Czech University of Life Sciences Prague

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Department of Economics

BACHELOR THESIS

ECONOMICS OF ROAD TRANSPORTATION POLICIES IN THE CZECH REPUBLIC

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Economics of road transportation policies in the Czech Republic

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Objectives of thesis

The objective of this thesis is to evaluate how the policies affect the economy in road transport and vice versa, as the economy can influence policies up to the regional level and how current situation affects road traffic participants i.g. drivers. The thesis is focused on ways of raising finance income from road transportation and the efficiency of individual methods. Another objective is to show how these policies encourage police to use unlawful methods to increase income. Last but not least, the work should detect errors made in individual areas of issues.

Methodology

Gathering of acts that have connection to thesis topic. Information about issue were mainly from Acts no. 16/1993 Coll. road tax, no. 353/2003 Coll. consumption taxes, no. 361/2000 Coll. road traffic, and no. 553/1991 Coll. municipal police. To these laws were added related regulations. Additional information gathered from available literature, internet sources and public institutions on the basis of requests for information with reference to Act no. 106/1999 Coll. free access to information and data about speed measuring methods and antiradars were obtained from the exclusive distributor of radar detectors of majority of world producers. By using deductive method on acquired data with focus on how policies affect economic indicators in transportation, how much can the economy influence policies and also how these policies can influence behaviour of traffic participants were evaluated realistic issues.

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Keywords

Municipal police, Police of the Czech Republic, Fines, Tax, Fee, Antiradar, Toll system, Car accidents, Traffic

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Statutory Declaration

I, the undersigned, hereby declare that the thesis "Economics of road transportation policies in the Czech Republic" is result of my personal work and only sources I used are listed in the reference. At the same time, I agree that this work can be available in the library of CULS and used for educational purposes in accordance with copyright.

In Prague …….. …….

Tomáš Oliva

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Economics of road transportation policies in the Czech Republic

Ekonomika politik a pravidel v oblasti silniční dopravy v České Republice

Summary

Bachelor thesis „Economics of road transportation polities in the Czech Republic“ deals with economic aspects, which significantly affects road transportation in the Czech Republic. It evaluates the extent to which the economics is able to influence the policy of the state, city, and last but not least ordinary citizens. It evaluates the state’s point of view on road transportation as a significant source of income that should be used to the maximum possible extent. In verifiable way then evaluates view of cities and municipalities on transportation as financial source that is significantly affecting their budget. The thesis explains ways of using economic resources in transportation with respect to their reasoning and assesses the effectiveness and success. The work is mainly based on existing legislation, publicly available sources and information obtained through requests for information with reference to Act no. 106/1999 Coll. about free access to information. There are used specific cases and statistics which shed light on the entire issue and often in surprising way explain the reasons for political pressure on the issue. The work shows increasing tendency of car accident amount, which is one of the consequences of low investment level in building of road infrastructure. Farther it shows income from toll system that is high, however operator gets unreasonably high part of it. Income from road tax is also high and effectiveness of its recovery is nearly 100%. On the other hand increase of consumption tax rate resulted in rapid decrease of gasoline tourism and thus income from fuel bought by foreigners went down. In the end it shows how income from fines changed priorities of police and especially municipal police and how are drivers defending themselves. Old priority of increasing of traffic safety became secondary goal. New primary goal is making profit from traffic offenses even by using unlawful methods.

Key words

Municipal police, Police of the Czech Republic, Fines, Tax, Fee, Antiradar, Toll system, Car accidents, Traffic

Souhrn

Bakalářská práce „Ekonomika politik a pravidel v oblasti silniční dopravy v České republice“ se zabývá ekonomickými aspekty, které výrazně ovlivňují dopravu v České republice. Vyhodnocuje, nakolik je ekonomika schopna ovlivnit politiku státu, měst a v neposlední řadě i řadové občany. Zhodnocuje pohled státu na dopravu jako významný zdroj příjmů, který je nutno využít v maximálním možném rozsahu. Prokazatelným způsobem pak hodnotí pohled měst a obcí na dopravu coby finanční zdroj výrazně ovlivňující jejich rozpočet. Práce objasňuje způsoby využívání ekonomických zdrojů v dopravě s ohledem na jejich odůvodnění a posuzuje účelnost a úspěšnost. Práce vychází především z platné legislativy, veřejně přístupných zdrojů a informací získaných na základě žádostí o poskytnutí informací s odvoláním na zákon č. 106/1999 Sb. o svobodném přístupu k informacím. Dále jsou zde použity konkrétní případy a statistiky, které na celou problematiku vrhají světlo a mnohdy překvapujícím způsobem objasňují důvody politických tlaků na danou problematiku. Práce poukazuje na rostoucí tendenci počtu dopravních nehod, což je jedním z následků nízkých investic v oblasti budování silniční infrastruktury. Dále poukazuje na příjem ze systému mýtných bran, který je vysoký, nicméně provozovatel dostává nesmyslně vysokou část z těchto zisků. Příjem ze silniční daně je taktéž vysoký a efektivita vymáhání této daně je téměř 100%. Na druhou stranu zvýšení spotřební daně vyústilo v rapidní pokles tzv. benzínového turismu, čímž se snížil příjem z prodaných pohonných hmot cizincům. V závěru práce ukazuje, jak příjem z pokut změnil priority policie a především městské policie a jak se tomuto řidiči brání. Původní priorita zvyšování bezpečnosti na silnicích se stala druhořadou. Novým primárním úkolem je příjem z dopravních přestupků a to i za použití protiprávních metod.

Klíčová slova

Městská policie, Policie ČR, Pokuty, Daň, Poplatek, Antiradar, Mýtný systém, Dopravní nehody, Doprava

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1 Introduction

The topic was chosen for obvious reasons. Everyone is constantly encountering in media and on the Internet news about effort of state, its segments and also the segments of cities and municipalities, to obtain funds from the transportation. With some ways of obtaining a large part of citizens disagree. Whether is discussed drawing funds or its effectiveness, author decided to work on this issue and find out the real picture of the economics in road transportation in the Czech Republic.

It is indisputable fact that the financial resources flowing from road transportation are extremely important part of both the state budget and budgets of cities and municipalities. It is also indisputable that the financial situation of the state is very difficult. State debt is constantly growing and although the statement of the current Minister of Finance Andrej Babiš, for the first time since 1995 state debt will fall by 20 billion CZK in 2014, many economists (eg. MEP and Chairman of the Freedom Party Petr Mach) refuses this claim with the fact, that it is only an accounting trick and state drew reserves created in previous years. From the poor economic situation of the state emerges poor economic situation of all institutions dependent on government subsidies. Based on already mentioned facts, as a logical outcome appears the effort of everyone to improve their economic situation and for that they use all possible and available means. [1] [2]

Individual categories were chosen because they are the main income sources from traffic, but also because they are obvious examples how they can influence policy economy and vice versa. The most profitable sources such as consumption tax on fuel and toll collecting are dramatically influenced by politics. Also they are most frequently and most strongly affected by the legislation. Less profitable sources, such as road tax, in essence, are not subject to pressure of policy or affect policy itself. Given that incomes are more or less constant and any changes would not affect revenues too much, laws dealing with them are almost unchanged. Finally finance from fines for traffic offenses which influence policy most, albeit mostly regional. Economic indicators here influence most the behavior of politicians and the economic gain often surpasses political interests.

2 Objectives of thesis and methodology

2.1 Objectives of thesis

The objective of this thesis is to evaluate how the policies affect the economy in road transport and vice versa, as the economy can influence policies up to the regional level and how current situation affects road traffic participants, i.g. drivers. The thesis is focused on ways of raising finance income from road transportation and the efficiency of individual methods. Another objective is to show how these policies encourage police to use unlawful methods to increase income. Last but not least, the work should detect errors made in individual areas of issues.

2.2 Methodology

Gathering of acts that have connection to thesis topic. Information about issue were mainly from Acts no. 16/1993 Coll. road tax, no. 353/2003 Coll. consumption taxes, no. 361/2000 Coll. road traffic, and no. 553/1991 Coll. municipal police. To these laws were added related regulations. Additional information gathered from available literature, internet sources and public institutions on the basis of requests for information with reference to Act no. 106/1999 Coll. free access to information and data about speed measuring methods and antiradars were obtained from the exclusive distributor of radar detectors of majority of world producers. By using deductive method on acquired data with focus on how policies affect economic indicators in transportation, how much can the economy influence policies and also how these policies can influence behaviour of traffic participants were evaluated realistic issues. Summarization and conclusion of these issues are in the chapter 5.

3 Literature review and theoretical part of thesis

The financial income from road transportation is divided in 2 main parts. First part is income from traffic fees and taxes. Second part is income from fines for traffic offenses. Income from fees and taxes provides income from using roads and cars. Income from fees and taxes is mostly influenced by toll system, road tax and consumption tax on fuel. Fees and taxes are paid regardless if you commit any traffic offense or not. On the other hand income from fines requires drivers commiting traffic offenses and drivers disrespecting rules.

3.1 Income from traffic fees and taxes

3.1.1 The toll system in the Czech Republic

In 2006 has started construction of toll gates on Czech motorways. Supplier of toll gates for the Czech Republic has become a firm Kapsch.This system gates work on the principle of microwave transmission, which Kapsch calls DSRC (Dedicated Short Range Communication). This variant is, unlike GSM / GPS which is used for example in Germany, less vulnerable to weather conditions and does not require a mobile connection. For a successful determining of tolls must be placed behind the windscreen so called premid unit. Premid unit contains information about the vehicle in which it is installed. By running through the toll gate vehicle is reported to headquarters and subsequently is calculated, according to the tariff rate and the distance which has been traveled, payment. On some of the gates is also located a control camera system that checks presence and the correct settings of premid unit. If there is a problem with premid unit, record is submitted for review. If the record proved that the offense was committed, Central informs the Customs Authority of the Czech Republic, which makes mobile control and in extreme cases may even stop vehicle and prevent it from moving until problem is solved. [3]

There are two ways of toll payment. The first way is pre-pay, the second one is post-pay. Based on which payment option is chosen, the payer gets premid unit with either a single or unlimited validity. In both cases, the carrier must pay security deposit of 1550 CZK and substantiate emission levels of vehicles. [14]

In the case of pre-pay it is easier to obtain the unit. Premid unit for pre-pay service can be purchased at border crossing points, large fuel gas stations or other distribution points. This unit has then pre-paid number of kilometers for a specified time. Carrier can recharge credit on unit (minimum 500 CZK). If carrier does not manage to use number of kilometers before the due date, the validity of the remaining kilometers forfeits. [3]

For post-pay options it is necessary to create a contract. For creating a contract, carrier must submit excerpt from Commercial Register and bank guarantee, or accepted petrol card. In this variant, however, is no problem with forfeiture of credit, because number of billed kilometers is based on actual mileage. [14]

The rate of payments affects not only emission class, vehicle weight and number of axles, but also the weekly period when the vehicle passes through the toll gates. Emission classes from Euro 0 to Euro II pay the highest rate, while classes Euro V and higher pay the lowest one. Exceptions are buses that pay about 25% of the normal price. [3]

Toll rates are raised on Friday from 15.00 to 21.00 hours for vehicles with two axles for almost 27% for vehicles with three or more axles by about 43%. That makes us increase for emission class Euro 0 to Euro II for two-axle vehicles from 3.34 CZK to 4.24 CZK per kilometer, for 3 axle vehicles from 5.67 CZK to 8.10 CZK per kilometer and for vehicles with 4 and more axles from 8.24 to 11.76 CZK per kilometer. [14]

For Class Euro III and Euro IV are then rate for two-axle vehicle increased from 2.61 CZK to 3.31 CZK. For vehicles with three axles is rate modified from 4.45 CZK 6.35 CZK to and for vehicle with 4 or more axles from 6.44 CZK to 9.19 CZK per kilometer. [14]

