

PRINCIPLES OF TAXATION OF ROAD MOTOR VEHICLES AND THEIR POSSIBILITIES OF APPLICATION

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Abstract

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The article deals with the taxation of ownership and operation of road vehicles in the Czech Republic. The result of study is the formulation of principles and functions that taxation of road vehicles should meet, including the subsequent evaluation of the feasibility of the optimal structure of the proposed tax. The text identifies many requirements for taxes and tax system, and also functions which have to be fulfilled. These findings are applied to the taxation of road motor vehicles. We find out, during use of standard general methods of scientific work, that taxation of road motor vehicles must provide primarily a fiscal function of a tax in sense of selection of means for the renewal of environmental and other damage caused by operation of road motor vehicles. It is not suitable to prefer other principles primarily in terms of redistribution, stabilization, and other requirements during taxation of operation or ownership of road vehicle. It should also be noted that the model of the proposed tax includes several aspects that do not allow its implementation in optimal form. Nevertheless, it is appropriate to consider the introduction of at least the best possible alternative of constructed model of taxation of road motor vehicles in the Czech Republic. Beside objective theoretical reasons for the change of taxation of road vehicles, it is necessary to take account of efforts made by the institutions of the European Union within the meaning of environmental taxation of road vehicles in the European Union.

tax, road motor vehicle, tax principle, function of tax, environment

It is always necessary to consistently articulate the objectives to be met by those steps when introducing new taxes or regulation of existing taxes. It is appropriate and possible to deal with specific options of application of tax in the real economy on the basis of clarifying the requirements that we imposed on the tax and defining functions which tax have to fulfill. It is necessary to count with the fact that tax are not able to meet all the requirements and functions whether it is problem of the very essence of the taxes, or mutually exclusive needs of society. A natural part of the process is retrospective theoretical testing of proposals for regulation of tax and its correction in terms of discovered findings. Only by this way resulting applied tax can be a good tool for the policies of the state.

The subject of this text is regulation of road tax in the Czech Republic. Road tax and all other charges associated with the ownership and operation of road vehicles has recently been very frequently discussed topic of general and professional public. An important aspect in this field is the effort to determine the principles of taxation of road vehicles within the member countries of the European Union. The aim of this paper is to formulate a suitable model of road tax in theory, based on exploration and selection of theoretical requirements imposed on taxes, while ensuring fulfillment of adequate functions of road tax in the Czech Republic. The resulting model can subsequently be evaluated in terms of options of its application and feasibility not only in the Czech Republic.

MATERIALS AND METHODS

Mainly general methods of scientific work should be applied in processing the issue of taxation of road vehicles in the Czech Republic. Analytical – synthetic approach allows building an objective and systematic description suitable for identification of properties of individual requirements imposed in frame of taxation of road vehicles with the option of subsequent construction of a unifying character resulting in the identification of parameters of suitable model taxes. At first the paper uses deductive procedures in the form of formulating the specific consequences of general observations regarding the functions of taxation and tax principles. Inductive generalized approach can be applied in the final passages in order to formulate generally applicable rules of optimal imposition of tax. The focus of the text offers modeling of suitable regulation of taxation of road motor vehicles; however, there is likely application of thought experiment considering thought realization of logical operations. Abstraction also allows covering only the essential patterns of complicated system and impacts of tax, considering also generalization of substantial phenomena related to the researched field. Logical systematic process involving introduction of the initial state of the issue, addition of other facts and connections including explanation and explication of thought processes and opinions are important roles especially in the frame of processing theoretical parts. Use of these methods offers the potential to fulfill determined objective and to obtain the necessary knowledge to understanding and meeting requirements for tax imposed on road motor vehicles.

Primarily scientific publications and monographs of important and respected personalities in the field of economic and social sciences were identified as a material suitable for processing of this topic. It is also necessary to use the material, or legal documents in the form of the relevant directives of the European Commission and the legislative framework of the Czech Republic.

