

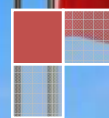
2010

Institute for Research in Economic and
Fiscal Issues

*Energy Policy and
Energy Taxation in the
EU*

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Abstract

In this paper we offer a survey of EU energy taxation scheme and provide some insights on the possible outcomes of current EU policy in the energy domain. For this purpose, we are reviewing in the first section the existing legislation, namely the Council Directive 2003/96/EC. The second section will analyze the possible economic ground for harmonization of European energy taxes. Our analysis leads us to doubt the virtues of energy taxation—including so-called double-dividend taxes—as a tool for energy policy. A further development of energy taxation coupled with EU harmonization would most probably leads us away from sound fiscal policy as well as from sound energy policy.

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Introduction

The European Union is eager to develop a supranational energy policy in order to achieve some of the objectives on its political agenda. This ambition is not surprising in the sense that, from the first European treaties on, the focus on energy has always been present. The creation in 1951 of the **European coal and steel community** had the purpose to pool the available resources; the following **Euratom** treaty was designed with the objective of establishing a common nuclear energy policy. In the same vein, the **European Commission** is now designing a common energy policy, which is supposed to govern production, importation and consumption for the all range of energy resources. The **2006 Green paper**¹ edited by the Commission identifies three main objectives:

- combating climate change,
- strengthening energy security,
- maintaining and increasing EU competitiveness.

One of the main tools that the Commission is ready to use in order to achieve those aims is **taxation**.

Indeed, using tax policy as a regulatory tool in various economic sectors is in vogue and the energy sector does not make an exception to that rule. According to a 2006 OECD report,² OECD countries are implementing **150 energy-related taxes and 125 motor vehicle taxes**. Together, they form the majority of environmentally related taxes, which are raising revenues for about **2 to 2.5% of the Gross Domestic Product (GDP)** of those countries.³ Nevertheless, energy taxes are not supported uniformly by all the involved sectors. According to the same study, OECD governments are granting some **1150 different exemptions** and have implemented several hundreds refund mechanisms and other tax rebates. The picture of energy taxation is hence highly complex and its outcomes – difficult to evaluate.

OECD countries are implementing 150 energy-related taxes and 125 motor vehicle taxes, raising revenues for about 2 to 2.5% of the Gross Domestic Product.

¹ European Commission (2006), Green paper “A European Strategy for Sustainable, Competitive and Secure Energy”, SEC (2006) 317.

² OECD (2006), “The Political Economy of Environmentally related taxes”.

³ The same study reveals that there exist in OECD countries about 375 environmentally related taxes and 250 additional environmental fees and charges.

At the EU level, the situation follows the general trend observed for OECD countries. There exists a multitude of different taxes and subsidies, with, however, important differences between Member States. This situation is rather irritating the EU administration, whose ambitions for **tax harmonization** naturally extend to the domain of energy. As usual, the topic is a “hot” one and the quarrels about a minimum level of taxation have occupied the European administration for nearly 10 years, until a highly controversial directive has been adopted in 2003.⁴

The case for such a policy could be summarized in three main arguments.

1. The first of them is the very politically correct concern about **environment**. According to this argument, the greenhouse gas emissions and other polluting residuals from the production and consumption of some of the “old” energies like oil, natural gas, coal etc. should be taxed heavily. Meanwhile, alternative sources of energy should be promoted by (again) the use of tax policy, but this time with its reverse hand – subsidies.
2. The second justification for the use of fiscal policy on energy products is **the scarcity problem (energy security)**. The European natural reserves amount for less than 1% of the world reserves in oil, 1.5% of the natural gas and 4% of coal.

A burgeoning economic literature on that topic indicates that taxes on gas and oil affects the demand and can therefore constrain the oil-producing countries to review their exploitation schemes and low prices. Additionally, heavy taxes on those energies are supposed to induce industries to invest in alternative energies and thus solve the scarcity problem. In the same vein, governments are subsidizing or exonerating from taxes research programs on alternative sources of energy.

3. Energy competitiveness is the third issue. It concerns mostly electricity production, the idea being that a common EU policy should **avoid “harmful” competition** between Member States and make them cooperate in order to be competitive *vis à vis* outside EU countries.

OECD governments are granting some 1150 different exemptions and have implemented several hundreds refund mechanisms and other tax rebates.

⁴ Council Directive 2003/96/EC of 27 October 2003, restructuring the Community framework for the taxation of energy products and electricity.

In this paper we offer an intelligible survey of EU energy taxation scheme, provide some insights on the possible outcomes of current EU policy in the energy domain and suggest an alternative policy. For this purpose, we are reviewing in the first section the existing legislation, namely the Council Directive 2003/96/EC. The second section will analyze the possible economic ground for harmonization of European energy taxes and allow us to conclude on more promising economic policies.

1. Towards a common European energy policy?

The desire of EU officials to build a common energy policy is inspired by political, economic and strategic concerns. The unconditional **dependence** of developed economies on energy resources is at the core of those concerns. The European Union is highly dependent on imports of energy resources, even if, since the first oil crisis in 1973, its dependence level fell from 60% to about 50% (Green paper 2006)⁵. On the global level the picture also seems to be rather murky – global oil consumption increased by 20% since 1994 and world energy demand is expected to rise by some 60% by 2030. Consequently, oil and gas prices are rising and expected to continue to rise, as stated in most official reports.

With the hope of better addressing this problem, the world major political powers have their own energy policy either alone, as in the case of the USA and Russia, or in coalition, as the Gulf countries have chosen to do. In Europe, no country is big enough to impose its conditions on the world energy markets, but taken together, EU countries represent the world second largest energy market, accounting for about 490 millions consumers. This leads the EU to believe—may be wrongly—that all Member States would benefit from a common policy that would allow them to count as big players on the international energy market.