For classes Euro V and higher are rates for a vehicle that has two axles raised from 1.67 CZK to 2.12 CZK per kilometer. Vehicles with 3 axles have modified rate from 2.85 CZK 4.06 CZK to and vehicle with 4 or more axles have a rate increase from 4.12 CZK to 5.88 CZK per kilometer. [14]

These rates are related to motorways and highways. First-class roads are charged at a rate reaching approximately 50% of the highway kilometers. For buses, there is an exception. Buses do not pay different prices for kilometers traveled on the highway and

first class roads, nor do they have increased prices for a ride on Friday from 15.00 to 21.00. Buses are paying a same price and that is for the class Euro 0 to Euro II 1.38 CZK per kilometer, Euro III and Euro IV and 1 CZK per kilometer and Euro V and above 0.80 CZK per kilometer. [14]

According to Supreme Audit Office, Ministry of Transport signed another not very beneficial contract with Kapsch firm where Kapsch demands increased commission. The condition is that the success of prescribed transactions is higher than 95% of all recorded transactions of tolls. Kapsch this condition always fulfilled and therefore they got within 5 years 755.2 million CZK. Independent expert then on costs of Directorate of Roads and Highways confirmed this fact and his work became on another CZK 113.5 million. [4]

During this period, then the Directorate of Roads and Highways paid Kapsch additional 499.5 million CZK in fees for credit card payments, which are not included in the contract. For the expertise to the examination of this requirement paid Directorate of Roads and Highways 810 thousand CZK. [4]

In 2009 concluded Directorate of Roads and Highways contract with law firm and firm for debt recovery. That contract included not only lawyer charges, but also the costs for development of software for almost 40 million CZK. This, however, other administrative authorities solve by themselves. [4]

The flat-rate fee for law office and firm for debt recovery was 285 thousand CZK per month. The price of lawyer services on request was then from 2500 to 3500 CZK per hour. Overall these services came to 56.8 million CZK, but recovered lost profits were only 18.3 million CZK. [4]

Next problem is the incompleteness of the evidence of operators of the vehicles. Because of that it was impossible to trace debtors of tolls and state lost 311.6 million CZK. [4]

This is a brief list of cases of ineffective toll collection and inefficient use of the economic potential of the state, which provides transportation infrastructure. [4]

3.1.2 Road tax

The obligation to pay road tax is governed by Act no. 16/1993 Coll. as amended. According to the wording of this Act, this obligation is for every payer of corporate income tax and every payer of individual income tax using vehilce (with four or more wheels) for economic activity. Road tax rates are set according to engine capacity for cars and according to the weight and number of axles for trucks. [18]

3.1.3 The Consumption tax on fuel

One of the main sources of finance from transportation is consumption tax on fuel. The amount and method of payment of consumption tax is regulated by Act 353/2003 Coll. as amended. This Act solves the entire spectrum of consumption taxes. Outside of category of consumption tax on mineral products, which includes primarily fuel, are eg. categories of tax on tobacco, liquors, beer and more. The consumption tax on fuels is one of the most important components of the state budget and is also a source of state finances, which is very criticized, and any change in the the rates of the tax is followed by great discussions and emotions. [18] [19]

Development of consumption taxes on fuel in recent history has undergone three changes. Until 2000, the consumption tax was calculated from the weight of fuel. Since 2000, the method of calculating the tax has changed and tax has started to calculate from the volume. The rate was set at 10.84 crown per liter of gasoline and 8.15 crown per liter of diesel. This situation lasted for three years and the rates were increased to 11.84 crown for gasoline and diesel for 9.95 crown. Although primarily for diesel was a quite substantial increase in rates (by 1.80 CZK), still the price of fuel in Central Europe was at a low level and compared with neighboring states drivers were able to refuel in the Czech Republic almost the cheapest. Given that the Czech Republic has always been transit country mainly used for truck transportation, its benefits from lower fuel prices and tax revenues from diesel and gasoline were really high. In this period, which lasted until the end of 2009, our country was under the onslaught of so-called gasoline tourism. It lied in the fact that drivers from neighboring countries (mostly from Germany and Austria) used to go for fuel purchases. Especially in border areas had therefore grown up really dense network of fuel stations. These stations were "overflowing" under the onslaught of foreign cars. There often were seen long queues from dawn to dusk and drivers were waiting to be

able to fill up their tanks with gasoline or diesel. Refueling was bound with purchases of whole assortment, which was cheaper in the Czech Republic. As example can be mentioned tobacco, food and beverages of all kinds. In 2009, came however the approval of another amendment to Act 353/2000 Coll., which came into force from January 1, 2010. By this amendment had increased consumption tax rates by 1 crown at both main types of fuel, thus unleaded gasoline and diesel. The initial consequence of this amendment was an immediate increase in fuel prices by 1.20 CZK. The explanation is simple. Consumption tax is so called indirect tax which is subject to additional taxation, in our case the value added tax. At the time of amendment to the Act was in the Czech Republic value added tax of 20%. By this consumption tax fuel prices had increased and got closer to the prices in neighboring states and prices, compared with the Slovak prices, were suddenly higher. Diesel then leveled price with Austria. Gasoline prices were lower than in Germany, but the difference was not that high to be worth for drivers to ride for purchase of gasoline from more distant locations. The response did not take long to come. Queues at fuel stations began to rapidly decrease, even trucks that passes through our republic began to fill up in neighboring states, such as Slovakia and Austria. Despite the increase in consumption tax in our country, republic had lower level of collection of consumption tax. [18]

Former Finance Minister Eduard Janota actually admitted in an interview for “Hospodářské noviny” at the beginning of 2011, that the increase of excise tax was a mistake. Originally it was him who as the author of "austerity package" publicly declared that the increase in consumption tax is for a 1 year period. However only few believed to him and how future showed the increase has remained. According to data of Česmad Association, which is an association of truckers, the consumption tax increase pushed Czech Republic between 5 states with the most expensive diesel, so even Czech hauliers started to refuel abroad. Czech Republic thus lost in 2010, according to data of Česmad Association, about 6-8 billion simply because of the increase in consumption tax, although transport services increased by 5%. Fact, that it was a bad policy, is clear from the fact that the government had repeatedly submitted suggestions to reduce consumption tax rates. One of the first suggestions for reducing was suggestion of MP Ladislav Šincl in September 2012. Here was suggested reduction of 2.50 crown for diesel and gasoline 1.50 crown. Such reduction in consumption tax would be in accordance with international treaties by

which is Czech Republic bound and also with European Directives. According to the explanatory memorandum to the suggestion of this reduction in consumption tax rates on fuel, sales of diesel and gasoline could have increased by 26%, which could have increased the collection of tax by 3- 5 billion crowns. However, this suggetion was not accepted. The first suggestion was accepted on the same tax cut, which was agreed in July 2014. After that, paradoxically, the MP Šincl doubted his voting and thus "destroyed" right approved change. Here are clearly shown the political pressures and general properties of our MPs, who in my opinion do not think about what is good for our country, but about the one who wants to promote that good thing. Thus, the opposition will not approve laws of governing parties and vice versa. One thing is certain here. The reduction in consuption tax has not come yet. We can only hope that if we get one, it is not too late. [13]

3.2 Income from fines for traffic offenses

Completely separate area of finance source is income from traffic fines for traffic offenses. This area deserves a wider investigation, and certainly it is the most controversial chapter. The topic of fines for traffic offenses is certainly the most discussed both in the media and on social networks and online discussion forums.

3.2.1 Police of Czech Republic, Municipal Police and legislation affecting road transportation

The starting point is the Act 361/2000 Sb. about traffic on roads and amending certain acts as amended. Act from 14th September 2000 has undergone 47 amendments, which last change for now was made by law 101/2013 Coll. Its text contains 7 parts, from which some are canceled, 143 sections and attachment. Act mostly deals with rights and obligations of traffic participants on the roads, traffic rules and competences of state authority and police of Czech Republic. [23]

As regards the rights and obligations of traffic participant, law deals more with obligations than rights. Basically we can say, that law is dealing only with obligations of traffic participants, namely what participant can do and what he can't do. Almost all laws, excluded provisions relating to authorization to drive vehicle by groups of driver licenses, which driver owns, are restricted by provision of article 2 section 3 of Charter of Rights and Freedoms (Act 2/1993 Col. as amended in 1998) that says: "Everyone can do anything

that isn’t restricted by law, and nobody can be forced to do anything that isn’t ordered by law.” [22]

Almost whole law focuses primarily on drivers of motor vehicles. An inseparable part of the regulations themselves are rules which must be followed by everyone and of course without which it would be an absolute chaos in traffic. However, for this job are essential provisions of the law, which are dealing with violations of individual parts, offenses and governing crimes. Then these violations results in sanctions, which are an integral part of the economy of the state. [17]

Another inseparable part of the law is called point system (dealt by Title V), where individual offenses are "valued" by amount of points. Principle is simple. For committing of selected violation is appropriate amount of points registered to driver in central evidence. This may lead, in the attainment of 12 points, to license suspension or sooner if driver repeats the serious offense multiple times in half a year. [17]

From an economic point of view is very important and perhaps the most important amendment of § 10, dealing with obligations of operators of vehicles. He is responsible for ensuring that his vehicle avoids violating rules. This transfers responsibility for any violations. This is a very crucial amendment which brings much higher success in collecting fines. This amendment to the Act is effective from 19 January 2013. Until this amendment, vehicle operators successfully avoided paying fines by referencing to so-called close person, which refused to admit the guilty of the offense. At this moment they can choose. Either they tell, who committed violation with their vehicle, or they fee equal to usual fine for the offense. In this case, they don’t get registered points in their records. A significant part of vehicle owners therefore prefers to pay a fine with no consequence penalty points. This brings significantly higher income from collected fines. But this is a quite controversial amendment because it can be considered as a suppression of constitutional rights, specifically the provisions of Article 37, section 1, which specifies the right refuse to give testimony if it would result in criminal proceeding of themselves or their relatives. More precisely, everyone has this right, but if it’s applied, he is obliged to pay for it by a fee that is equal to the fine. The fee is then official name, because penalize someone who did not commit anything, is not possible. In this case the economic benefits

completely overshadow the need for tougher punishment of real culprits. Another benefit is proceeding of much higher number of violations, because there is no need to examine the particular person but just collect fees from owners, respectively operators of vehicles.