RESULTS AND DISCUSSION

Within taxation of so-called harmfulness is currently expanding the attention of tax policies on the operation of motor vehicles (Messere *et al.*, 2003). Radvan (2007) distinguishes taxation of motor vehicles for taxes payable at the time of acquisition of a car or its putting into service, taxes paid regularly in relation to the ownership or operation of the vehicle and fuel taxes, and points to the fact that fundraising from use of motor vehicles does not necessarily may take place only through taxes. A substantial part of the collection of taxes in connection with ownership or the use of motor vehicle is made by excises duties, whether it is a general excise duty, or a specific excise duty. Decisions and recommendations regarding the taxation of road motor vehicles must be based on

the context of the current situation of taxation in the Czech Republic but also of the requirements and vision within the European Community.

European context

The aim of the European Commission in the field of taxation of road motors vehicles is mainly to improve the functioning of the internal market by removing existing tax obstacles for transfer of passenger vehicle from one Member State to another and restructuring of tax bases in the European Union within the meaning of inclusion of carbon dioxide emissions caused by operation of vehicles. It is obvious that the aim, at least for now, is not a harmonization of tax rates, nor the obligation to implement new taxes.

These trends are based primarily on Directives 94/12/EC, 70/220/EEC, 98/69/EC, 70/220/EEC, 715/2007/ES, on draft of directive COM/2005/261 together with the document COM (2002) 431. Directives 83/183/EEC and Council Directive 83/182/EEC caused limitation of the rights of member states regarding the possibility of imposing excise duties on motor vehicles. Current requirements for the taxation of passenger road motor vehicle are based on the draft of directive COM/2005/261. This primarily involves the abolition of fees for registration of vehicles and the implementation of element of CO₂ emissions into the tax base of annual road tax.

A partial target state is to reduce CO₂ emissions at 100% of new cars within 120g CO₂/km by 2015 and further reductions within 95g CO₂/km by 2020. In 2010 the CO₂ emissions were at level of 135g CO₂/km for new vehicles. Currently this value is around 125g CO₂/km, which represents a 20% reduction of this value compared to the state in 2008. This state results from situation in January 2011 (ACEA, 2011a).

In the European Union, the ownership and operation of road motor vehicles are associated with tax liability, in connection with value added tax, excise duties on mineral oils, registration tax and tax from operation of vehicle. Value added tax is considered not only during acquisition of vehicles, but also during the acquisition of fuel, which there is currently excise duty on mineral oils as well. In EU countries, the value added tax ranges from 15% to 25%, the specific rate for excise duty on unleaded petrol ranges between 348 EUR – 714 EUR/1000l and on diesel from 274 EUR to 617 EUR/1000l. 19 countries of the European Union applied registration tax. This tax is usually based on the price of the vehicle, emissions, engine performance, number of axles or weight of the vehicle. Tax from ownership or operation of a vehicle is necessary to distinguish for vehicles used and unused for the business. All EU countries apply tax from ownership of vehicles used for businesses. Weight, number of axles, emissions, noise, fuel consumption and vehicle load are the tax base. 20 countries of the European Union apply

tax from ownership of vehicles unused for business. Content and performance of engine, emissions, fuel consumption and vehicle weight can be tax base.

In the European Union, where there already is road tax system for motor vehicles according to their emissions in some form, average age of rolling-stock is significantly lower than in countries where there is no this system (ACEA, 2011b). The dependence of the existence of environmental taxation and the age of rolling-stock may be only apparent. From many other objective reasons, a higher average age of road motor vehicles can be expected in Eastern and Central Europe. It is also clear that the process of reducing average emissions for new cars was caused at least initially only by technological progress without doing any environmental incentives or environmental taxation of ownership or operation of a motor vehicle. Results of examination of dependence of age of vehicle and their emissions are indisputable. Examination was done by Singer and Harley (1996), when almost two thirds of emissions of rolling-stock are produced by vehicles over ten years.