Those concerns about energy dependence are reinforced by the desire of the EU Commission to secure competition on the single market. The **liberalization of electricity production and distribution** was, in that sense, a considerable step towards this objective, even if many things still have to be done in order to reach a state of truly

⁵ According to the projections presented in this Green paper, the European import dependence will increase to 70% in the course of the next 20-30 years.

unrestricted competition. But the EU Commission argues that market liberalization is not enough. More needs to be done to “**level the playing field**”. In their view, energy prices do not impact only on energy markets; since energy products are used as an essential resource for the manufacturing of other goods, it would be necessary **to harmonize taxes** to insure that producers from different Member States meet the same input prices.

Nevertheless, the difficulty for Europe remains to reconcile diverging national interests. As the shortcomings of the common foreign and security policy indicate, the resistance is strong and should not be underestimated. In the energy domain the problem is related to diverging, even **conflicting, approaches to the nuclear risk**, different strategic concerns and even, as recent developments show, diverging **appreciations of the need to develop alternative energy sources**.⁶ Since European countries claim total liberty in their choice of energy policy, Brussels decided to use a “back door” strategy and to root its energy policy in a less conflicting way, by relating it to a common tax regime, to a common environmental policy and, to some extent, to the common competition policy.

1.1. Community framework for the taxation of energy products and electricity: not so stringent... for most countries!

In 1992 was established a Community system for taxing mineral oils, through the adoption of two directives. The first one (92/81/EEC) harmonized the structure of **excise duties on mineral oils**, while the second focused on the approximation of the rates of excise duties on mineral oils (92/82/EEC). However, the Council authorized Member States (15 at that time) to introduce different reductions and exemptions to the benefice of specific policies or industries, resulting in more than one hundred special provisions.

Due to political resistance on a proposal for **CO2 energy taxation**, in 1997 the Commission presented another proposal for a common framework of energy taxation. After long years of discussions and negotiations, the Council finally adopted a new directive in 2003, which resulted in **an extension of the Community system of minimum tax rates on energy products to coal, natural gas and electricity**. The directive covers

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⁶ See Vaclav Klaus, « Blue Planet in Green Shackles », *Competitive Enterprise Institute*, 2007.

electricity, transport and heating for private, commercial and industrial use.⁷ Its purpose is to impose a framework for taxation of energy products in the Member States in order to “improve the operation of the internal market by reducing distortions of competition between mineral oils and other energy products”. In line with the Community's objectives and the Kyoto Protocol, it is supposed to “encourage more efficient use of energy so as to reduce dependence on imported energy products and limit greenhouse gas emissions”.

Also, in view of protecting the environment, it authorizes Member States to grant tax advantages to businesses that take specific measures to reduce their emissions. Article 4 §1 of the directive mentions that “the levels of taxation which Member States shall apply to the energy products and electricity ... may not be less than the minimum levels of taxation prescribed by this Directive”. The “level of taxation” is defined as the “total charge levied in respect of all indirect taxes calculated directly or indirectly on the quantity of energy products and electricity at the time of release for consumption” and it does not include VAT (which has been harmonized already).

The EU Council adopted a new directive in 2003, which resulted in an extension of the Community system of minimum tax rates on energy products to coal, natural gas and electricity.

Table 1: Minimum levels of taxation applicable to motor fuels

	Leaded petrol (per 1000 l)	Unleaded petrol (per 1000 l)	Gas oil / diesel (per 1000 l)	Kerosene (per 1000 l)	LPG (per 1000 kg)	Natural gas
Previous to the directive rates	337 €	287 €	245 €	245 €	100 €	100 (per 1000 kg)
2009	421 €	359 €	302 €	302 €	125 €	2.6 €(per gigajoule)
January 2010	421 €	359 €	330 €	330 €	125 €	2.6 €(per gigajoule)

Source: directive 2003/96/EC

⁷ The tax is applied if energy products are used as fuel or for heating purpose. Other possible uses, as raw materials, chemical reductions or use in electrolytic or metallurgical processes are out of the scope of the directive.

Table 2: Minimum levels of taxation applicable to heating fuels and electricity

	Gas oil / diesel (per 1000 l)	Heavy fuel oil (per 1000 kg)	Kerosene	LPG	Natural gas (per gigajoule)	Coal and coke (per gigajoule)	Electricity (per MWh)
Previous to the directive rates	18 €	13 €	-	-	-	-	-
Business use	21 €	15 €	0	0	0.15 €	0.15 €	0.5 €
Non-business use	21 €	15 €	0	0	0.3 €	0.3 €	1 €

Source: directive 2003/96/EC

The directive finally adopted a significantly less stringent than the 1997 proposal and includes many general exceptions as well as exceptions which are Member States specific.

It is important to notice that the directive finally adopted a significantly less stringent than the 1997 proposal and includes **many general exceptions as well as exceptions which are Member States specific**. For example, in the domains of agriculture, civil engineering and public works, plant and machinery used in construction, the tax rates fall, for gas oil and kerosene to 21 €, for LPG to 41 € (instead of 421 € and 125 €) and for natural gas to 0.3 € (instead of 2.6 €). Member States are allowed to exempt from taxation energy products used to produce electricity, supplied for use as fuel for the purpose of air navigation or navigation within Community waters.

Member States may also apply total or partial exemptions or reductions in the level of taxation to products used in the field of pilot projects for the technological development of more environmentally-friendly products or in relation to fuels from renewable resources; electricity of solar, wind, wave, tidal or geothermal origin, of hydraulic origin produced in hydroelectric installations, generated from biomass or from products produced from biomass, generated from methane emitted by abandoned coalmines, generated from fuel cells. Exemptions can be applied to energy products and electricity used for the carriage of goods and passengers by rail, metro, tram and trolley bus; electricity, natural gas, coal and solid fuels used by households and/or by organizations recognized as charitable by the Member States concerned. Exemptions can be also allowed in favor of energy intensive business or in the cases where there exist

agreements with the firms, permit schemes or other arrangements leading to the achievement of environmental protection objectives.