Similarly is repressed right to deny giving explanation, quoted in the Act 553/1991 Coll. about the municipal police. This Act from December 6, 1991, in wording later amendments which was 15 until now, specifies who can become municipal police officer. Act contains requirements for education, health and professional competence and other prerequisites for entry into the corps of municipal police. Furthermore, in Act is determined the range of powers and duties of officers and ties to the founder of the municipal police - city. [24]

The basic duties of police officers are protection of person and property, following the rules of civil coexistence, supervision of compliance with mandatory regulations, laws, and respect for cleanliness in public areas. In terms of the economy and transportation are in this law contained provisions, which have absolutely major influence on the activity of officers. It is primarily a § 2, letter h), which states that the municipal police uncover violations and other administrative offenses falling within the jurisdiction of the municipality. Because the traffic offenses falling within the jurisdiction of the municipality – they are solved by the traffic governing departments of the municipal authorities, the uncovering of offenses in traffic transportation becomes one of the main objectives of municipal police officers. It is not entirely possible to globalize and say, that the officers are only uncovering traffic offenses for the purpose of collecting fines. That would be shortsighted, but the fact that the collected fines are income of the municipality and the municipality itself is struggling with shortage of funds. It still shows that income from fines is at least a considerable increase in the budget of the city. [24]

It is worth mentioning also § 11 of this law, which clearly shows how is in practice possible to use lack of knowledge of the law by citizens in the submission of (some) officers. A good example is a situation where driver of the vehicle finds a paper from the city police officer behind windshield wiper of his car. On this paper (observed to especially in Prague) is an invitation for driver to appear on a certain day and hour to give an explanation of the

alleged offense (eg. wrong parking). Problem is that the officer has no jurisdiction to call someone to appear on a police station and give an explanation. Officer may invite driver to give an explanation on spot but he cannot summon him for that purpose to the police station. To summon, or respectively invite someone to appear on a police station, can officer do only in connection with writing record of already given explanation. And that's a big difference. Last but not least, there is an obligation on police officer quoted in section 6). The thing is that the officer is obliged to advise the person from which he requires explanation in advance, that he has right to refuse explanation and under what conditions he can do it. At this point law 553/1991 Coll. intersects with law 361/2000 Coll., where the fine is exchanged for a fee and income into the municipal budget is almost guaranteed. [20] [24]

It is quite obvious that Czech drivers are highly undisciplined in terms of following of traffic regulations and their lack of discipline is counted in the economic plans of municipalities for building automatic systems for detection of traffic violations and subsequent collection of fines or fees. Right here is shown increase in trade and effort to maximalize profit from traffc offenses. It goes without saying that all these intentions are advocated by efforts to increase traffic safety, reducing the number of accidents and injuries during them. In fact, beyond this effort prevail economic aspects. E.g. conceptual study for the city Sokolov confirms this approach. This study for the contracting authority, the city of Sokolov, summarizes in the introduction the impact of high speed of vehicles in accidents. Referring to statistics of police of Czech Republic it shows that the speeding in the long-term is the most common cause of accidents resulting in death. Another important factor is the failure to respect of traffic signs, "Stop", or running a red light. The study also shows the results of examining the consequences of a collision of motor vehicles with pedestrians and death probability in dependence on the speed of the vehicle, this probability is increasing with the speed for each ten km/h quadratically. In the materials are presented causes of negative statistics, the importance of speed limits in municipalities and other effects of speed on emissions, noise and fuel consumption. Some data, however, do not include the resources and it is not easy to believe them. For example, data on fuel savings of 23% at a speed of 90 km/h compared to 100 km/h are very speculative, in my opinion, unsupported and what is the main thing its purpose is false. [15]

The next part of the study deals with its project objectives and especially by the economic indicators. As the main objective that is increasing of safety on city streets, reduction of vehicle speed and accidents. Other (“side”) effects of the project are financial revenues such as collecting fines and reduction of noise and dust of the city. [15]

Producer of study suggests four solutions: the purchase or rent of portable measuring devices and the purchase or rent of devices for measuring and controlling of driving a red light on fixed locations. For each alternative are listed pros and cons of the variant and economic indicators which are ultimately becoming the main argument for recommendation of the most suitable one of them. It is surprising that the last option which is recommended in the end has no disadvantages, only advantages. These advantages are especially in financial terms. As the main advantage is stated the amount of profit from collected fines for the city. Paradoxically, in the study is mentioned that the project objectives can be achieved by increasing the repression actions, or increasing of collecting of fines. These repressions are supposed to have very strong preventive effect. In the calculation of costs and benefits, however, the producer calculates annually with exactly the same number of offenses and therefore same amount of fines. It means that the ideal option for contracting authority is the status where drivers will continue to commit offenses and their morale does not improve. However, the city will be able to punish offenses and much better and more efficient in collecting of fines. The collected fines can be then used basically for anything, because they are part of the city budget. [15]

In conclusion of the study is recommended option that is also described in more details including the recommended locations for installation of measuring devices and devices for monitoring of violations of command "Stop". Practically in all of the recommended locations is the main reason increased pedestrian movement, which is at one location a bit odd. That is in the location in which there is no crosswalk, minimal person movement, plus location has been evaluated by the Police of Czech Republic as safe and there is even allowed speed of 70 km/h. [15]

The final section specifies the technical requirements for each device, service, software, etc. There is mentioned here the link to the legislation and, last but not least, examples and experiences from other cities and towns. [15]

Clearly, from the content of the study is visible requirement for economic benefits for the city. Perhaps because of the reference to the experience of other cities where the collection of fines became permanent and regular income to the municipal budget, approval has been granted on that recommended most profitable option. But the effect of increasing road safety, which is somewhat neglected, is not documented and becomes practically unnecessary. [15]

Here comes the stage where is increased supervision of compliance with traffic laws, but this mostly thanks to automated systems, which in totally overwhelming majority supervise speeding. Admittedly, these automated systems actually increase the compliance with speed limits. On traffic safety, however, it has no effect. At a minimum, it can be argued that the number of accidents will not be affected. Each new repression works only temporarily, and people will get accustomed to it. The same case is already mentioned point system, introduced in 2006. Effect of the point system to reduce the number of accidents in the Czech Republic Josef Montag (2014) describes in his study [6].

According to this study amendment of the Act 361/2000 Coll., which came into force on 1 July 2006, has introduced a point system for drivers, with which penalties for offenses on Czech roads have tightened. Not only that, after the point system became active, the amount of collected fines raised, but also the number of accidents on the roads dropped. Many short-term studies have shown that the introduction of stricter laws in traffic causes a decrease in traffic accidents, usually by 20 to 30%. This decrease, however, is provable only during the first six months. [6] [23]

The reason, why decrease of offenses and accidents slows, stops, or even start to rise again, may be fact that with decreasing number of traffic accidents is decreasing level of supervision by traffic police on roads. Nobody can say, however, that police officers work less, only, that they concentrate on other tasks and duties. Some studies have shown that number of found stolen vehicles is increasing, number of offenses outside of traffic dropped, which is a result of the use of police forces elsewhere than on the roads.

From the perspective of safety on roads isn’t stop of decrease of traffic accidents and committed offenses any good news, although an increase would be much worse news.

However, form the economic point of view it is not such a disaster. It is true that traffic accidents are clearly bad factor, because finances for repairing of damages are high, but the offenses and fines for them are relatively significant income to the municipal budget and eventually to the state treasury. Someone could say that for the economy would be ideal if number of accidents keeps decreasing but at the same time the number of offenses, where offender is caught and fines are collected, keeps increasing.

Study conducted by Josef Montag (2014) assumes that the effect of the amendment is zero after 12 months. This is probably due to the redirecting of traffic police forces to other tasks than oversight of communications. However this fact does not explain reason, why is the effect of the amendment to the Act so short-time. Therefore there is a convenient hypothesis, which assumes that people overestimated the effect of law and the presumption of punishments. During first weeks after the amendment, drivers rethink their opinion on punishments and number of violations and traffic accidents began to increase again. [6]

The ideal situation of bringing an increase of offenses and decrease traffic accidents mentioned in the study, however, does not occur. The number of traffic accidents is not decreasing. The statistics of traffic accidents say yes, but the reality is different. One can infer that there is a proportional increase of the number of unreported accidents. There is no doubt that traffic accidents financially burden the state. Damage to own vehicles and property state apparently does not count. Those are paid by the vehicle owner, or are covered by the insurer with which the vehicle is insured. But, for example, in the case of serious damage to permanent health consequences then state may be burdened, e.g. In the form of disability pensions. Another significant expense in traffic accidents is departure of an official vehicle of traffic police for the accident investigation and subsequent administration. Here seems increase of the limit for the obligation to report the accident as a truly economical step which leads to savings. Thereby drops the need for a certain number of police officers by tackling approximately half of traffic accidents compared to 2008 onwards. On the other hand, there is also inevitable decrease in amount of collected fines for causing traffic accidents, respectively for offenses that immediately preceded traffic accidents. Thereby we return to the offenses and economic impact of their punishment. It is quite clear that the fines are an asset to the city or the state budget. Traffic offenses committed in the land of the city are mostly detected locally by relevant municipal

police and the fines thus improve relevant city budget. Without a doubt, municipal police therefore focus on traffic offenses particularly close. As an example can be picked the city of Prague and the calendar year 2013, then traffic offenses commited in the city and discovered by municipal police did the whole 88.4% of all offenses detected. There were 738 817 traffic offenses. From these offenses were nearly 100,000 cases of violating the stop ban, more than 125,000 offenses in paid parking areas and thanks to automated measurement system speed was revealed nearly 191,000 cases of speeding. It means that only on the Prague territory is only in traffic revealed more than 2,000 violations every day. There will be commited, of course, more, because there are many cases that are not uncovered. It should be mentioned that to the December 1, 2012 Metropolitan Police Prague had 2530 employees. During 2013 the total of 289 employees left, which is more than 11%. Traffic offenses detected afterwards were 24.1% less than the previous year. Part of this may be due to employees drop, part is probably because people committed offenses less. Or drivers are successful in hiding their offenses... [7]

3.2.2 Drivers – taxpayers

On the other side of the imaginary barricade stand drivers as taxpayers who pay all the aforementioned fees. For corporate vehicles is the weight of payments on companies, that own these cars. Exceptions are fines that can be paid directly by the driver or at least should be paid. When we take a look on the number of vehicles on the roads, it is constantly increasing. The number of passenger vehicles has increased since 2000 by almost 42% and the increase occurs almost linearly. We can therefore assume that the trend will continue. [8]

Another important criterion are the cities, traffic density in them and not least amount of parking spaces. It is generally known that in large cities there is a problem with parking spaces. Drivers are in certain circumstances forced to park anywhere, even on a no-parking or no-stopping places. Thus risk involuntary contribution to the city budget, but they often have no other option. From the density of traffic in my opinion derive other offenses consisting of the violation of traffic regulations. Nowadays many jobs are emphasing on mobility. From the time, when most people walked or rode public transportation vehicles somewhere in the factory where they spent working hours, have passed many years. Thousands of small business owners and employees of small businesses are moving

between customers and business partners. With the pursuit for higher profits comes the need to be everywhere in time and cover the widest possible area. Omnipresent traffic jams and various delays bring efforts to catch up what they missed due to, for example, waiting in queues. This cannot be globalized, because there will be drivers who chase on the roads literally for fun. But there is really a lot of those who are simply propelled by the employer or job duties within the business. And that's why are police officers, in the eyes of drivers, only persons who want to get money from them in the form of fines and by nothing else. And unfortunately, it's not surprising, because in many cases it is really like that. Even on police officers, and probably mostly on municipal police officers, is putted pressure to collect largest possible amount of fines. Many times was mentioned in the media that police officers are brought to tasks set out in the form of a certain amount of money obtained with the threat of received lower wages without bonuses. This attitude is of course always subsequently disowned by the command, but this can be hardly believed. The problem is that to people, it seems that the number of policeman in the streets decreases and if they sometimes appear, they are just handing out fine.

Drivers have already started to have enough of everlasting fining and because of that a brand new business appeared in the Czech Republic and it has with transportation and economy in transportation very much in common.

