

ENVIRONMENTAL POLICY IN CAR TAXATION

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Abstract:

This article monitors situation of environmental aspect related to taxation of buying a passenger car. First we distinguish an environmental car from less eco-friendly vehicles with focusing on importance of electricity in modern vehicles. Nowadays, implementation of electricity dominates in technological trends, which are used by car makers for reducing of emissions. Cars with lower are required because of environmental taxes, which are mainly oriented on passenger cars. These taxes are usually based on level of emissions of car and can motivate people to buying an environmentally friendly car. Besides these special taxes some countries use subsidies to convince people to buy for example batter electric vehicle. These instruments (especially taxes and subsidies) related to buying a new car used by chosen EU countries monitors the main part of article.

Introduction

Nowadays we are witnesses of new policy directions that focus on environmental problems. Especially in the European Union there is tendency to reduce emissions of all entities on its territory. Even this issue of air pollution poses one of the main pillars of the activities of EU institutions. This attitude also affects policy of EU member states because they have an obligation to respects this policy and integrate into their own legislation. At this point it is important to note that many governments of EU states create their own special laws focused on environmental problems. Overall governments want to convince (or in some cases coerce) people to act environmentally friendly. One of the conventional methods, how to effectively influence behaviour of people, is change of taxation.

Focused on life of normal people it is evident that passenger cars are most common air polluters owned by households. If politicians really tend to reduce emissions, they change the taxation of cars. This change is characterized by progression of taxation depending on level of emissions of particular vehicle. There are a lot of compounds which are produced by cars, but the most of countries deal with CO₂ emissions. This

approach means that tax laws rate cars by the amount of emissions of carbon dioxide per kilometre. This solution is really one-sided because carbon dioxide is not the only pollutant and for example the EU directive includes regulation of all key pollutants which are produced by passenger cars. EU directive is primary important for car makers and car dealers but secondary it influences what people buy because they cannot demand cars which no dealer offers. On the other hand, tax legislation influences mainly buyers because it increases (or decreases) the amount of money which is required to buy a vehicle. Finally, people are by this legislation motivated to buy environmental friendly car or not to buy a vehicle that produce a lot of emissions.

1. Environment-friendly cars and taxation

It was mentioned that EU directive changed market because car makers are forced to produce more environmental friendly cars. Car makers have to decrease emissions of their production line so they tend to research and develop new powertrains which can help them reach the goals of legislation. First way is, of course, to make conventional engines more efficient. This attitude brings for example start/stop system or diesel particulate filter. Other attitudes are conditioned by radical change of powertrains. These changes usually include some implementation of electricity into the powertrain.

This use of electricity can be combined with classic petrol or diesel engine; in these cases, they are called hybrids. There are three types of hybrids which differ from one another in the importance of electricity in the drivetrain. First of all, there is a mild hybrid which uses electric motor in some specific cases when driver needs more power. Electric motor is in this type of hybrid really weak, so it means that vehicle is not able to drive with using only the power form of this small electric motor. Another solution is called as full hybrid; this type of car has small only electric range (only few kilometres) and for charging batteries use only recuperation. On the other hand, plug-in hybrids are charging from power network and their electric range can be few tents of kilometres. These cars also have petrol engine for greater range. Finally, battery electric vehicles are cars, in which is electricity implemented in the broadest possible way and electric power is the only available because there is no petrol or diesel engine.

There are also few issues with implementation new environmental laws because of the controversial content. First of all, some people can disagree with environmental laws, especially when they change taxation. Environmental taxes can reduce budget of people, so they affect standard of living in particular country. It is very important, for successful application of environmental taxes, to convince the public of the rightness of the decision. Niklas Harring and Sverker C. Jagers (2013) have analyzed this problem of values of people. They emphasize that “unless there is a public acceptance of these policy instruments, they will seldom be successfully implemented, or be implemented at all.” (Harring & Jagers, 2013) Negative approach from public can ruin the effort of government to change public behaviour to make environmental decisions.