Taxation of road motor vehicles in the Czech Republic

Road tax is classified as property taxes in the Czech Republic, although it is classified according to the OECD as excise duty. From this perspective, also the literature does not always consider road tax as property tax, or at least not for the typical property tax. Despite all these aspects of the classification of the road tax, it is classified as property tax, given the similarity of the used tax techniques (Boněk, 2001).

Road tax is regulated in the Czech Republic by Act No. 16/1993 Coll. On Road tax, as already 17 made amendments, whose effort is solving the problem of obtaining necessary funds for the maintenance and development of road infrastructure. Road tax is the income of the State Fund for Transport Infrastructure. However, it is obvious that the present fiscal income is insufficient in relation to this goal. Possible collection reserve of road tax can be seen already in the definition of the subject of tax and also in connection with the efficiency of collection of this tax (Andrlík, 2010). Subject of road tax are road motor vehicles and their trailers when they are operated and registered in the CR, and when they are used for business or other self-employment or in direct connection with it. Reserve of collection income can be currently seen in the limitation of the scope of tax for passenger vehicles only to vehicles used for business, given the growing number of registered passenger vehicles. The implementation of taxation of all vehicles regardless of the criterion of business would lead to an increase in public revenues or budget, more precisely State Fund for Transport Infrastructure.

The tax base for passenger cars is an engine capacity in cm^3 , if it is not the car on electric power. Tax base is not determined for car on electric power, because it is exempted from tax. Maximum

allowable weight in tones and number of axles are tax base for all other vehicles. Sum of the highest permitted weights on axles in tones and number of axles are tax base for trailers. Maximum permitted weight is defined as the maximum weight that is theoretical, it is not therefore the actual weight of the vehicle.

The tax rate depends on the category of road vehicles, as well as the number of axles and weight or engine capacity (i.e. on the tax base). The higher engine capacity car has, the higher the tax rate is applied. Currently the tax rate in relation to engine capacity ranges between 1 200 CZK and 4 200 CZK. However, if it is a passenger vehicle, where employer is the taxpayer, therefore private vehicle of employee that have been used for business purposes, and employees received travel expenses, tax rate can be 25 CZK for every day of use of this car or its trailer. Collection will derive from advantage for the taxpayer. The tax rate for trailers and other vehicles is then dependent on the number of axles and weight. In this way the tax rates range from 1 800 CZK to 44 100 CZK.

It is also necessary to mention the value added tax in the acquisition of a motor vehicle where there is tax rate of 20% pursuant to Act No. 235/2004 Coll. on Value Added Tax, as amended. Operation of vehicles, consumption of fuel consumption, is burdened with excise duty on mineral oils according to the Act No. 353/2003 Coll. on excise duties, as amended. The rate of excise duty on unleaded petrol is 12 840/1 000l and on diesel 10 950/1 000l. At the same time general excise duty in form of value added tax with basic rate is imposed on fuel. Value added tax is calculated from price including excise duties due to the ad valorem form of excise duty and also general excise duty. Value added tax is the income of the state budget. Excise duties flow into the state budget and the State Fund for Transport Infrastructure.

Environmental aspects of road tax in the Czech Republic

Vehicles using ecological fuel as a drive are exempted from road tax. They are vehicles for transporting people and for the transport of goods with maximum permitted weight less than 12 tons. These are exempted from tax, if they have electric drive, if they have a hybrid drive combining a combustion engine and electric motor, if they use LPG (liquefied petroleum gas) or CNG (compressed natural gas) or if they are equipped with an engine that is designed by manufacturer for combustion of automotive gasoline and E85 ethanol.

Reducing the rate of road tax is applicable in cases specified by law. There is thus evident intent of the lawmaker to favor the operation of new, suppose environmentally friendly vehicles. Reducing rates may apply from the date of their first registration for the next 9 years. The reduction in rate is gradual. To the latest vehicles belongs a reduction of 48% of basic tax rate, then decrease by 40% and last by 25%

(a change occurs every 36 calendar months). Claim for reduction begins with the calendar month in which occurred the first registration of the vehicle. If during this time there is a change of operator, it is possible to apply an allowance first in the month, when there was made a change in the technical license of operator. If the vehicle was first registered abroad, taxpayer proves a claim to reduction in the rate by certificate or other document issued by the competent registration authority abroad (or by registration authority in the CR, if it has available data on the vehicle, in which the first registration is recorded).