3.2.3 Antiradars and measuring of speed

Antiradars are devices that help drivers to avoid being fined for their traffic offenses. Basic information about antiradars and vehicle speed measurement can be obtained from the publication "Information for users of radar detectors". [16]

The publication provides readers information about practically all aspects of measuring the speed of the Czech Republic and in 25 other European countries (although there is mentioned a total number of 27 countries in the text). There are clearly explained practically all methods of measuring speed. The first mentioned is classical microwave radar. In the Czech Republic are used two types, namely Ramer 7M and AD9. These meters work on the principle of Doppler effect and they work on frequencies called Ka band 34.0 GHz and 34.3 GHz. It is the only method of measuring the speed which can be easily detected because radar detectors are able to detect signals at a greater distance than

the radar can measure. This allows driver, if necessary, to adapt his speed in time and avoid to be caught. [16]

The detectors are divided into two basic types. The first type is the portable version, which is fitted on the windshield of vehicle. Its advantage is that it can be easily removed and placed into another vehicle. The second type is called fixed set. It is a detector that is permanently installed in the vehicle. The radar head (antenna, receiving and detecting the radar signal) is usually placed in the plastic bumper. The control unit is then installed in the interior of the vehicle. This detector has higher sensitivity than the portable version and its installation can be absolutely invisible on vehicle. [16]

Another way of measuring the speed is by using laser measurements - LIDAR. Name LIDAR stands for "Light detection and ranging." The basis of this device is a semiconductor laser which uses invisible infrared part of the light spectrum. LIDAR emits rapid pulses against the measured object. Based on the reflected and captured optical pulses it calculates the distance and by its changes in time the velocity of a moving object. LIDAR is, unlike microwave radar, capable of measuring at much greater distance. [16]

Very popular and recently expanding manner is sectional measurement. Its principle is based on the recorded video in real time, on which the vehicle passes the section of communication of already known length. From the time and path is calculated average speed, which is the basis for the detection of speeding. The device is cooperating with a special program capable of recognizing license plate and immediately sort out the vehicle, which committed the violation. [16]

The last mentioned method of speed measurement is system GESIG / POLCAM. This is basically a video recorder installed in civil version of police vehicles in conjunction with the metrologically certified tachometer records the vehicle traveling in front of a police car (in some cases even behind him). Police vehicle adapts its speed to the measured vehicle and records its speed. In case that the distance between the two vehicles do not change or increases if the measured vehicle is in front (decreases if the measured vehicle behind),it’s proved that the measured vehicle travels at least the same speed as the police vehicle. The

punishment is then equal to the speed of police car, because you cannot prove how much faster measured vehicle went. [16]

The only method of measuring the speed, which is not mentioned in publication, is measuring by using induction loops. This method consists in installing two induction loops under the road surface. By driving over loops can be, based on induction of individual loops, calculated speed at which vehicle went. [16]

The publication also describes methods of measuring the speed in other European countries. In the tables are described methods of measurement, frequency of microwave radars and other information. [16]

The last topic is about legality of radar detectors in the Czech Republic. It's referring to the law 361/2000 Coll. where is stated that using of passive detector, which in any way does not affect or do not block the function of the radar, isn't prohibited by any Czech law and therefore is completely legal. Publication very clearly introduces readers to almost all aspects of measuring the speed in purely amateur, but for the general public understandable, form. [16]

Trade with antiradars has fully started in the Czech Republic in 2008. Until then, the sale was negligible. However, in this period the interest in this product began to be enormous. This was due to the fact that the police and the Municipal police started to hardly earn on offenses for speeding in traffic. In this era there were frequently present times when the police measured the speed not for reasons of road safety, but only for the purpose of higher revenues from fines. In an incredibly large percentage of cases the velocity measurement carried out in areas of certain earnings. For example can be used the measurement of the speed at the exit of the village, just before the end of the village road sign. In addition measurement was usually in a place that is quite distant from buildings and in which is zero motion of pedestrians. Another example is the measurement of speed in a limited speed area e.g. due to road work. There would be nothing wrong if the roadworks have not ended a few months ago. Somehow, someone accidentally forgot to delete the temporary reduced speed limit sign, although it shouldn't be there long ago. Simply police officers deliberately searched places that tempts to a slight acceleration.

Rarely officers were seen to measure the speed where it was needed. And that didn’t left driver cold and decided to to solve it by the purchase of detectors that will alert them in the presence of radar. According to a large part of these drivers the reason to buy antiradars is not desire to drive fast and intentionally violate the law, but to ride in peace and smoothly without constant observation of tachometer.

Another main reason for drivers, who resort to buying detectors, is the fact that in many cases the fines enrich private companies. There is documented a number of cases where the city conclude contracts for the supply of stationary radar, sectional measurements and other devices for the supervision of transport respectively for documenting traffic violations. These devices are delivered to them in the form of rent, where a large proportion of fines go to the benefit of these private companies. For cities this kind of supply appears to be economically favorable, because they need not to pay practically nothing. They pay only the minimum rent for each device and then commission from each recovered fine. In many cases it is so that the commission is greater than what remains for the city. As an example, there can be mentioned cities of Mělník, Sokolov, Turnov, Modřice u Brna and more. In several cases occurs situation that the evidence on traffic offenses is taken illegally and then recovered fines are unlawful.

4 Practical part of thesis

In this part of thesis are prepared chapters about income and costs of toll system, income from road tax and effectiveness of road tax, amount of car accidents which connected with amount of motor vehicles registered in the Czech Republic and investments in building road infrastructure. Further is prepared chapter where is seen how much effort drivers put to avoid being fined and chapter with maps where are marked all devices for automatic surveillance in the Czech Republic. Last chapter of this part is focused on unlawful methods used for obtaining finances with real cases.

4.1 The toll system in the Czech Republic

Report of the Supreme Audit Office, which mentioned the costs of operation of toll gates, is surprising. From this report implies that costs during the first 5 years of operation, nearly 50% of revenues. During the years 2007 to 2011, the amount of collected tolls was 31.3 billion CZK, but State paid 15.6 billion CZK for the operation of the gates. For comparison, there are highway stamps, which costs in proportion to revenues reached for the years 2009 to 2011 only 7.4%. In 2010, the amount of collected fees in average was 547.875 million CZK per month. The following year, the amount of collected fees reached an average of 677.183 million CZK per month, which makes an average increase of 23.6% per month during that year. In 2011 and subsequently in 2012 has price of tolls increased by 25%. However, growth of collected toll does not stop in 2010. In January of 2012, there was another increase of 10.6%. This increasing of collected toll also confirms increasing traffic density. In the first quarter of 2012 collected Road and Motorway Directorate of the Czech Republic 2.158 billion CZK. During its existence from 2006 to 2012 earned tolling system nearly 40 billion CZK. [3] [4]

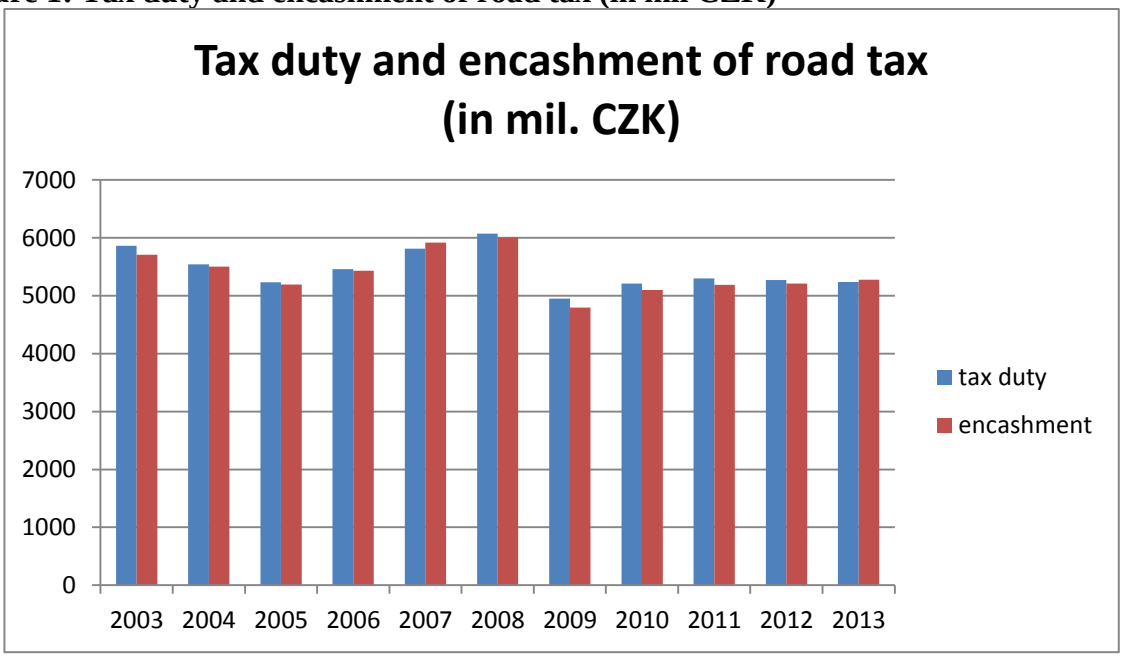
If collecting of finances by toll gates is thoroughly evaluated, it seems that the amounts collected are reaching impressive heights and still grow. The truth is that this system is facing the problem of defaulters. Tolling is the responsibility of the Directorate of Roads and Highways (DRH), control and eventual enforcement is then the responsibility of the Customs Administration. However, DRH signed a contract on enforcing of debts with law office and firm for management and recovery of debts. This contract is signed until 31 march 2015. It's amazing how "beneficial" contracts are signed in the Czech Republic. Based on this contract reached effectiveness of recovery 0.32 CZK, it means that

for 1 CZK of costs state gets 32 cents from toll debt. The effectiveness of field controls and block fining is however even worse. One field inspection by the Customs Administration costs in average 708 CZK, costs of one law offense is then about 3600 CZK and cost of 1 CZK collected from block fine which is 4.6 CZK. That means state pays almost 5 CZK to get 1 CZK back. The exaction of the toll by state is so ineffective, that state should forgive debt and avoid exaction rather than do it. Which of course cannot be done because the legislation does not allow such a procedure and it would end up with nobody paying toll after a while. The second and certainly more significant issue is economics of toll collecting. The costs of toll collecting reach astronomical amounts. These costs are also subject of criticism of the Supreme Audit Office. [4]

4.2 Road tax

The road tax rate for cars is set in the range from 1200 CZK to 4200 CZK per year. The annual reports of the financial administration of the Czech Republic show that in the period from 2003 to 2013 was determined by financial offices in average nearly 5.45 billion CZK. From 2010 to 2013 is average income 5.254 billion CZK per year. The amount of road tax in the last four years remains almost unchanged, as shown in the following graph: [5]

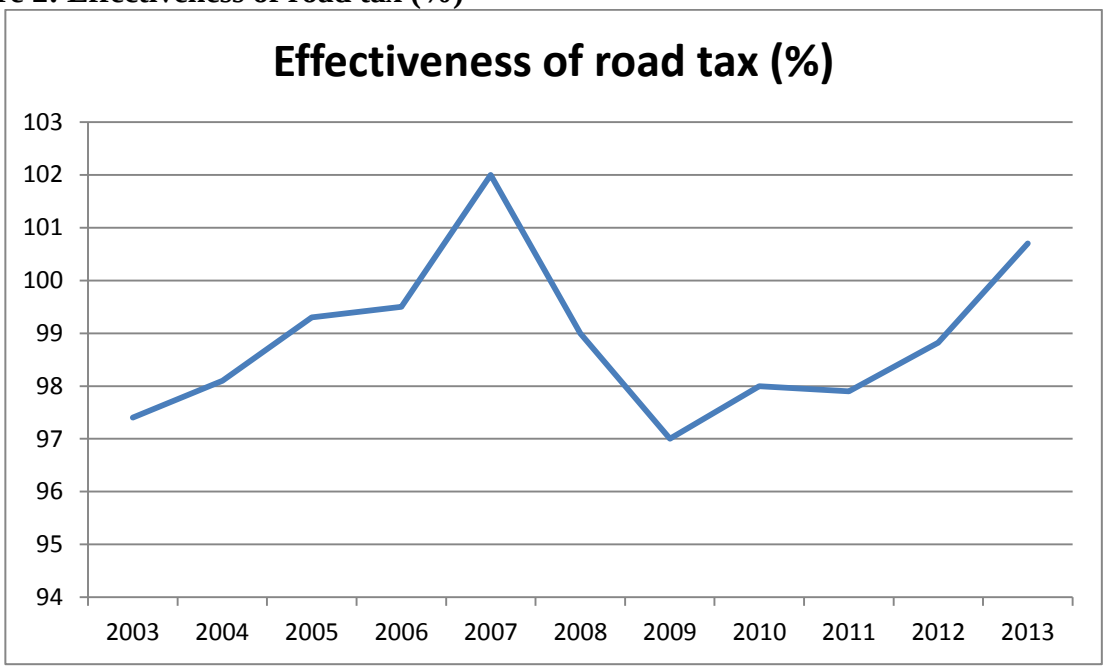
Figure 1: Tax duty and encashment of road tax (in mil CZK)



source: own (data [5])

Effectiveness of road tax collecting has a very nice average of 98.9% of the prescribed tax. Collecting over 100% of the prescribed tax is not due to the fact that taxpayers pay more than they have to, but by collecting of arrears from previous period. This result will be very difficult to achieve in all other areas of income from traffic. Income from road tax significantly dropped in 2009 due to economic crisis.