Those are only few of the exemptions allowed by the directive, which annexes are listing each country's additional areas of exemptions. Even more, the directive leaves an open door for further exemptions at the demand of Member States (art. 19). In April 2004, the Directive has been amended by another directive (2004/74/EC), thereby according **additional exemptions**.

Apart from the exemptions, there exist various **transitional periods**, for EU-15 but also for new Member States, according to an amendment of the directive. As the table below shows, **the incidence of the minimal tax level on new Member States is higher, since most of them were applying lower taxes or no taxes at all on energy products**. This is confirmed by macroeconomic simulations that show that the negative impact on the GDP of those countries as well as the energy consumption effect will be stronger.⁸

The directive has also been criticized, because the minimal levels of taxation were so low that, anyway, most of the countries' taxes were de facto already superior. Additionally, the large scale of exemptions rendered the constraints futile, at least for the EU 15 Member States.⁹ Actually, we can easily see from table 3 that those who were the more constraint by the harmonization were the Eastern and Central European Member States. The directive can be therefore interpreted as a constraint imposed on those Member States and not to "old" members, who are already taxing heavily energy. The initially allowed period of transition for those countries is supposed to end in 2012. The projects of the EU Commission for further developments consist to impose partial or total harmonization of tax levels. In March 2008, the Council stated that a review of the energy tax directive is needed to make it fitted more with the EU energy and climate objectives.¹⁰

The incidence of the minimal tax level on new Member States is higher, since most of them were applying lower taxes or no taxes at all on energy products.

⁸Kouvaritakis N and al. (2005), "Impacts of energy taxation in the enlarged European Union, evaluation with GEM-E3 Europe", Study for the European Commission, DG TAXUD.

⁹ There are, however, some Member States as France that has been sued (ECJ case C-388/06), because they didn't respect the conditions of the directive.

¹⁰ See http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/99410.pdf

Table 3a: Tax increase (%) from minimum tax implementation compared to tax rates in 2003¹¹

	AT	BE	DE	DK	FI	FR	EL	IE	IT	NL	PT
Industry											
Coal	Min	Min	Min	>	>	Min	Min	Min	Min	>	Min
Reduced rate	Min	Min	Min	>	>	Min	Min	Min	Min	Min	Min
Heavy fuel	>	15%	>	>	>	>	>	10%	>	>	15%
Reduced rate	Min	Min	Min	36%	>	Min	Min	Min	Min	Min	Min
Light fuel	>	56%	>	>	>	>	>	>	>	>	>
Electricity	>	Min	>	>	>	>	Min	Min	>	>	Min
Reduced rate	Min	Min	Min	>	>	Min	Min	Min	>	>	Min
Natural gas	>	>	>	>	>	>	Min	Min	>	>	Min
Reduced rate	Min	Min	Min	>	>	>	Min	Min	>	131%	Min
Transport											
Diesel	4%	4%	>	>	>	>	23%	>	>	>	1%
Gasoline (95ron)	>	>	>	>	>	>	21%	>	>	>	>
Domestic/household											
Coal	Min	Min	Min	>	>	Min	Min	Min	Min	>	>
Light fuel	>	14%	>	>	>	>	>	>	>	>	>
Electricity	>	>	>	>	>	>	>	>	Min	Min	>
Natural gas	>	>	>	>	>	Min	Min	Min	>	>	Min

¹¹ Min means that there were no tax and the minimum tax rate will be applied, % is the tax increase through the minimum tax, > - the existing taxes are higher than the minimum tax.

Table 3b: Tax increase (in%) from minimum tax implementation compared to tax rates in 2003¹²

	ES	SE	UK	HU	PL	SI	CZ	SK	EE	LT	LV
Industry											
Coal	Min	>	>	Min	Min	Min	Min	Min	Min	Min	Min
Reduced rate	Min	>	10%	Min	Min	Min	Min	Min	Min	Min	Min
Heavy fuel	4%	>	>	>	Min	3%	Min	>	Min	15%	28%
Reduced rate	Min	>	26%	Min	Min	Min	Min	Min	Min	Min	Min
Light fuel	>	>	>	>	>	>	Min	>	>	7%	Min
Electricity	>	Min	>	Min	Min	Min	Min	Min	Min	Min	Min
Reduced rate	Min	Min	>	Min	Min	Min	Min	Min	Min	Min	Min
Natural gas	Min	>	>	Min	Min	>	Min	Min	Min	Min	Min
Reduced rate	Min	>	14%	Min	Min	Min	Min	Min	Min	Min	Min
Transport											
Diesel	3%	>	>	>	21%	>	32%	9%	95%	44%	80%
Gasoline (95ron)	>	>	>	>	>	>	18%	23%	60%	32%	34%
Domestic/household											
Coal	Min	>	Min	Min	Min	Min	Min	Min	Min	Min	Min
Light fuel	>	>	>	>	>	>	Min	23%	>	7%	>
Electricity	>	>	Min	Min	Min	Min	Min	Min	Min	Min	Min
Natural gas	Min	>	Min	Min	Min	14%	Min	Min	Min	Min	Min

Source: Kouvaritakis N. and al. (2005)