Increase in tax rate, namely by 25%, occurs in the case when it is a vehicle that was first registered before 31. 12. 1989. The first registration could be done both in the CR and abroad (thus true age of the vehicle is reflected). It is not crucial about what category of vehicle we are speaking. There is again apparent intention to tax older vehicles, so obviously environmentally damaging, and thus increase the overall cost for their operation, which would subsequently affect the decision to buy a new, ecologically favorable vehicle.

Tax allowance is in the case of road tax another correction factors influencing the final tax liability. It can be applied in case of vehicles used in connection with combined transport. The environmental aspect of the tax allowance cannot be seen in the pressure to rolling-stock recovery or to reduce emissions of existing vehicles, but rather to reduce road transport in favor of more environmentally friendly forms of transport.

It is also necessary to mention the Decree No. 383/2008 Coll. from 2008, which sets the fees for the first registration of used vehicles in the Czech Republic. The fee is determined by compliance with the marginal values of emissions in exhaust gases. These are sums 3 000 CZK for meeting the marginal values of emissions EURO 2, 5 000 CZK for meeting the marginal values of emission EURO 1 and 10 000 CZK in the case of non-fulfillment of given marginal values of emissions. The fee does not apply to vehicles that meet the minimum emission limit EURO 3. Level of fulfillment of relevant emission level is demonstrated by writing in vehicle registration certificate for the purpose of determination of fee. Fees are income of the State Environmental Fund.

There is no direct link between the emissions of vehicles and the rate of their taxation in the Czech Republic, apart from the above introduced connections with environmental impact of operation of motor vehicles. Fee for first registration of used vehicles in the Czech Republic on the basis of membership in emissions class is undoubtedly the closest to the taxation of actual emissions of vehicles. Other provisions with the environmental aspect use only wildcard characters that cannot be considered adequate and also fair.

Selection of requirements for the taxation of road motor vehicles

Taxation of motor vehicles should meet the requirements whose fulfillment assume the imposition of taxes. Šíroký *et al.* (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 they remain mostly identical as regards content and semantics, see for example, Musgrave and Musgrave (1994), Nehybová (1998) or Hamerníková and Maaytová (2007). Other reported requirements for taxes and tax system may be sufficient yield principles, uniform distribution of tax burden, awareness of tax incidence, of minimum intervention in otherwise efficient markets, facilitating the use of stabilizing pro-growth fiscal policy, cheap, uniform and comprehensive management, low administrative costs, neutrality, universality, satisfactory profitability, sustainability, manageability, harmonization with the EU, or the principle of tax generality.

The effectiveness of taxes lies in the fact that individuals bear the full costs of their consumption. If the consumption of individual transfers the cost to others, then others pay part of the burden of foreign consumption. This burden is called a negative externality. Taxes can be used in such situation to correct negative externalities, and to ensure economic efficiency in this situation. The tax would reach marginal cost of operators or users of motor vehicles, into which is necessary to include the marginal social cost of using motor vehicles. Then the situation can be described as economically efficient. Determination of the net social cost of motor vehicle use should therefore be crucial for determining the manner and extent of their taxation. Determination of the social cost of motor vehicle use is very difficult, if not impossible. Cnossen (2005) notes, however, that significant externalities can be quantified in this field and we can abstract from minor impacts. This claim is in accordance with the approaches to the taxation called "second best". Fair taxation is perceived in two ways. According to the first, fair taxation can be achieved on the base of measurement of utility. Theoretically, under this principle, the same overall benefit as before is retained to each taxpayer. The problem, however, according to Šíroký *et al.* (2008) is the measurement of utility and also how to set taxes. Hamerníková and Maaytová (2007) identifies other questionable points in the form of uncertainty, whether public goods financed from taxes consume more rich or poor people and in the form of inability to demand that the poor people pay for their own social needs. The principle of benefit is due to these deficiencies recognized only in certain taxes. The principle of solvency includes the conditions of horizontal