Figure 2: Effectiveness of road tax (%)



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4.3 Amount of car accidents

Table 1: Amount of car accidents in the Czech Republic on all roads

Amount of car accidents in Czech Republic on all roads										
year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
car accidents	196484	199262	187965	182736	160376	74815	75522	75137	81404	84398

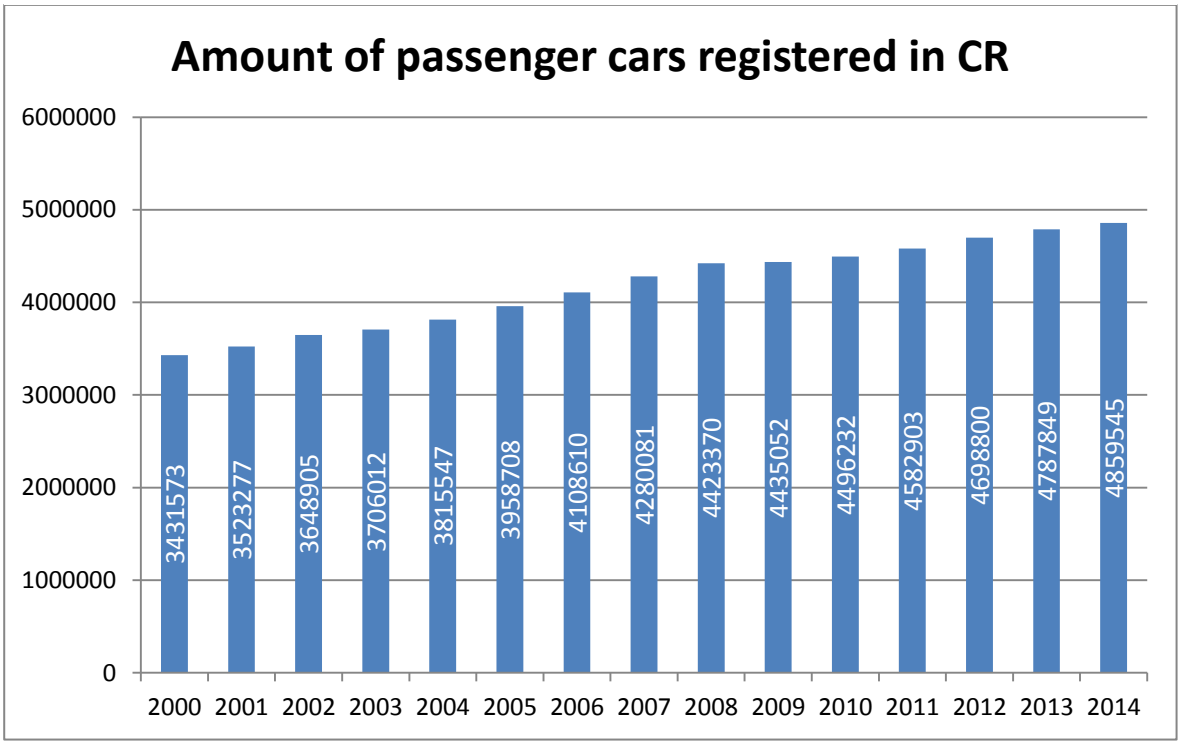
source: www.policie.cz (2014)

Amount of car accidents is closely connected with increasing amount of cars and investments to infrastructure. It is important to realize that from 1 July 2006, the amendment to Act No. 361/2000 Coll. changed the obligations to report traffic accidents from the original amount of the damages of 10 000 CZK to 50 000 CZK. Moreover from 1 January 2009, this limit actually another amendment increased to 100 000 CZK. This means that an accident in which the damage was less than 100 000 CZK, the driver do not

report to police and it saves money for departure of police officers. These accidents thus mostly disappeared from the statistics, but it does not mean that they did not happen. If years 2008 and 2009 are compared, amount of accidents to which were police units departed dropped to less than half. In other words, costs of departures were in 2008 more than twice as big as in 2009. By this increase of damage costs is Police saving millions CZK every year. Conversely, it is seen that the number of reported and thus recorded accidents in the past five years, is slowly growing. Costs of car accidents in 2010 were over 53 billion CZK. This means average cost about 700 thousands CZK. As it can be seen in chapter 4.3 amount of registered cars is increasing even slower. One reason, why is amount of reported accidents increasing, is fact that drivers own more expensive cars and so repairs are more expensive. Other more important reason is fact that road infrastructure is not developed fast enough and traffic density is increasing every year. [21] [25]

4.4 Registered motor vehicles in the Czech Republic

Figure 3: Amount of pasenger cars registered in CR

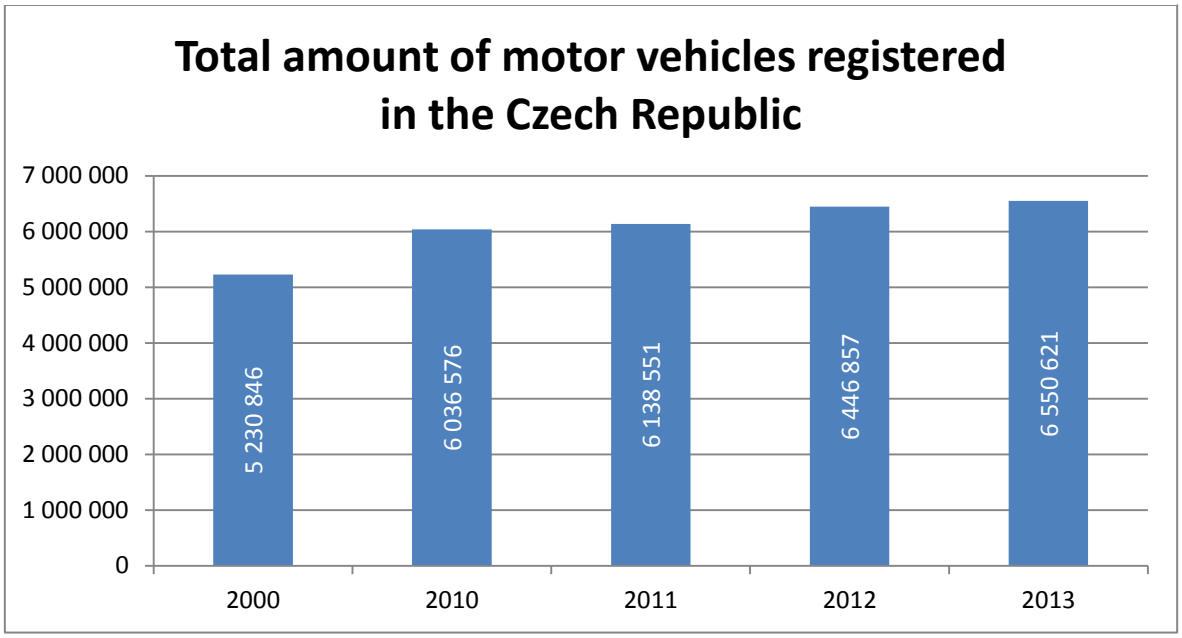


source: own (data [8])

Amount of registered passenger cars is constantly increasing. Amount of passenger cars is about 41% higher than it was in 2000. If we look at the status of all motor vehicles

registered in the Czech Republic, we see that the percentage increase is lower (increase by about 25% since 2000). That means that vehicle owners are registering more passenger cars than motorcycles, trucks etc.

Figure 4: Total amount of motor vehicles registered in the Czech Republic



Source: own (data [9])

Information on the total number of registered vehicles at different sources differs slightly. It is due to the transfer of registration of vehicles to another manager. By 2012, records were led by Ministry of Interior and from 2012 the Ministry of Transport took over the records. Differences in the numbers are resulting from use of other software with different converting algorithm of vehicles status. Differences however are not essential. Thus there is no need to deal with it.

4.5 Investments in infrastructure

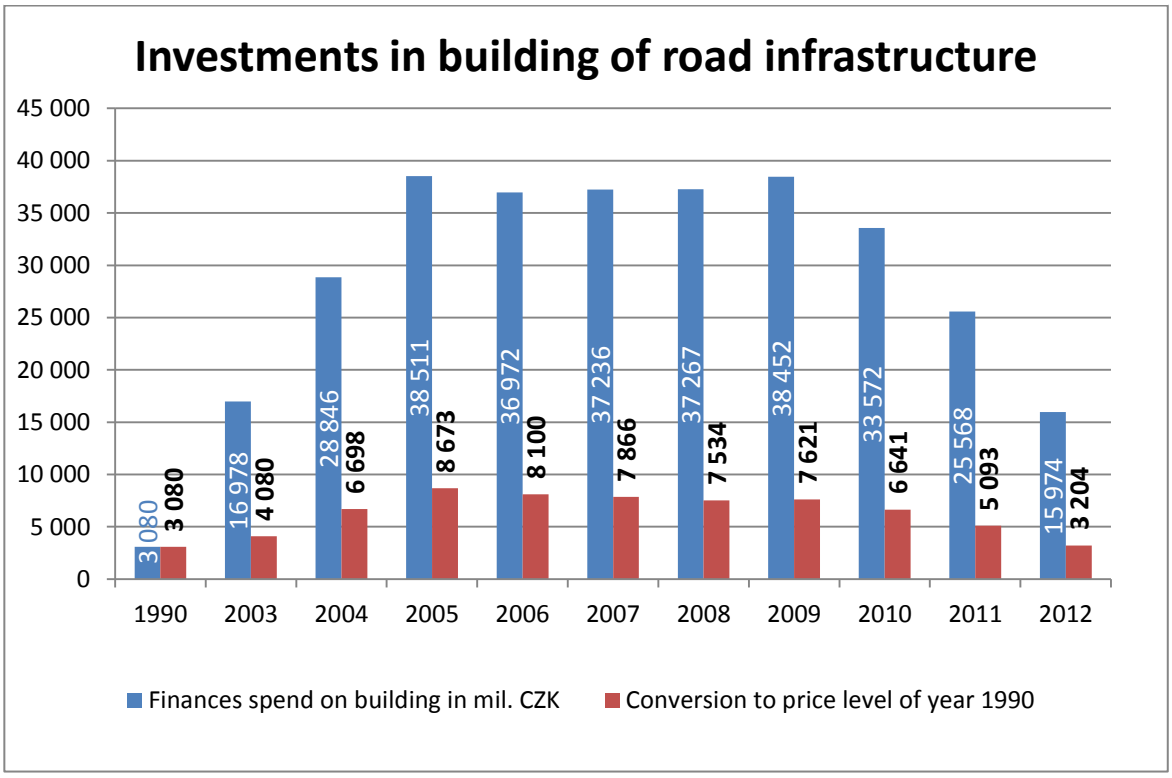
Here is clearly reflected the increasing traffic density, because the development of the infrastructure is insufficient and it is not able to copy an increase in the number of vehicles. Also, the quality of communications is constantly subjected to criticism. In many ways, we wanted to compare with our neighbors (Germany, Austria), but we do not know how to think economically. For example, the construction of highways in our country costs by about a quarter more than in Germany. And what is worse, quality of work is often poor. Investments in highway and road system are not high and at high prices of construction it

is clear that amount of work done decreases. According to the publication of Directorate of Roads and Highways "Silnice a dálnice v České republice" is the development of invested funds in the construction really negative, especially in recent years. [10]

Especially striking detail is the value of investments converted to the price level of 1990. It is a calculation based on data from the Czech Statistical Office, where are investments reassessed with respect to the prices of materials and labor from 1990. According to this comparison investments in 2012 were essentially identical like in 1990. But 22 years ago, in the Czech Republic was registered about 4 million motor vehicles, which is about 2.5 million less than now. [9]

This low level of investments is probably attempt of government to save funds for other purposes. However, by this move government let traffic density grow. Higher traffic density results in faster decrease of quality of roads. Both traffic density and quality of roads directly affects amount of car accidents and thus costs connected with them. In other words, government saves money only to pay for consequences of this decision.