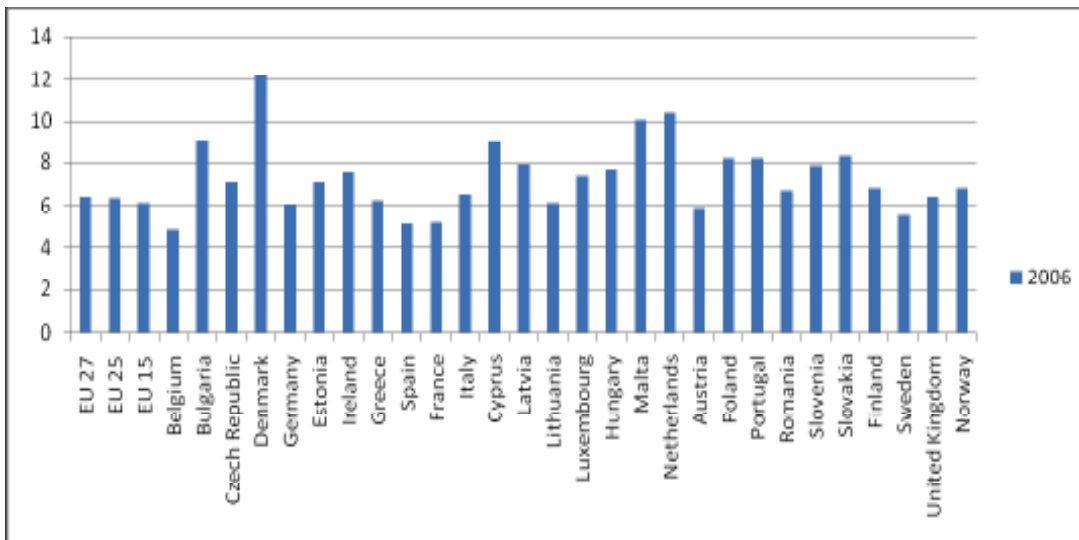
¹² Min means that there were no tax and the minimum tax rate will be applied, % is the tax increase through the minimum tax, > - the existing taxes are higher than the minimum tax.

1.2. Energy taxes – a comfortable source of revenue for governments

The demand for energy products, at least in the short term, is relatively price-inelastic, which makes those products perfect targets for taxation. Indeed, according to fiscal theory, the goods that government should tax in order to raise more fiscal revenues (and also, to bring less distortion in resource allocation) are those with few or no substitute. In this way, the consumer is prisoner of its dependence on the product and has no choice but to pay the tax without changing significantly—at least in the short run—his/her consumption behavior. The energy taxes can in this way attain incredibly high rates. In 2008 for example, the average tax rate for oil in EU countries was over 232%, the average rate for diesel - over 195%, about 22% for natural gas and 26% for electricity.¹³ The revenues gathered with those taxes account for one fifth of indirect tax revenues of developed countries or 6.41% of total tax revenues for EU27 countries:

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Figure 1: Share of energy taxes in total tax revenues (%)



Source: Eurostat¹⁴

¹³ Those percentages refer to the final consumer price and therefore are including VAT.

¹⁴ Energy taxes here include taxes applied on transport and pollution.

What is important to know is that energy tax revenue is **mostly oil tax revenue** (more than 93% in 2003).¹⁵ Also, most of the taxes are excise taxes, which rates are fixed per unit, rather than *ad valorem*. This means that their rate, computed as a percentage of the initial price, varies with the variations of that price. The rate is therefore increasing when the price is falling and decreasing when the price is rising. Many governments are trying to take advantage of the considerable fluctuations in the price of oil and increase tax rates when the price is low and vice versa, in such a way that fluctuations in the final consumer price are reduced. For example, the average tax on oil for OECD Europe was 41% in 1981, when the price of the barrel was high, and rose to 200% in 1994, when the price had fallen.¹⁶

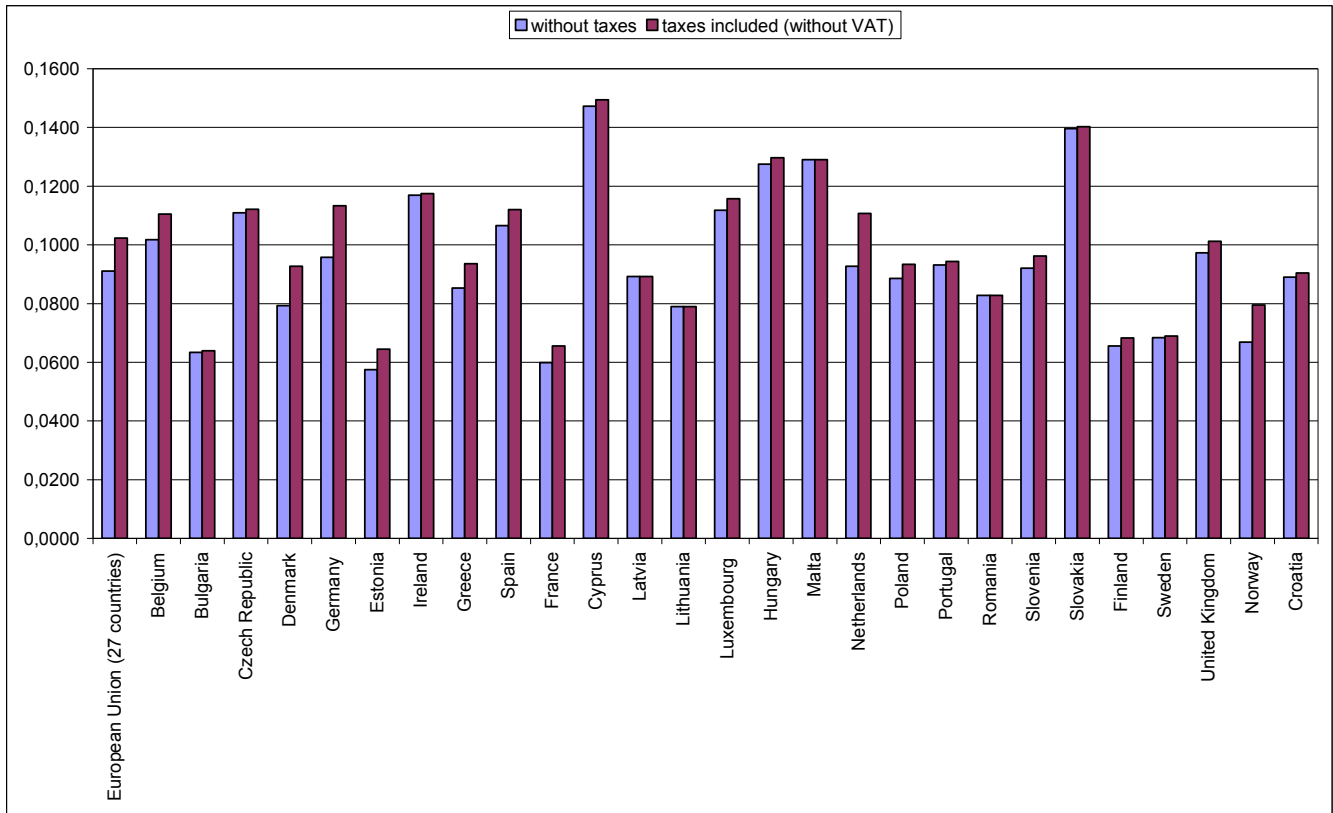
If we look at the data, most OECD countries apply **energy taxes**. Figures 2 to 5 show that those taxes are usually lower for industrial consumers—a choice easy to understand, since nobody wants to penalize the industry too much. However, the figures below also provide evidence for considerable differences in tax levels (all the figures do not include VAT, which accounts usually for some additional 20% on the price). In the case of **electricity for industrial consumers**, tax rates (again, without taking VAT into account) are varying from 0% for Latvia, Lithuania, Malta and Romania to more than 16% for Denmark, 18% for Germany and Norway and 19% for Netherlands. The average tax in the EU 27 is 12.29%:

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¹⁵ OECD 2003a.

¹⁶ Newbery (2005).

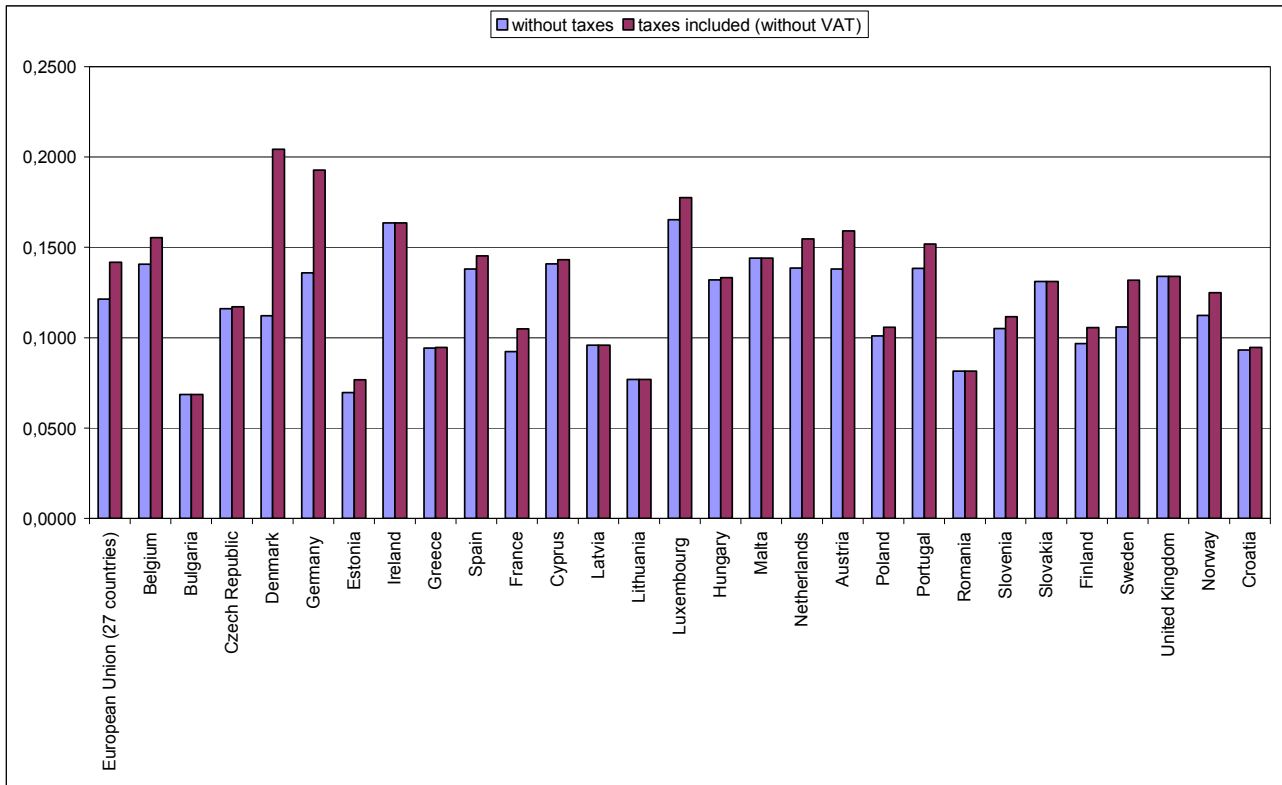
Figure 2: Electricity prices for industrial consumers (€/MWh)



Source: Eurostat, 2009 data

Taxes on electricity for domestic consumers are higher, with an average for the EU 27 of 16.81%. The rates behind this average are also very disparate - 0% for Bulgaria, Ireland, Latvia, Lithuania, Malta, Romania, Slovakia and the United Kingdom, 13% for France, 24% for Sweden, 41% for Germany and 82% for Denmark:

Figure 3: Electricity prices for domestic consumers (€/MWh)