and vertical equity. Horizontal equity assumes the same amount of tax for taxpayers with the same relevant parameters; the vertical equity assumes various amount of tax for taxpayers with different parameters. Široký *et al.* (2008) and Hamerníková and Maaytová (2007) agree that it is difficult and in practice impossible to order taxpayers and create a scale – who and in what amount has to pay taxes.

Effective and fair tax system can be characterized as follows. Revenue flowing into government budgets, according to Musgrave and Musgrave (1994) should be sufficient and allow the government to apply the necessary steps in the field of fiscal policy. On the other hand, the amount of paid taxes should be determined by the amount of incomes and correspond to benefit that people receive from government programs. It is also necessary to highlight the need for flexibility in the tax system to be able to perform the functions imposed on it.

It follows that the essential requirement on tax imposed on road on motor vehicles should be efficiency in terms of economic efficiency. Tax fairness in terms of inclusion of impacts of activity in the form of operation of motor vehicles can be regarded as assured in this way. It is obvious that such built tax will not correspond to any other requirements imposed on taxes. However, in practice it is clear that tax deficiencies can be compensated by appropriate modifications of other components of the tax system.

Function suitable for fulfillment by taxation of road motor vehicles

Boněk *et al.* (2001) argue that taxes perform many functions in the economy, particularly fiscal, allocation, redistribution and stabilization function. Educational and remedial function can be newly formulated function of taxes.

Fiscal function is the oldest and the most important function of taxes. It is about raising funds in public budgets to finance public goods and needs. It is essential that any tax must meet the fiscal function. However, it is necessary to distinguish whether it is appropriate to impose a specific tax for the need of financing public goods generally, or in terms of the financing needs of specific items. Road tax cannot be considered as suitable for financing public goods without a specific determination. On the basis of sufficiently specific determination is only possible to evaluate whether the taxation of road vehicles perform a fiscal function.

Allocation function is applied in cases where market mechanisms are unable to ensure efficiency in the allocation of resources. Taxes can correct this deficiency and provide the location of resources where they would not normally be in net allocation of market. The role of certain taxes is correct initial inefficient allocation of market. This function is suitable to carry through tax imposed on road motor vehicles, if we admit that not all impacts of operation of motor road vehicles are included in their prices.

Redistribution function is based on no acceptability of the distribution of incomes and wealth on the base of simple functioning of the market. Therefore taxes alleviate differences in incomes of individual subjects so that higher incomes or greater wealth are taxed more. Taxes provide the solidarity of members of society, i.e. citizens of given state. Taxes affecting the indicators with meaningful skills in terms of income of pension of taxpayers or their consumption are appropriate taxes to meet redistribution function. Although road tax is considered as excise duty according to applied classifications, it is not suitable for the performance of redistribution in society due to their considerable specificity. Income tax is certainly better able to meet redistribution of resources in society (David, 2009a).

The stabilization function is part of the economic policy of the state, it helps to alleviate cyclical fluctuations in the economy, it is used to achieve the target in the employment or price field. Road tax has not many possibilities, how to become an stability element in the economy.

Some taxes may be imposed for educational reason. In imposing an educational tax we assume that we tax activity or consumption, its consequences are socially inappropriate. We assume that taxpayers are not aware of these consequences and that is the reason why through taxes we create pressure to reduce given activity or consumption. The educational function essentially excludes the performance of fiscal functions. The aim of the educational function is not the selection of means. Education taking place under the imposition of taxes and thus the financial pressure is de facto education of less privileged and it substitutes pressure of sufficient information (David, 2009b). Education is not an appropriate reason for the imposition of any taxes, thus nor tax imposed on road motor vehicles. Indeed, Proost *et al.* (2009) have not seen a significant reduction in traffic volume after the imposition of taxation on emissions caused by operation of road motor vehicles. Unlike, however, Johansson, Burman and Forsberg (2009) recorded reduction in car traffic after imposition of higher road taxes in the experiment carried out in Stockholm. The result can be interpreted as determined by the local nature of the experiment and also by reduction of redundancy caused by the initial inefficient allocation.