Figure 5: Investments in building of road infrastructure

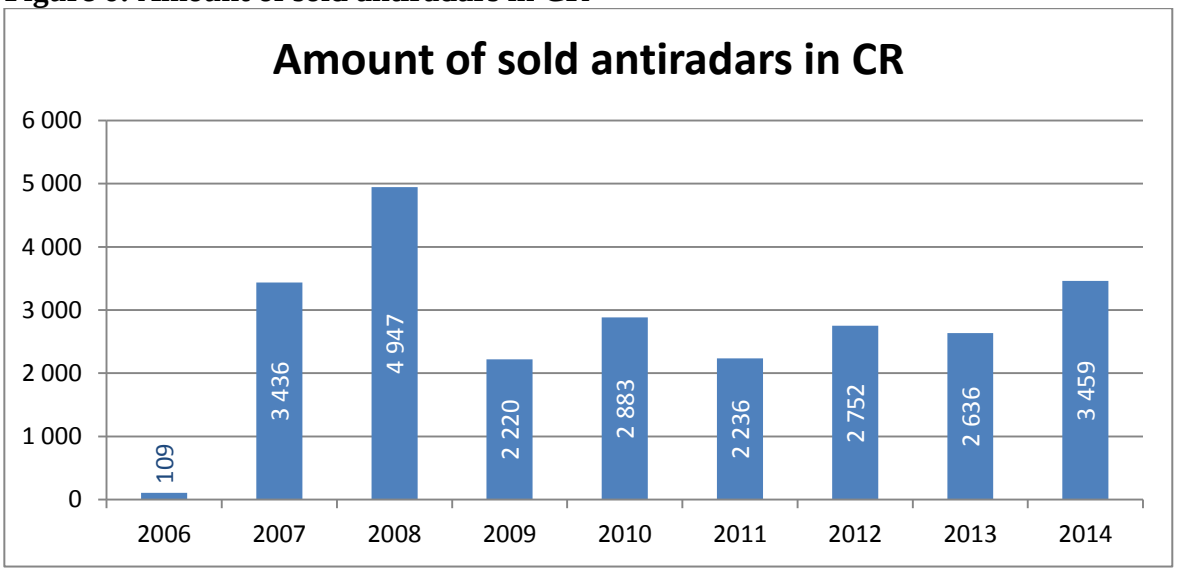


Source: own (data [10])

4.6 Antiradar business in the Czech Republic and income from fines

Another way of increasing income is collecting of fines. Amount of traffic offenses is growing due to increasing traffic density. After 2006 when point system for drivers started, drivers increased effort to avoid being fined and prevent loss of license.

Figure 6: Amount of sold antiradars in CR



source: AntiRadary.NET s.r.o.(2015)

State and municipalities are not the only ones who are making profit from road transportation and traffic offenses. Effort of drivers to avoid fines for going faster than speed limit allows or effort to avoid loss of driver license is so high that business with speed measuring radar detectors expanded to Czech Republic.

Sales of radar detectors developed rapidly, as shown in the graph. These data are from the exclusive distributor of brands of radar detectors Beltronics, Escort, Genevo, Protector and Antilaser for the Czech Republic. As the graph shows, after a rapid increase in sales in 2007 and 2008 there was a significant decrease due to the global economic crisis in 2009. After that the sales remained between about 2200 and 2900 pieces. Then in 2014 sales increased again, by about 31% compared to previous year, which got them on second place in history. According to the seller it is a reflection of the re-deployment of more and more speed radars and, in addition, the slow fading out of the economic crisis. Quantities sold do not seem large, but it is necessary to look at the whole thing as the fact that almost 25,000 drivers paid rather amount between 10 000 and 100 000 CZK in order to avoid the

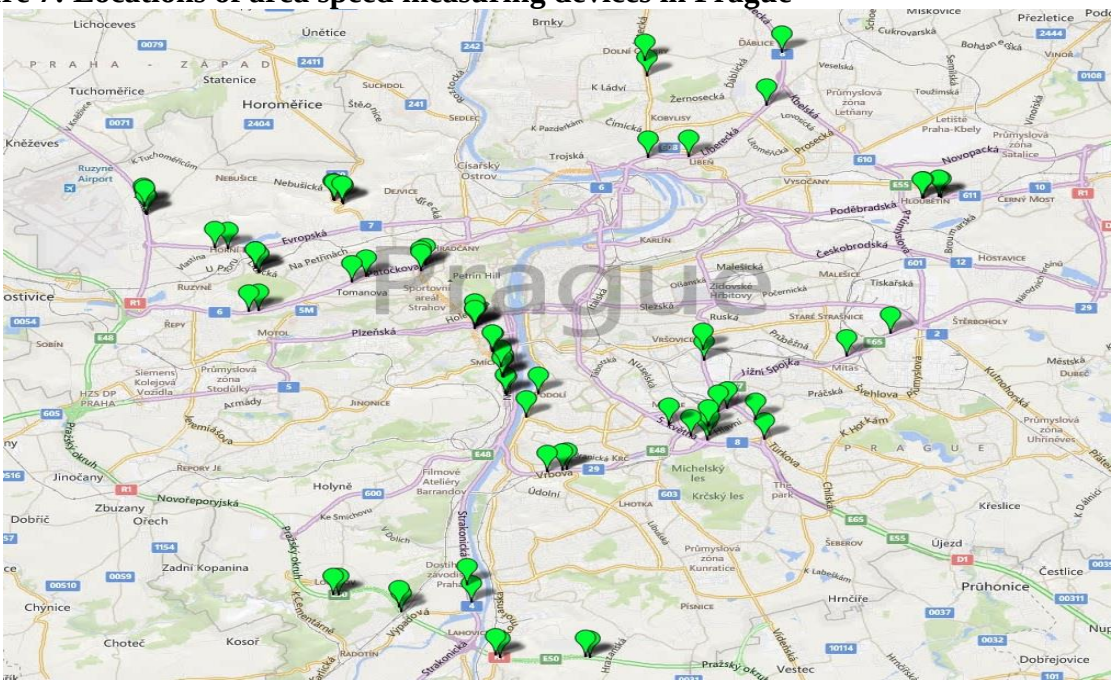
"badgering" by the police. Why our legislators do not prohibit using of it? After all in almost all other countries is using of detectors prohibited, in some countries is actually forbidden even simple possession of this device. That is probably the fact that our legislators recognize the right of every citizen to access information. So if someone only gets information about the measurement of the speed, he cannot be prohibited from such information or other way restricted in obtaining this information. And it is also obvious that sales of detectors from the state's perspective are not so high that anybody intended amendments to laws. Well, the number of drivers with a detector far less than 1 per mille of all drivers.

4.7 Devices for automatic surveillance

Devices for automatic surveillance have primary objective to increase safety on roads. Fact is that they provide also high income from collected fines based on its records of traffic offenses is clear. Nowadays are these devices used rather for obtaining finances than to increasing traffic safety and traffic safety becomes secondary instead of primary objective, which is also confirmed by locations where these devices are installed. Cost of 1 automatic surveillance device is about 1.3 million CZK.

4.7.1 Locations of area speed measuring devices in Prague

Figure 7: Locations of area speed measuring devices in Prague

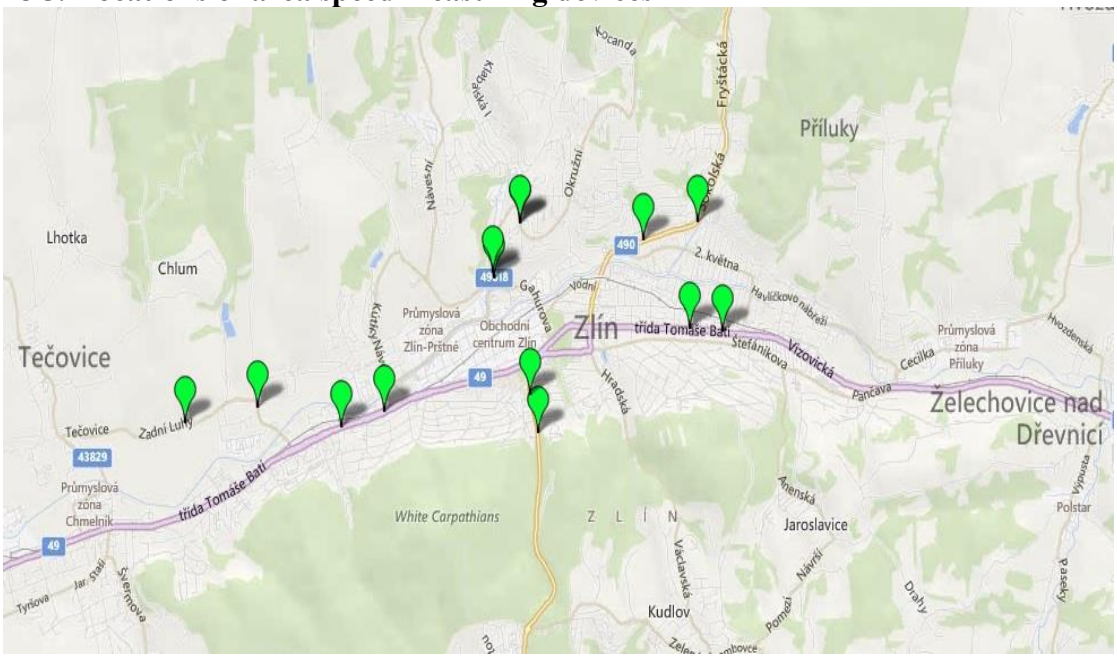


source: own (data: AntiRadary.NET s.r.o.)

The highest number of area speed measuring devices in the Czech Republic is located in Prague. Only 12 of these devices are located on roads where can go pedestrians. All other devices are on more-lane roads where is restricted enter of pedestrians. On the other hand, roads, where is highest movement of pedestrians and which should be equiped by measuring device for increased safety of pedestrians, are still without surveillance. Here is seen clear goal of speed measuring. Obtain finances from drivers on roads where is restricted enter of pedestrians and where drivers exceed speed limit much more often than in strees full of pedestrians.