Other complications can arise when setting up rules environmental taxation because there is a variety of approaches and it is difficult to forecast the impacts of implementation different taxation systems. The following paragraphs outline situation in several EU countries because environmental legislation can have different background with various effects.

One of the most common attitudes to taxed non-environmental friendly cars is taxation based on the amount of CO₂ emissions. This approach is associated with registration tax, which amount is calculated depending on the level of carbon dioxide emissions. Another way can be characterized by “bonus-malus” (good-bad) system, for which is typical that this registration tax is not levied on cars with low level of emissions (or buyers even get subsidy) and, on the other hand, cars with higher level of emissions are taxed with higher tax rate. Other option for governments is motivated by subsidies for environmentally friendly car buyers.

2. Ireland

There is a relatively long tradition in environmental vehicle taxes based on emissions in Ireland. This taxation aims to reduce CO₂ emissions by changing consumers demand. Concretely, “the carbon emissions-differentiated vehicle tax system introduced by the Irish government in July 2008 was predicted to result in a 3.6–3.8% reduction in CO₂ emissions intensity.” (Giblin & McNabola, 2009) First studies of its impact were applied in 2011, when this type of research was made by Hugh Hennessy and Richard S.J. Tol (2011). They have identified, that whole environmental tax reform “*has led to a substantial shift to diesel cars, particularly for larger engines. We estimate that the overall market share of diesels will increase from 25% to 58% as a direct result of the tax reform.*” (Hennessy & Tol, 2011) It can be figures from this effect that people in Ireland have changed their behaviour, so environmental taxes have had an impact on Irish people.

Legislation in Ireland includes many environmental aspects in addition to transport to influencing car buyers, this article focuses on registration taxes. Car taxation is one of the activities of The Office of the Revenue Commissioners (known in Ireland as Revenue), whose “core business is the assessment and collection of taxes and duties.” (The Office of the Revenue Commissioners, 2016) First of all, there is a Vehicle Registration Tax, all Irish owners of a motor vehicle must register this vehicle when they want to use it on Irish roads. (The Office of the Revenue Commissioners, 2016) “Vehicle Registration Tax is chargeable on the registration of motor vehicles (including motor-cycles) in the State.” (The Office of the Revenue Commissioners, 2016)

Table 1 illustrates current tax rates (or amount of tax) of Vehicle Registration Tax in Ireland. It is clear from the table that cars with low level of emissions are taxed with lower rate. It is important, for right interpretation of this environmental Irish policy, to

note that first VRT Band cover relatively large CO₂ emissions range. This adjustment creates a situation, in which cars with no CO₂ emissions are taxed in the same way as cars with relatively low emissions, for example certain hybrid cars.

TAB. 1: Vehicle Registration Tax in Ireland

VRT Band	CO ₂ Emissions (g/km)	VRT Rate	Minimum VRT
A1	0-80	14%	€ 280
A2	81-100	15%	€ 300
A3	101-110	16%	€ 320
B1	111-120	17%	€ 340
B2	121-130	18%	€ 360
B3	131-140	19%	€ 380
C	141-155	23%	€ 460
D	156-170	27%	€ 540
E	171-190	30%	€ 600
F	191-225	34%	€ 680
G	More than 225g/km	36%	€ 720

Source: (The Office of the Revenue Commissioners, 2016)

There is another article of this legislation, which distinguish low emissions cars from cars with zero emissions. There is a “Repayment/Remission of VRT on Hybrid Electric Vehicles”, which is determined in the amount of €2,500 for new plug-in hybrid electric vehicle. (The Office of the Revenue Commissioners, 2016) Tax relief for new electric vehicles is 100% higher than for plug-in hybrid electric vehicles, so €5,000. (The Office of the Revenue Commissioners, 2016) There is, of course, certain difference between price of new technologies (with electric motor) and conventional cars, so this tax relief can be stimulation for consumers to buy an environmental-friendly car.