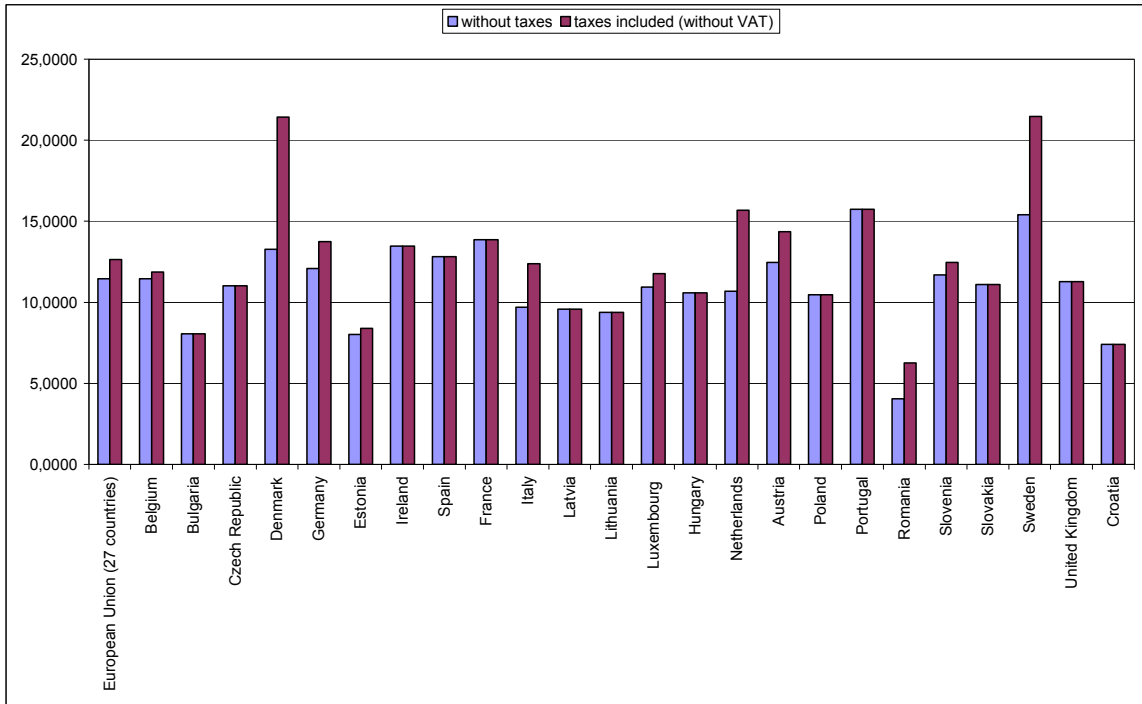


Source: Eurostat, 2009 data

As a matter of fact, taxes on **natural gas** are lower than those on electricity. Regarding the prices of gas for domestic consumers, in the top rates we find again Denmark, with a tax level of 61%, Netherlands, with 46% Sweden with 39% and, surprisingly, Romania, with 54%. There are however several countries that do not apply on natural gas other taxes than VAT, which lowers the EU 27 average to 10.53%.

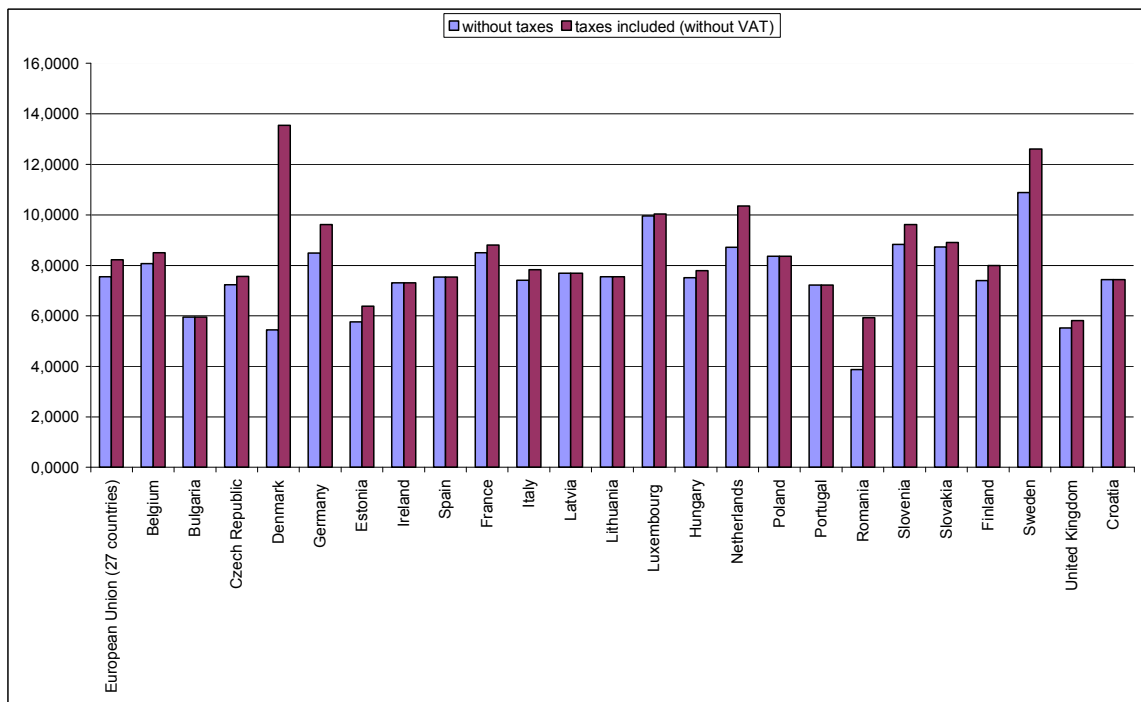
The EU 27 average tax on gas for industrial consumers is slightly lower - 8.9%. Again, there are huge disparities, going from 0% tax rate in Bulgaria, Ireland, Spain, Latvia, Lithuania, Poland, Portugal and Croatia to 148% in Denmark and 53% in Romania.