4.7.2 Locations of area speed measuring devices in Zlín

Figure 8: Locations of area speed measuring devices in Zlín

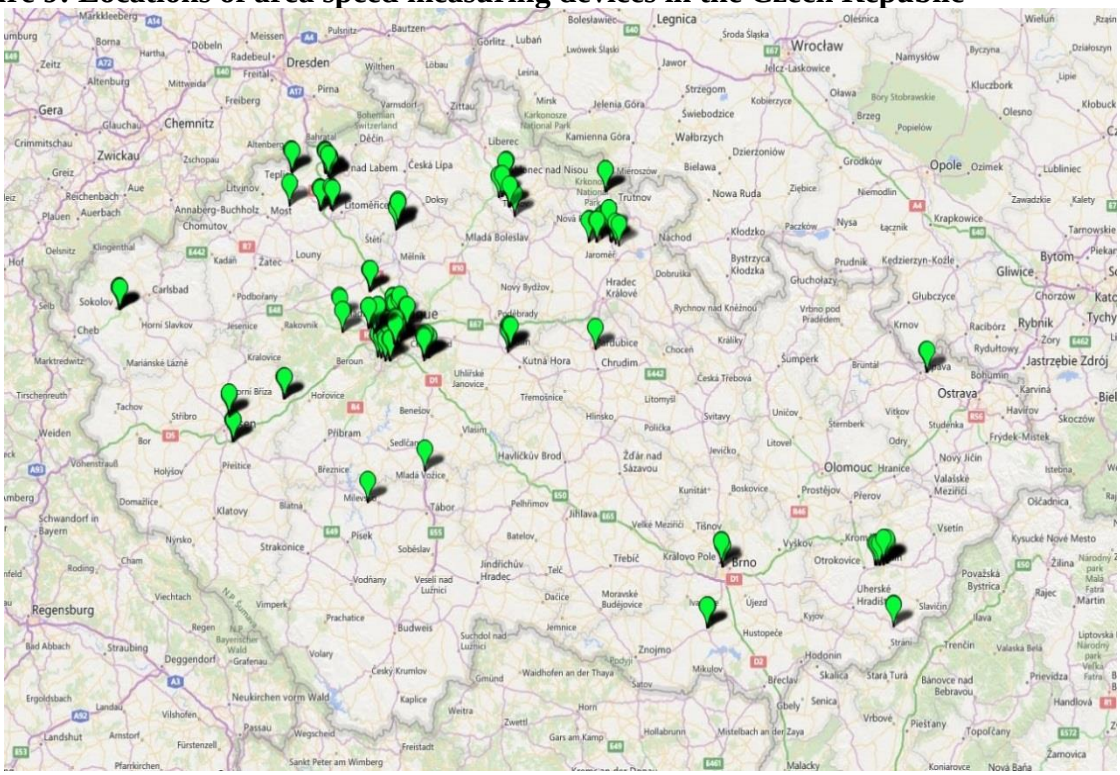


source: own (data: AntiRadary.NET s.r.o.)

As an exact opposite of Prague can be considered Zlín city. Zlín is a city where is highest amount of surveillance devices in the Moravia and second highest amount in whole Czech Republic. Here can be seen completely different attitude to efficienty of area speed measuring devices. Devices are primary installed on main highways and in direction to city with clear goal: slow vehicles at the start of populated area so vehicles reach centre of city at allowed speed.

4.7.3 Locations of area speed measuring devices in the Czech Republic

Figure 9: Locations of area speed measuring devices in the Czech Republic

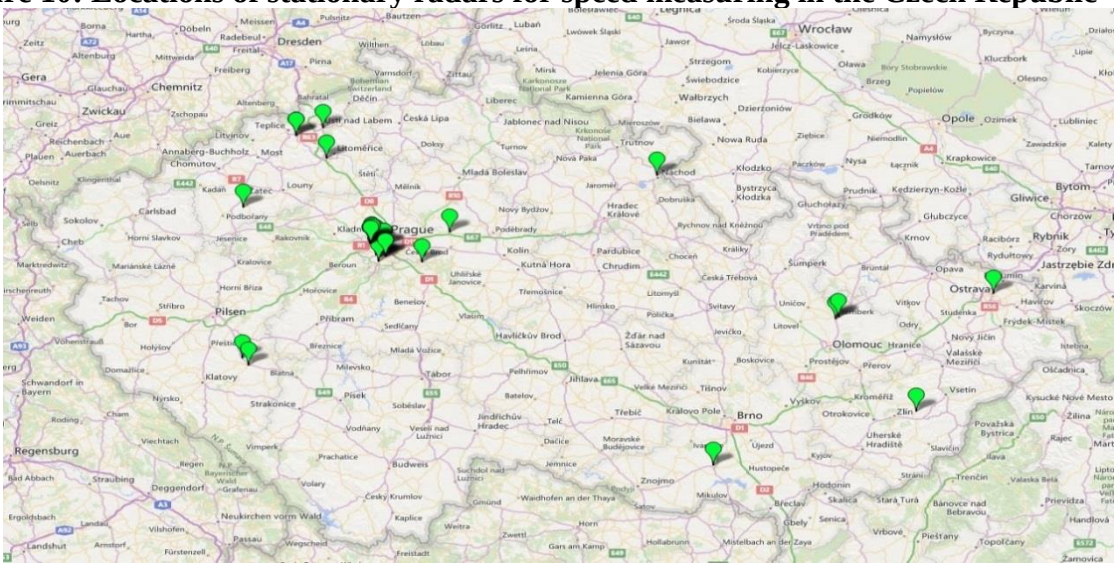


source: own (data: AntiRadary.NET s.r.o.)

There are 87 area speed measuring devices in the Czech Republic, 37 of them is in Prague. From looking at the map it might look like there is lower amount of them. It is also necessary to explain that some measured areas are at both directions of road and some are directly continuing (end of the area is start of next one at the same time). Here is clearly seen that area speed measuring devices are used only in several regions. Many big cities, such as Ostrava, Hradec Králové, České Budějovice and others, chose obviously completely different method of surveillence of traffic security. From the map is also clear that Bohemia is using area speed measuring devices much more than Moravia. Question is when will be Moravia filled with these devices or if it ever be filled. For now there are no planned instalations.

4.7.4 Locations of stationary radars for speed measuring in the Czech Republic

Figure 10: Locations of stationary radars for speed measuring in the Czech Republic

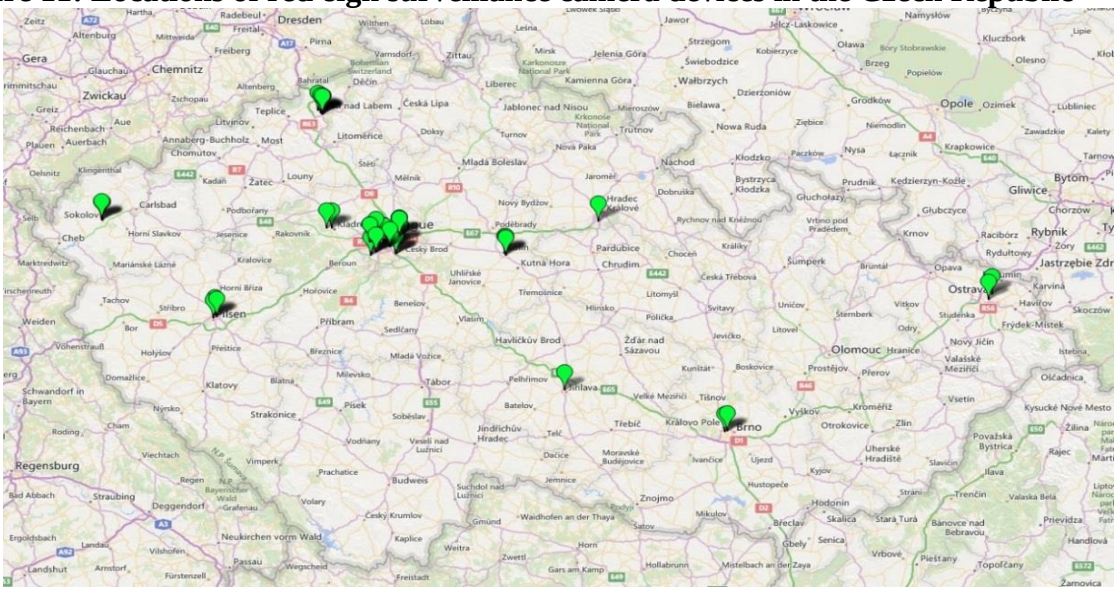


source: own (data: AntiRadary.NET s.r.o.)

The deployment of stationary radars is very similar to deployment of area speed measuring devices. In matter of number, stationary radars have lower usage. More specifically, for surveillence and possible fining of drivers is used 31 of them. It is perhaps due to the fact that the stationary radars are obliged by law to go through regular certification, which brings additional costs.

4.7.5 Locations of red-sign surveillance camera devices in the Czech Republic

Figure 11: Locations of red-sign surveillance camera devices in the Czech Republic

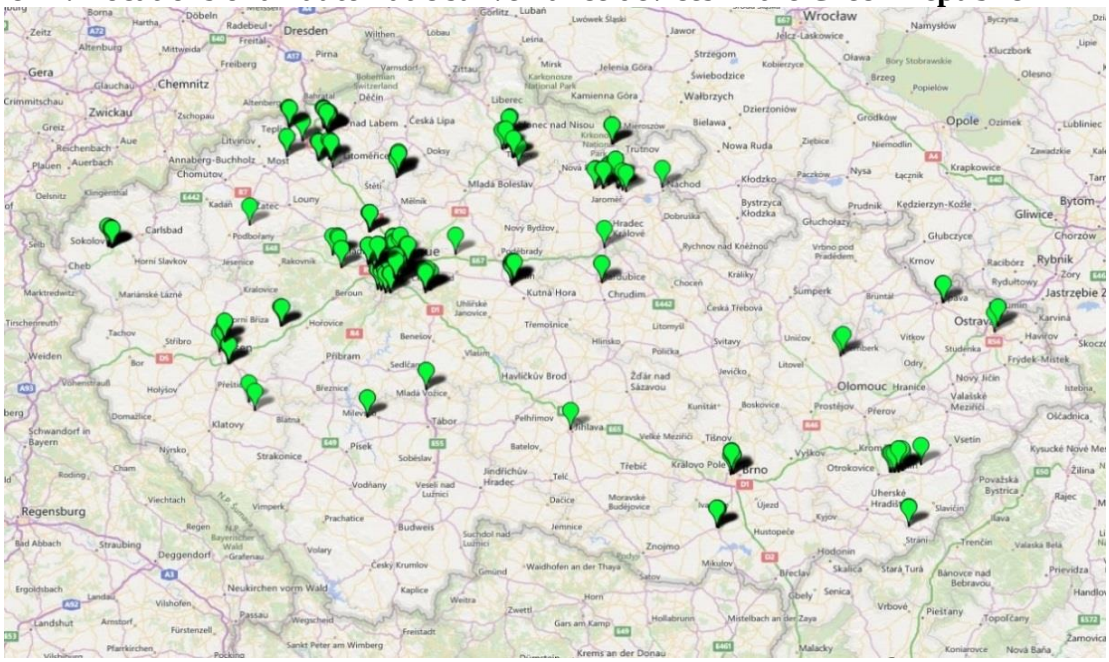


source: own (data: AntiRadary.NET s.r.o.)

Number of cameras, which are guarding ride on red, is especially recently increasing. The map shows that practically the same cities, which operate other devices, choose also this type of surveillence.

4.7.6 Locations of all automatic surveillance devices in the Czech Republic

Figure 12: Locations of all automatic surveillance devices in the Czech Republic



source: own (data: AntiRadary.NET s.r.o.)

From an overall perspective on all surveillance devices is evident that highest density is obviously in Prague, then around Ustí nad Labem and Teplice, and finally in Liberec region. Vice versa in South Bohemia hit on no such device for now. There are preparations for installation of stationary radar between Chotice and Tábor in 2015. From perspective of traffic safety, these devices do not increase it significantly. Proof of that is chapter 4.3 and increasing amount of car accidents.

4.8 Practice in conflict with legislation

Effort to obtain finances and increase income can be seen everywhere and in many cases goes this effort side by side with illegal or unlawful practice. This applies not only to private companies but also to municipal police. Municipal police officers are using citizen's ignorance of legislation to obtain finances. They are consciously unlawful methods to do it.