However, tax relief within Vehicle Registration Tax is not the only advantage, which can buyers of cars benefit. It has been found an organization, which provides other grants for environmental projects, called Sustainable Energy Authority of Ireland (SAEI). SAEI has a range of funding and one of them has been created for passenger cars. This grant is called Electric Vehicle Grant and supports buying an electric vehicle or plug-in hybrid vehicle. Buyers can get up to €5,000 depending on list price of approved car. (The Sustainable Energy Authority of Ireland, 2016) These two instruments can really help to convince people to buy a low emission car because these subsidies cover the price difference between classic motor vehicles and electric (or hybrid) vehicles.

Irish legislation, which is appointed to make environmental cars more attractive for their citizens, can be considered as one of the most complex. These special laws aggregate

two basic approaches: firstly, amount of tax progressively unfold from carbon dioxide emissions and, secondly, there are donations for low buying emissions cars.

3. Finland

Another country which want to stimulate people to buying cars with low level of emissions is Finland. There are couple of tax legislation, which affect amount of tax that must be paid in according to buy and drive a car in Finland. Reform in car taxation based on CO₂ emissions were discussed in Finland, so there are even views from experts on environmental taxation, for example from Nina A. Nygrén, Jari Lyytimäki and Petri Tapio. (2012) Their article monitors media debate related to environmental taxation policy, so it demonstrates the importance of public view. On the other hand, they figure out, that “despite a relatively wide-ranging discussion, the media debate made only a marginal contribution to public understanding of the prerequisites for environmentally sustainable transport.” (Nygrén, Lyytimäki & Tapio, 2012)

Most important part of above mentioned environmental tax reform is a registration tax of similar type as in the Republic of Ireland. This tax is payed after (or related to) first registration, which is needed to be able to drive a car in Finland, of a vehicle. “The amount of the car tax depends on the common retail price for the vehicle inclusive of tax on the Finnish market and on its carbon dioxide emissions per mass and its driving power.” (Finnish Transport Safety Agency, 2016) There is clear environmental aspect of taxation, because there is placed a great emphasis on emissions. Even if the car is old and there is no information about CO₂ emissions, this particular car will be taxed based on the mass and driving power of the vehicle and vehicle mass and CO₂ emissions of older cars typically increase together.

The biggest importance for environmental policy is the connection between amount of tax and level of CO₂ emissions. This positive dependency can affect behaviour of people, because relatively small emission difference between two cars make significant change of tax rate, so the price. Finnish attitude of emissions application is unique between European cars because there are usually set several groups and for each of them particular interval of level of CO₂ emissions. Finnish law differs from classic approach and for each level of CO₂ emissions is determined individual tax rate. (Finlex, 2016) There are rarely same tax rates for different level of emissions and tax rate usually increases by one to three tenths percent for each gram CO₂ per kilometre. It can be notice, that this is progressive type of taxation and it really is but it brings a new perspective on progressive taxation with mentioned subtle differentiation of each slight increase in emissions.

Above mentioned specific type of progression requires special attitude in setting tax rates. Natural way would be establishing obligatory formula to calculation of tax, but the approach of Finnish legislation (concretely Car Tax Act) is different. There is

comprehensive table, in which there are lines for each level of emissions from 0g per km to 360 and more g per km, so the table consists of almost four hundreds of lines. (Finlex, 2016) On the surface it seems that similar table can people confuse but for buyers, when they buy for example a family car, it is really simple, because they only find a particular value of emissions and then a tax rate. There are noticed some specific data in table below, for better understanding of vehicle registration tax in Finland.

TAB. 2: Registration tax in Finland

Emissions CO ₂	Tax rate 2016	Tax rate 2017	Tax rate 2018	Tax rate 2019
0	4.4	3.8	3.3	2.7
50	8.2	7.1	5.9	4.7
100	15.3	14.1	12.9	11.7
150	25.8	25.8	25.8	25.8
360<	50	50	50	50

Source: (Finlex, 2016)

It has been chosen few key values of CO₂ emissions and to them related tax rates for several years. Notable is fact, that the gap between zero emissions (and lower emission cars) expands every year. It means, that the taxation is more and more progressive. Car with no emissions, typically battery electric vehicles, are taxed at the rate at 3.8% in 2017 and this rate will decrease to 2.7% in 2019. The tax rate for cars with emissions of 100g CO₂ per km will reduce by 3.6 percentage points, which is more than lower emissions car. This level of emissions is really important not even for interpretation of tax policy but for buyers of cars, too, because around 100g CO₂ per km varies the most efficient cars with conventional drive.

