC_{\text{pit}}$) are defined by relation:

$$TC_{\text{pit}} = K_{3\text{pit}} \times CC_{\text{to}} + K_{3\text{pit}} \times TNC_{\text{to}},$$

(7)

where:

- $CC_{\text{to}}$ ... current costs of local tax authorities,
- $TNC_{\text{to}}$ ... investment costs of local tax authorities.

The actual calculation of direct administrative costs of personal income tax is given by the ratio of total costs of personal income tax compared to collection of personal income tax ($TR_{\text{pit}}$) given by:

$$AC_{\text{pit}} = \frac{TC_{\text{pit}}}{TR_{\text{pit}}} \times 100,$$  

(8)

where:

- $AC_{\text{pit}}$ ... administrative costs of local tax authorities as a percentage of collection of personal income tax.

According to provided documents by the Ministry of Finance of the Czech Republic on the specification of employees of local tax authorities according to activities, employees of local tax authorities are divided into groups defined by the relation (1) and the resulting distribution used in calculating the direct administrative costs are shown in Tab. I.

Based on the defined methodology of the calculation of direct administrative costs of taxation and the documents listed in Tab. I there are calculated the following results of coefficients for conversion of costs $K3$ for personal income tax in individual surveyed years listed in Tab. II. The results show that the trend in personal income tax is a gradual reduction in the number of employees involved in the administration of this tax.

It is necessary to define the amount of collection of personal income tax on a defined timeline

### Tab. I: Division of number of workers of the local tax authorities in individual years

<table>
<thead>
<tr>
<th>Item</th>
<th>Number of workers in individual year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2005</td>
</tr>
<tr>
<td>$DE_{\text{pit}} - DE_{\text{ret}}$</td>
<td>4994.11</td>
</tr>
<tr>
<td>$DE_{\text{na}}$</td>
<td>3459.51</td>
</tr>
<tr>
<td>$IE_{\text{ta}}$</td>
<td>6096.90</td>
</tr>
<tr>
<td>$IE_{\text{o}}$</td>
<td>916.90</td>
</tr>
<tr>
<td>total</td>
<td>15467.42</td>
</tr>
</tbody>
</table>

Source: own calculations according to internal sources of Czech Ministry of Finance

### Tab. II: Coefficients for conversion of the cost of local tax authorities

<table>
<thead>
<tr>
<th>Item</th>
<th>K3 coefficients in individual years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2005</td>
</tr>
<tr>
<td>$K_{3\text{pit}}$</td>
<td>0.11167</td>
</tr>
</tbody>
</table>

Source: own calculation
from 2005 to 2012 and the amount of investment and current costs in individual years for the actual calculation of the direct administrative costs of personal income tax. Collection of personal income tax is given in Tab. III and costs of local tax authorities arising from Tab. IV.

Amounts of directive administrative costs for personal income tax are calculated in the individual researched years, on the basis of defined methodology of calculation of direct administrative costs of taxation and information given in Tab. II, Tab. III and Tab. IV.

Tab. V represents the results of measurement of direct administrative costs based on the method of recounted worker, which classifies employees of local tax authorities into groups and assigns a specific number of these workers to monitored personal income tax using the conversion coefficients. Then it defines the total costs (current and investment costs) using the coefficients for personal income tax, and establishes administrative costs as a percentage of collection of personal income tax. The obtained results suggest that the direct administrative costs on income tax on natural persons are low, in particular with respect to the statement of the Czech Ministry of Finance (2006) that the average administrative costs of the Czech tax system are approximately 2% (a more recent figure was not known at the time of this article). The results clearly show that the collection amount of the examined tax in the respective years monitored is sufficient for the settlement of costs related to the collection and administration. The results obtained by measurements show that the situation has markedly improved since the research performed by Pudil et al. (2004) also considering the data mentioned in Tab. II, which show that the number of staff working on the administration of income tax on natural persons has been decreasing along the monitored timeline since 2005. If we use the comparison with measurement outcomes already processed, e.g. in the case of property taxes, which were published in Andrílk (2010b), we may say that in comparison with property taxes, the income tax on natural persons involves almost no costs. Measurements in the case of property taxes evidence that the estate and gift taxes show long-term loss and the tax revenue proper is not sufficient to settle the direct administrative costs related to the collection.

CONCLUSION AND SUMMARY

Issues of tax collection and achievement of the highest possible effectiveness are a subject of many discussions, in particular between politicians. This paper deals with the issue of effectiveness of the tax system and definition of three basic components that cause inefficiencies of the tax system – direct administrative costs, indirect administrative costs and excessive tax burden. It defines the basic characteristics of all given components of cost of tax system and is dedicated in detail to the direct administrative costs. For indirect administrative costs also known as incremental costs, the results of measurements carried out research studies both abroad and in the Czech Republic.
The author of this article performed his own measurements concerning the direct administrative costs related to the collection of tax on income of natural persons in the Czech Republic. The method used for determination of direct administrative costs of the mentioned personal income tax is the so-called full-time equivalent method, which is described in detail in the text. Results achieved in the respective monitored years are lower by the average of ca 1.42 percentage points in relation to the average value of direct administrative costs of the Czech tax system. On the basis of results of measurements concerning property taxes (real estate tax, gift tax, estate tax and tax on real estate transfer) performed earlier we establish that the income tax on natural persons is an absolute „number one“, as the administrative costs necessary for its collection are negligible if compared with the amount of collected tax. This statement is based on conclusions of a separate measurement whose results are contained in articles Andrlík (2010b) or Andrlík (2012), where the values of direct administrative costs related in particular to estate tax and gift tax exceed 100%, and local revenue authorities sustain losses from their collection.

The future and further development of direct administrative costs related to tax on income of natural persons is difficult to predict as it depends on a number of factors. However, assuming that the long-term trend continued, with average direct administrative costs of this tax being 0.58% along the defined timeline from 2005 to 2012, the tax administrators could be proud of their work.

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