Function of taxes from use of motor vehicles should be based on answers to a question seeking reasons why tax the motor vehicle. Operation of vehicles brings with it also obvious and hidden costs. Arthur Cecil Pigou distinguished private utility from social one and thus he introduced the problem of externalities into the economy (Holman *et al.* 1999). Santos (2010) states environmental damage, accidents, traffic jams and dependence on oil, which are not reflected in market prices as externalities of road transport. State interventions, in the market process through a system of taxes and subsidies, which should remove the inconsistency of social

and private costs or benefits, should be answer to externalities. Marginal utility, as described Široký *et al.* (2008), Pigou then called “the same casualty”, which defines on the base of absolute same casualty of taxpayers, their same marginal casualty and the same marginal proportional casualty. Correction of damage caused by operation of vehicle should take place through imposition of tax. Road tax should primarily perform a remedial function. Some other general functions of taxes of course can be performed simultaneously and it is good, if they are performed, however, they must not disrupt the remedial function.

Selection of the model of taxation of road vehicles

The method of taxation, or change the way of the taxation of motor vehicles does not necessarily affect the selection from these taxes, which confirmed England and Carlson (2008). On the other hand, it is desirable to create some additional tax burden, provided that the current taxation did not correspond to the social cost of motor vehicles by its amount. This can provide a neutral model in taxation of motor vehicles. The total additional burden will, according to Auerbach and Feldstein (2002), depend on the actual amount of tax and cross-elasticity of demand.

We often see proposals for solutions distorting the market, such as in Sergeant *et al.* (2008), who in frame of the reduction of air pollution, propose implementation and increase in fees for parking, transits, or allowing entry to selected localities. At the same time, these authors offer much better alternative in the form of offer of quality environmentally-friendly alternative forms of transport of both persons and goods, which, however, be rather considered as a suitable complement to correctly set the tax on operation of road motor vehicles.

Due to the identified needs that can be placed on the tax imposed on road motor vehicles and functions that this tax should meet, it is clear that emissions of vehicle will be the primary aspect suitable for inclusion in the calculation of tax liability. Because all conventional road vehicles produce emissions, generality is the first requirement for the taxation of their operation. All vehicles used for both business and private, if they are causing emission, must be taxed. All subsequent models include, among other aspects, emission characteristics of road motor vehicles. The emission properties can be included in the calculation of tax in different ways. It offers use of membership of vehicles belonging to the classes according to the EURO, actual emissions of given brand and type of vehicle, or indeed of actually produced emissions per unit of time. Connection of rates of road tax to the relevant EURO emission class of the given vehicle according to its technical documentation seems at first glance like a simple alternative to environmental taxation of road motor

vehicles. Unfortunately, it says very little about the actual emissions of the vehicle. The first reason is the range of EURO emission class, which would cause the same degree of vehicle taxation with very different actual emissions. The result can then be distortion of the car market just like the gradual progression of income taxation. Furthermore, this alternative does not reflect the actual amount of emissions with respect to the degree of use of a vehicle. Underutilized vehicle belonging to the low limit of EURO group can produce far fewer total emissions than a vehicle belonging to the advanced EURO emission class, which will be operationally very busy. The inclusion of emissions of relevant brand and type of vehicle according to the technical documentation is a significant shift compared to the previous model. The model eliminates possible distortion and better reflects the environmental impacts. However it does not deal with the actual amount of emissions with respect to the degree of use of a vehicle, like the previous model. Model including emissions of relevant brand and type of vehicle together with mileage performed over a certain period of time is alternative in terms of more effective taxation of impact of operation of road motor vehicles emission. This leads to the inclusion of relatively realistic images about the actual produced emissions by given vehicle for the designated period of time. Potential unfairness due to differences in degree of vehicle use is eliminated. Model identifying and taxing the actual amount of emissions produced in operation of each vehicle registered in the Czech Republic is the last, in terms of taxation of emissions produced during the operation of each vehicle by optimal variant. The model is based on the principle of direct measurement of emissions in each vehicle throughout the period specified, and on the taxation of the total actual amount of emissions in this period.