Figure 4: Natural gas prices for domestic consumers (€)



Source: Eurostat, data from 2009

Figure 5: Natural gas prices for large industrial standard consumers (€ per GJ)



Source: Eurostat, data from 2009

Additionally to those taxes, each country is applying the value added tax, going from 5% to 25%:

VAT applied on energy products (2010)

	Euro-Super 95	Automotive gas oil	LPG - motor fuel	Heating gas oil	Fuel oil - Sulphur <= 1%	Fuel oil - Sulphur > 1%
	In 1000L	In 1000L	In 1000L	In 1000L	In Tonne	In Tonne
Austria	20	20		20	20	
Belgium	21	21	21	21	21	
Bulgaria	20	20	20	20		20
Cyprus	15	15		15	15	
Czech Republic	20	20	20	20	20	
Denmark	25	25		25	25	
Estonia	20	20	20	20		
Finland	23	23		23		
France	19,6	19,6	19,6	19,6	19,6	
Germany	19	19	19	19		
Greece	23	23		23	23	
Hungary	25	25	25	25	25	
Ireland	21	21		13,5	13,5	
Italy	20	20	20	20	10	
Latvia	21	21	21	21		
Lithuania	21	21	21	21		21
Luxembourg	15	15	6	12		
Malta	18	18		18	18	
Netherlands	19	19	19	19	19	
Poland	22	22	22	22	22	22
Portugal	21	21	21	13	13	
Romania	24	24	24	24	24	
Slovakia	19	19	19	19	19	19
Slovenia	20	20	20	20	20	
Spain	18	18	18	18	18	
Sweden	25	25		25	25	
United Kingdom	17,5	17,5		5		

Source: European Commission, Market Observatory for Energy, 2010

Most people are unaware of the share of government taxes in energy prices, even if, when the resource prices increased considerably in 2007-2008, there were here and there some public debates on that issue. The main concern was the fact that the burden of those taxes is supposed to be stronger for poor households:

Indirect Taxes in euro (excise duties + other indirect taxes)

	Euro-Super 95	Automotive gas oil	LPG - motor fuel	Heating gas oil	Fuel oil - Sulphur <= 1%	Fuel oil - Sulphur > 1%
	In 1000L	In 1000L	In 1000L	In 1000L	In Tonne	In Tonne
Austria	485,09	386,18		109,18	67,70	
Belgium	613,57	392,89	0,00	18,49	15,00	
Bulgaria	350,24	306,78	173,84	306,78		36,81
Cyprus	369,70	340,70		135,43	20,50	
Czech Republic	522,59	445,67	87,91	96,66	19,21	
Denmark	572,06	389,38		332,60	396,76	
Estonia	422,78	392,93	69,92	110,95		
Finland	611,31	330,12		80,66		
France	606,20	427,90	59,90	56,60	18,50	
Germany	654,50	470,40	91,80	61,35		
Greece	680,69	423,12		422,00	25,55	
Hungary	445,79	363,49	93,48	363,49	27,11	
Ireland	563,20	469,20		108,66	81,73	
Italy	564,00	423,00	125,27	403,21	31,39	
Latvia	360,77	314,26	126,83	21,14		
Lithuania	434,43	274,27	167,40	21,14		15,06
Luxembourg	462,09	310,00	54,04	10,00		
Malta	438,38	352,40		97,00	15,02	
Netherlands	719,90	437,70	91,21	254,20	33,06	
Poland	419,78	324,58	115,70	58,74	16,20	16,20
Portugal	582,95	364,41	55,48	213,83	15,30	
Romania	350,15	295,00	67,88	295,00	15,32	
Slovakia	514,50	368,00	0,00	26,55	26,55	26,55
Slovenia	495,70	439,08	75,17	120,11	66,02	
Spain	440,80	344,64	32,41	85,77	15,15	
Sweden	601,90	473,12		414,79	450,66	
United Kingdom	672,51	672,51		129,23		

Source: European Commission, Market Observatory for Energy, 2010

Energy demand is not income-elastic and the purchase of energy products represents a considerable expense in the budget of the poor. This leads some authors and politicians to talk about “fuel poverty”. According to the UK *Family Expenditure Survey* for 2000/2001, for example, spending on gas and

electricity represents 6.1% of the budget of the lower quintile of income distribution, while it represents only 1.9% of the budget of the top quintile. It is, therefore, politically incorrect to tax equally in both cases and some countries are trying to correct this inequity by, for example, income tax reductions for the lower quintiles of incomes.

But what is more astonishing here is that, according to fiscal theory, the deadweight loss of a tax (that is, the difference between, on one hand, the losses to consumers and producers directly caused by the tax and on the other hand government's revenues from that tax) increases at roughly the square of the tax rate. This leads to think that given the extremely high rates evidenced by the data, energy taxes seems to be a very costly source of revenue for the government.

2. The economic effects of energy taxes

Standard tax theory explains that the best way to avoid production distortions is to tax final consumption.¹⁷ The social loss from the tax is then minimized. Hence, if taxes are aiming at nothing but raising revenue, all indirect taxes should be Value Added Taxes or something close to it. However, theory leaves open door for other taxes, such as excises, in the case of market failures or externalities.

In view of the previous section survey of the measures adopted by the EU in order to control energy production and consumption one must therefore conclude that EU and national officials are convinced that energy markets are riddled with market failures (or that their policies are grounded on poor economics). That is, indeed, the traditional justification for government intervention, regulation and control. Even absent a political consensus on a common EU energy policy, there is a consensus on the need for an active energy policy at least at national level; in other words, there is a lack of consensus about how the government is supposed to intervene, but everybody seems to agree that the government **should** intervene in energy markets.

According again to the economic literature, there are at least four characteristics of energy markets that could provide a justification for government intervention:

There is a lack of consensus about how the government is supposed to intervene, but everybody seems to agree that the government should intervene in energy markets.

¹⁷ Diamond and Mirrlees (1971), Salin (1996).