First concrete example of unlawful recovery of fines, which is currently the most famous, is the case of measurement of the speed performed by the city Turnov. The city signed a contract for the supply of equipment for measuring speed by Czech Radar s.r.o. This company has installed in Turnov and in neighboring municipalities (Radvánovice, Ktová etc.) falling under the administration of office Turnov several stationary radars. Right this company then processed the acquired data and delivered directly to the municipal office in Turnov suggestions for recovering fines from drivers. These were then sent directly to the owners of vehicles. Here it should be noted that this procedure is unlawful for several reasons. Firstly Municipal Police does not have the right to delegate its own measurements to the third party. This procedure is a violation of the law on protection of personal data. Private company had accessed data on the vehicles that have committed an offense and that was at least in the form of vehicle license plate, photographs of these vehicles and their drivers or passengers.
Quite a long time the officials went through because drivers unfamiliar with the laws and without sufficient information on the method of measurement did not protest. After some time, one of the drivers spoke and didn't let the incident pass without defense. The case came to the Supreme Administrative Court, which decided by its resolution that the evidence was obtained in violation of the law and as such cannot be used. It was a precedent decision, which should give a very clear way how cities should proceed. Unfortunately, the city Turnov even long time after that judgment continued illegal enforcement of fines because of revenue that fines provided to them and they were not going to give up on that. Officials did not continue in enforcement of fines only at drivers who speak up against the administrative proceeding and silently let specific case until it was forgotten. Later, the city amended the lease agreements for speed measuring devices, but it did not help it. Even when they tried to defend their actions, the Regional Court in Hradec Králové always agreed with the driver or his counsel. Consequently there was a repetitive filing a cassation complaint to the Supreme Administrative Court, which has repeatedly rejected the complaint with reason that the evidence was taken illegally and fines are not recoverable. [10]

Another example is the measurement of the speed of the Municipal Police Modřice u Brna. In this municipality is not installed any stationary radar or area speed measurement. They use the services of a private company that has radar installed in the civil vehicle. Unfortunately it cannot be, in any legal way, found out to whom the vehicle belongs, or to whom it is registered. What was found out is how the vehicle looks, its license plate and then photo was taken.

Figure 13: Photo of civilian vehicle used for unlawful speed measuring

source: own

In this civilian vehicle is sitting according to the words of the city Modřice always one Municipal police officer and one employee of private company DOSIP s.r.o., Třebíč, which owns device installed in this car (and presumably also owns vehicle). It is a device Traffipax SpeedoPhot II. and objectively must be said that, as such, it has a valid certification of the Czech Metrological Institute. This device is therefore capable to measure the speed. However, the method of measurement is again in conflict with the law. The Ministry of Interior issued regulation no. 418/2008 Coll., which implements Act 553/1991 Coll. about the municipal police. Act about municipal police relies on this regulation, therefore it is at the level of the act itself - it is an implementing regulation.

From this regulation is clear how the police officer and vehicle used for the operation must be identifiable. Under the existing legislation, if the municipal police, respectively the officer that carry out tasks under the Act on Municipal Police or another law (eg. Act no. 361/2000 Coll., on the road, as amended), must the officers uniforms and identification of vehicles of municipal police contain elements which provides for the Ministry of the Interior regulation. The red color vehicle without any signs fails to comply with legal requirements and shall not be used to perform tasks of municipal police officers. This vehicle does not meet either the diction of § 15 section 5 and § 16 of the regulation of the Ministry of Interior, which contain certain exemptions from generally desired range of uniform elements, especially in the so-called temporary municipal police vehicles. Czech Ministry of Interior confirms this interpretation of the Act in its report issued under ref. MV-37461-2 / OBP-2012. [12] [24]

Here it should be emphasized that police officers carry measuring of speed by method with which is familiar even Mayor of the City Modřice. He is legally commander of municipal police. It is absolutely impossible for police officers even their commander to not know the laws that directly affect them. Especially not to know laws which directly determine their duties. But still they keep measuring of speed in this way and enforce the fines from drivers. The only thing that matters in Modřice is earning of finance. How the city gets to it is completely irrelevant. It is unfortunately Czech bad habit that some officials, police officers and policemen think they can do whatever they want and as long as someone does not make an end to it, they will do what they want.

4.9 Summarization of income and costs

In summarization table are factors that directly affect state, cities or municipalities.

Toll system income in 2012 reached nearly 720 million CZK per month however costs were nearly 360 million CZK per month. 50% of income is paid to cover costs.

Road tax income in period from 2003 to 2013 was in average 5.45 billion CZK per year. Income in period from 2010 to 2013 was in average 5.254 billion CZK per year. Difference in averages is 0.196 billion CZK per year which reflects economic crisis in 2009.

Car accidents costs in 2010 reached 53 billion CZK. Amount of car accidents reached 75 522 that year, respectively 75 522 car accidents were reported and recorded. Damages of these car accidents were thus higher than 100 000 CZK. If there was no increase of damage limit in 2009, costs would probably be twice as high as they were.

Investments in building road infrastructure were in 2012 nearly 16 billion CZK. If these investments are converted to 1990 price level, it is 3.204 billion CZK. That is only by 0.114 billion CZK higher than it was in 1990. However investments in 2009 when economic crisis appeared were 38.452 billion CZK. In 1990 price level it is 7.621 billion CZK. This results in decreasing of quality of road infrastructure. From 2003 to 2012 was invested 309.374 billion CZK, that is in average 30.938 billion CZK per year.

Automatic surveillance devices income is classified information due to close connection to traffic offenses and protection of personal data. However costs of these devices are available. Cost of 1 device is 1.3 million CZK. In Czech Republic is 87 area speed measuring devices, 31 stationary radars and 47 red-sign cameras. Costs of area speed measuring devices are 113.1 million CZK, stationary radars cost 40.3 million CZK and red-sign cameras cost 61.1 million CZK. Total costs paid reached 214.5 million CZK.

Table 2: 5 factors affecting income and costs of state, cities and municipalities

Toll system		2007 - 2011	2010 per month	2011 per month	2012 per month	2006 - 2012
	Income	31.3 billion CZK	547.875 million CZK	677.183 million CZK	719.334 million CZK	nearly 40 billion CZK
	Costs	15.6 billion CZK	273.938 million CZK	338.592 million CZK	359.667 million CZK	nearly 20 billion CZK

Road tax		2003 - 2013 average	2010 - 2013 average
	Income	5.45 billion CZK	5.254 billion CZK
	Costs	-	-

Car accidents		2010	2010 average per accident
	Income	0	0
	Costs	53 billion CZK	701.782 thousands CZK

Investments in infrastructure		1990	2009	2012	2003 - 2012	2003 - 2012 average
	Income	0	0	0	0	0
	Costs	3.080 billion CZK	38.452 billion CZK	15.974 billion CZK	309.374 billion CZK	30.938 billion CZK
	Costs in 1990 price level	3.080 billion CZK	7.621 billion CZK	3.204 billion CZK	65.510 billion CZK	6.551 billion CZK

Automatic surveillance devices		per device	area speed measuring	stationary radar	red-sign camera
	Income	-	-	-	-
	Costs	1.3 million CZK	113.1 million CZK	40.3 million CZK	61.1 million CZK

source: own

5 Conclusion

When evaluating each of the areas examined from the taxpayer's point of view, one has to be concerned about it.

Toll collection seems to be very profitable, but the efficiency is low. What cannot be evaluated is the contract with Kapsch from the legal view, but even to the layman it must be clear that revenues for the operator of toll gates are unreasonably high. Bad habit of concluding of disadvantageous contracts by the state is seen almost everywhere and it's very unpleasant picture of our policies. Outwardly, the political scene in the Czech Republic pretend that it always wants to reduce government borrowing, adapting the laws to it, but on the other hand, concludes government contracts that cannot leave a man cold. Perhaps noone except politicians and high managers of state institutions cannot imagine an expert report whose value is higher than 110 million CZK. On the one hand can be heard and read in the media that the state is facing a shortage of funds and therefore constantly need to modify the legislation, on the other hand we continue to meet with government contracts, in which is their financial disadvantage to the state obvious at first sight.

To road tax, specifically to its rates and selection cannot be said anything negative. Its amount is balanced in all categories of vehicles and one can say that it is not subjected to criticism. Apparently this is also a prerequisite for almost 100% collection and minimum of irrecoverable arrears. Road tax is also one of the few state revenues from transport, which is not subject to significant changes, apart from adjustments in benefits for vehicles that fulfill individual emission limits. Road Tax Act is also one of the few Acts in the Czech Republic, which is composed clearly and is well structured. The rules for taxpayer are determined in a way that allows only one interpretation and almost nobody has a problem with compliance of this Act.

Consumption tax on fuel is the exact opposite the road tax. Speculative recent increase of this tax did not bring the expected result by Czech politicians. However, it brought the expected results by renowned economists. Sales of fuel have significantly dropped, mainly due to the reduced number of foreign customers. Thanks to this state lost and continues in losing of large amounts of money. The fact that politicians know about the whole problem is clear. Fact that they do not want to solve the problem is however striking. This means

that in this case policy exceeds the economic interests of state. Politicians will rather not act efficiently, just to make sure that their opponents will not obtain affection of large part of the electorate. The reduction in consumption tax on fuel would bring economic benefits and this move would be certainly welcomed by everyone. In addition, this reduction is entirely within the competence of the state and does not contradict any European directives. There is no other way but to recommend to politicians to rise above the contradictions between the different parties and finally agreed that a good change in the law does not necessarily mean an increase in voting preferences of a particular party, but also increase of trust in politics globally. Both government and opposition parties could make a profit from it.

Investments in building of road infrastructure are nearly at same level as in 1990. Due to poor quality of roads and its repairs, state is paying for same roads and highways every year. This leads to lack of invests in building new roads. That is also reason why road infrastructure in the Czech Republic cannot keep pace with increasing amount of vehicles which is main reason of increasing traffic density. Higher traffic density provides main source to many effects which creates a never-ending cycle. In concrete terms, poor quality of roads leads to expensive every year repairs. Every year repairs slow down expanding of road infrastructure. Low level of road infrastructure is reason of increasing traffic density. Traffic density leads to faster damaging of roads and higher amount of car accidents. Due to this are necessary repairs and cycle starts again. Additional effect of this cycle and increasing of amount of car accidents is decreasing of traffic safety. Police has to solve more accident cases and thus is not elsewhere. Only thing that can end this cycle is increase of road quality. But that will result in lower income for companies which are repairing road and nobody will voluntarily weaken his source of money. If government won’t solve this problem soon, road infrastructure might collapse.

Fines as a source of finance should be evaluated in two levels. The first is income of Police of Czech Republic. Here can be said that the supervision of traffic on the roads is greatly attenuated in cities and municipalities. It's probably due to the rise of the municipal police, which has extensively adopted monitoring and sanctioning traffic offenses. Police of Czech Republic mainly deals in road transportation with accidents. The fines imposed in these cases rather cover the cost of its own act, i.e. departure of patrols and administration

associated with the accident records. Here can be concluded that in the case of Police of Czech Republic and in its activities there are not noticeable efforts in the field of road transportation for the economic benefits. In this case, it really is an activity paid from the state budget aimed at supervising of compliance with the law in general. And that's fine. It is not possible that it was always just about financial gains. In many cases municipal police behaves somewhat differently. It cannot be globalized and nobody can claim that all municipal police officers are doing their job poorly and their only goal is financial benefit for the municipality in which they are on duty. It would be very shortsighted. But the truth is that in some cities are activities of police officers not seen and if so, it is precisely during imposing fines for traffic offenses solved only by automatic systems. In some communities, the police officers are almost not seen and one becomes aware of their existence only in case he gets invitation to pay a fee for the offense. If a municipality wants to avoid offenses in their cadastre and increase safety on the roads, police officers should be seen more on the streets and causing mainly preventive. Yes, it could reduce the financial benefit of the municipality, as this could lead to a reduction in the number of offenses and lower income for municipality, but it would definitely raise respect to municipal police in the eyes of the citizens and also would improve view on the activities of police officers. In this case, political pressure on the economical aspect of activities should go to seclusion.

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