The most appropriate calculation is calculation of actually produced emissions per unit, as a result of requirement of taxation of damage caused by the operation of vehicle. Unfortunately it is not real to practice this alternative nowadays, due to the assumption of installation a special measure device into each operated vehicle. Similarly, it is not currently possible to implement a variant involving actual mileage of each operated vehicle. Therefore, the best real form of environmental taxation is identified in the form of actual emissions of given brand and type of vehicles while covering the numerous shortages, however it does not miss environmental character, the introduction is not too administratively demanding and it provides space for the implementation of the collection of adequate funds to cover damage caused by road motor vehicles in the Czech Republic.

We must also clarify the appropriate amount of collections due to the existing collection of road tax and the amount of environmental damage knowing by which way is suitable to tax the environmental

impact of operation of vehicle. There are three basic models due to environmental impact and the current collection of road taxes.

Models relating to the existing collection of road taxes are fiscally positive model, fiscally negative model and collection neutral model, which express the relation between the current collection of road tax and the collection of newly modified road tax. Fiscally positive model assumes collection of greater funds than before, fiscally negative model assumes a lower amount of funds compared to the current collection and a fiscally neutral model is adjusted so that the collection of a new model would be equal to current collection of road taxes. Due to the previously identified functions and requirements that need to be imposed on the road tax on motor vehicles, it is clear that we must refuse collection models. These models may be able to distribute the tax burden among taxpayers in proportion in which their vehicles produce emissions, but the actual amount of collection does not have connection to the overall environmental damage caused by vehicles. Fiscal models are not able to express the required amount of road tax.

Models based on the relationship to the amount of environmental damage are environmentally positive model, environmentally negative model and environmentally neutral model. Environmentally positive model assumes collection of greater funds than environmental damage caused by operation of road motor vehicles reach, environmentally negative model assumes a lower amount of funds compared to environmental damage and environmentally neutral model provides a collection of taxes so as to just compensate environmental damage. Environmental models not only allow you to distribute the tax burden among taxpayers in proportion in which their vehicles produce emissions, but are also able to collect the required amount of tax in specified ratio to environmental damage. It is clear that road tax should cover just the damage caused by the operation of road motor vehicles and so environmentally neutral model is in place. However, it is necessary to take account of other costs associated with the collection of road tax for the tax collector, which should also be taken into account in the calculation. The choice therefore falls on environmentally positive model in the sense of inclusion of environmental damages and other related costs of society on the operation of road motor vehicles. Environmental damage may be times higher than previously paid road tax and so it is possible also to use and environmentally negative model in early stages of introduction of a new model of road tax considering need of a stable tax environment without changes. The target state must be coverage of environmental damage and related costs.

If you want to put more pressure on the overall reduction of emissions from the operation of road motor vehicles, it is possible to accentuate the emission rate through coefficients or progressive

rates. It would be possible to take into account emission class of vehicle, emissions of given brand and type of vehicle or actual produced emissions of vehicle within a specified time period by the coefficient for the calculation of road tax. Progression can be applied by stepping or sliding tax rate in relation to the emissions class of vehicle, emissions of given brand and type of vehicle or actually produced emissions of vehicle within a specified time period. However, since these models do not correspond to appropriate identified requirements for road tax and they appears as an educational by means of price pressure, it makes no sense to deal with them further.