4. Austria

Other countries use also similar registration tax, which is related to environmental aspect and one of them is Austria. Specific environmental taxation has been in Austria for several recent years. Typical attribute for Austrian system was label: “bonus/malus”, in which were integrated advantages for low emission cars and additional taxation for non-environment friendly cars. (Bundesministerium für Finanzen, 2016) V. Gass, J. Schmidt and E. Schmid (2014) have analyzed Austrian environmental taxation policy in transport with conclusion that “an up-front price support system (e.g. direct financial support, exemption from registration tax, bonus/malus system) seems to be favorable rather than taxation.” In reaction to this article it is remarkable that there is no more “bonus/malus system” in Austria.

NoVA-Normverbrauchsabgabe (can be translated as fuel consumption tax) must be paid in situation, when is car firstly registered in Austria, so it has also character of

registration tax. (Bundesministerium für Finanzen, 2016) The tax rate for each vehicle is calculate by the following formula (Bundeskazleramt Rechtsinformationssystem, 2016):

$$\text{Individual tax rate} = \frac{(\text{Individual CO}_2 \text{ emissions} - 90)}{5} \quad (1)$$

The tax rate of NoVA can be up to 32% (according to formula it refers to 250 g per km), higher tax rates cannot be applied. On the other hand, there are two other applications, which affect effective tax rate (Bundeskazleramt Rechtsinformationssystem, 2016):

- a) tax deduction for every car in amount of 300 euros
- b) cars with level of CO₂ emissions above 250 g per km are taxed more about 20 euros for every gram exceeding 250.

When the level of emissions of vehicle is lower than 90 g CO₂ per km, the tax rate is set to 0%. (Bundeskazleramt Rechtsinformationssystem, 2016) This approach to environmental taxation means that there is no registration tax levied on cars with low or no fuel consumption (e.g. hybrids or battery electric vehicles). On the other hand, the maximum tax rate at 32% does not means that buyers of cars with higher emissions than 250 per km benefit because there is another treatment for non-efficient cars, mentioned above.

First of all, the absolute amount of tax deduction makes cars with relatively low level of emissions and low price at the same time tax free. This policy is oriented to middle class buyer, which want a new car. On the other hand, taxation stays environmental progressive and the deduction is so low that it cannot protect all buyers from paying NoVA.

It is clear, which basic pillars have been set in according to taxation policy. Cars can be divided into three groups based on CO₂ emissions: efficient cars, normal cars and non-efficient cars. Efficient cars have level of CO₂ emissions below 90 g per km and their buyers do not have to pay any registration tax. Mentioned tax relief can reach buyers of cars with low consumption, e.g. battery electric vehicles, hybrids and modern small cars with classic drivetrains. There is no tax relief or increase of NoVA for normal cars with CO₂ emission between 90-250 g per km but there is a significant progression based on emissions. The spirit of the legislation considers cars with emission above 250 g CO₂ per km and is taxed with extra absolute amount. Effective tax rate then, of course, depends on the price of particular vehicle.

Conclusion

There are more countries, which use similar registration tax or fees based on environmental aspects of cars in the EU. These three mentioned demonstrates three different attitudes to registration tax, which have common one basic character, can be

called: *environmental tax progression*. On the other hand, they are needed special subsidies for battery electric vehicle for better stimulation of people because of big price difference between electric cars and conventional cars.

Car registration taxes based on emissions are specific part of tax system and they are changing every single year. This evolution is caused by dynamic development in technologies used by manufactures. Special importance in implementing of environmental tax policy requires also public view, which influences its overall impact on country.

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