It is not possible to forget to take account of environmental damages through the registration fee corresponding with emission class of vehicle or actual produced emissions of given brand and type of vehicle. This alternative, however, unlike the regular payment of road tax completely ignores the length of the period in which the vehicle will be in operation and will produce emissions. Registration fee calculated on any basis is not therefore an appropriate alternative nor complement of environmental road tax.

The current budgetary allocation of road tax offers maintaining the existing or modified form of road tax and the introduction of new additional environmental road tax whose collection should accrue to the remedy of damages caused by produced emissions during operation of road motor vehicles. The current version of the road tax could then be greatly simplified, because it would be possible to abandon the application of all signs of environmental character existing in the present form of road tax. This alternative can be called a synthetic model including fiscal neutrality, positivity or negativity in relation to the current collection of road tax and also environmental neutrality, positivity or negativity due to environmental damage caused by the operation of road vehicles.

CONCLUSIONS

Discussion and review of the taxation of road motor vehicles in the Czech Republic and also in the European Union is currently more than necessary. The necessary modifications should be carried out deliberately with the knowledge of long-term concept and sustainable development of society. Long term needs of this tax can be expected. Also Proost *et al.* (2009) claim that traditional technologies will dominate at least until 2030 in the automotive industry.

There are large differences in the amount of tax, its very existence and way of taxation of motor vehicle among the member countries of the European Union. This is the fact that distorts market conditions within the European Union. Effort to harmonize the taxation of operation of motor vehicles is particularly evident from the existence of directives on this issue within the European Union.

At the same time the taxation of motor vehicles should be an essential tool to fulfill the obligation under the Kyoto Protocol, due to efforts on the taxation of operation of motor vehicles based on their emissions.

In the Czech Republic, road motor vehicles are taxed only selectively and on the basis of wildcard characters that more or less do not correspond to identified need of environmental character of the tax. In the regulation of the law there can be found some provisions favoring vehicles which produce fewer emissions, but it is still primarily the use of wildcards characters of actual emissions.

It is not possible to expect that the taxation of road motor vehicles will meet expectations corresponding to social interests, without investigation in detail individual requirements for this tax. Without knowing the theoretical foundations and potential connections it is not possible to formulate proposals of appropriate forms and rate of taxation of road motor vehicles. Good tax can be eventually introduced in practice only by through rigorous examination of the parameters of proposed models.

SUMMARY

It is necessary to distinguish the environmental damage caused by the operation of vehicles and other costs related to infrastructure, damage to property or health. From this perspective, it is advisable to maintain the highly modified existing form of road tax appropriate for collection funds from other than environmental reasons. Generalizations of tax liability, removing of signs of taxation of impacts on the environment and review of the relevance of wildcards characters of tax bases for road motor vehicles are mainly necessary modifications. These steps will lead to greater fairness and simplification of existing tax forms and to the collection of adequate funds due to identified needs. It is also necessary to implement the environmental tax imposed on emissions produced by road motor vehicles.

At present, unfortunately it is not real to implement here identified optimal model of taxation. Periodic alternative of tax reflecting actual emissions of given brand and type of vehicle was identified as the best possible model to implement. Collection of newly introduced tax would, due to the need for a stable tax environment without step changes, behave initially as environmentally negatively with a gradual tendency to neutrality. It follows that the essential requirement put on the new tax imposed on road motor vehicles should be efficiency in terms of economic efficiency. Tax fairness in terms of inclusion of impacts of activity in form of operation of road motor vehicles can be regarded as assured in this way. It is obvious that this built tax will not entirely conform to any other requirements imposed on taxes. However, in practice it is clear that deficiencies of one tax can be compensated by appropriate modification of other components of the tax system.

The environmental tax is able to perform remedial function. Education is not an appropriate requirement on the environmental tax, but it is possible to see the educational impact within the corrective nature of the proposed tax. Environmental road tax also performs a stabilization function in terms of a sustainable development of society. In addition to redistribution, which is not an appropriate requirement on the environmental tax, new tax is also able to allocate selected resources by its appropriate budgetary determination so not to interfere with the fulfillment of all the above functions.

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