- Fossil fuels are not a renewable resource. For that reason, there is a risk to harm future generations by not taking into account their preferences in today's consumption and production decisions,¹⁸ or simply to fall in a recession due to fuel shortage in a near future.¹⁹
- The demand for energy products is highly inelastic, which in turn is supposed to generate inflation and recessions.
- Consumers invest sub-optimally in energy conservation.
- Energy prices do not include the costs associated with damages to the environment, to health or national security (what economists call externalities).

The suggested remedies then vary from price correcting actions—taxes and subsidies—to the more ambitious direct intervention and control of production and consumption decisions.

But in real life—as opposed to economic textbooks—the main problem is often a different one. It comes from too much rather than too little intervention, or more precisely with the poor quality of intervention that results in more harm than good. As a matter of fact, energy markets have been hampered for so long by government intervention that prices hardly signal anything economically relevant. But, for most people, it is the market itself that failed, and, not surprisingly, governments keep trying to correct the distortions, which result from earlier interventions, with ... more intervention.

Energy markets have been hampered for so long by government intervention that prices hardly signal anything economically relevant.

2.1. Strategic concerns

The optimal tariff as counter strategy against producer's manipulations

There exists a longstanding conflict between two opposite views on energy supply. On the one hand we have those who strongly believe that energy (especially oil) supply is driven by ordinary market forces subject to the stimulus of profit maximization; on the other hand, we have those who are convinced that political considerations are dominant. Both views are exaggerated if pushed beyond their logical limits. We will

¹⁸ Weiss (1989), Barresi (1997).

¹⁹ Hirsch (2005). This concerns mostly the petrol-related sectors such as transport.

concentrate on economic theory arguments rather than political action scenarios, which lay outside the scope of this study.²⁰

If we refer to the perfect competition theory, in a competitive market sellers as well as buyers are price-takers and respond to the market price resulting from their global interaction between all sellers and buyers. However, in the case of imperfect competition, it is possible for some of them to affect market price. The “classic” scenario one can find in economic textbooks is the oligopoly market, where few sellers collude to reduce quantities and thereby increase prices and profits. The OPEC cartel is thus pointed out as a source of oil prices’ increase. In response to such cartel power, the economic literature offered a surprising solution – an import tariff that is supposed to impose constraints on producers’ behavior. The ground for this theory lies in the supposition that, if coordinated, oil buyers can form a monopsony²¹ and, through “optimal tariffs”, be able to restrict imports and therefore extract rent from exporters (who have formed a cartel).

Going back to the EU context, excise taxes can be seen as substitute to import tariffs that theoretically discipline cartels of oil producers. The harmonization can then be interpreted as a common strategy aiming at lowering world oil prices and fighting against free riding. Indeed, if one of the EU Member States does not impose the excise tax while others do, it can benefit from lower world oil prices induced by the EU tax (that is, by the reduced consumption of oil from other EU Member States), without penalizing its own industry and consumers. Excises can also serve as a way to escape free-trade WTO commitments.

Several **counterarguments** can be found, however, to this analysis of the international oil market. First of all, the success of cartels in general and of the OPEC cartel particularly, is highly overestimated. Games theory advances and also empirical observation tend to show that cartels are instable because members often disagree about common strategy and also because they lack reliable information about how far they can push the market price.

Second, the government, like anyone else, does not possess **the information that would be necessary** to set the theoretically definable optimal tariff. This is so because the

²⁰ There exists, however, some evidence against the pertinence of the political-action view. See Adelman (1995), Gordon (2008). The main argument of those authors, confirmed by historical examples, is that whatever the political changes in petrol-producing petrol-importing countries, the prices and quantities of oil on the market are ruled by profit maximization incentives.

²¹ The equivalent of a monopoly on the demand side.

optimal tariff depends on many factors. In particular, it depends on the shape and elasticity of the demand, which vary through time and is not easy to estimate. Theoretically, the lower the elasticity, the higher the optimal import tariff. According to Newbery (2005), if the price elasticity of the demand for oil is constant at unity, the optimal tax in both EU and US should be fixed at \$4.6 per barrel, but it should be twice higher if the elasticity is only at 0.5.

Thirdly, the “optimal” tariff depends on the “scenario” of the game that determines, for instance, who is the first to move: is it the producer or the importer? In the simplest scenario oil importers announce their tariff first and then producers decide on their level of supply, which in turn determines the price of oil. But while the theoretical determination of the optimal tax in a perfectly certain world with supposedly competitive oil producers is easy, it is not so if one takes into consideration the many real world departures from this scenario. For example, the threat of imposing a tax on imports has to be dynamically consistent, that is, it has to be credible for producers that importers will really apply this tax. Indeed, if the incentives for the importer is to depart from the initial taxing plan once the price of oil are set too high, this plan is therefore not credible for oil producers, which in turn means that they will not take it into account while adjusting their current supply.

Moreover, even if there is a perfect equilibrium in this kind of game, the outcome, that is, the level of the tariff, strongly depends on the order in which decisions are taken.²² The outcomes here can differ significantly, since if the producer knows that the importer cannot rapidly change its import tariffs (which is particularly relevant in the case of a common EU tariff), he will take advantage of that situation and adjust its exploitation plans in order to extract maximum surplus. In that context, importers will levy lower than optimal tariffs or corresponding taxes.²³

Harmful fiscal competition?

Another argument in favor of tax harmonization at the EU level, used not only in the domain of energy taxes but in all fields of taxation, is that it prevents “harmful tax

²² Karp L. and Newbery D.M. (1991).

²³ Newbery (2005).

competition". Theoretically, **fiscal competition in the energy domain could result in tax rates** higher than what fiscal harmonization could bring (a result contrary to what you usually expect from fiscal competition). As we have seen, this is so because importers of fossil fuels have an incentive to use carbon taxes or tariffs to extract rent from exporters. Hence, it is theoretically possible that the net outcome of those incentives results in higher global level of taxation (Strand 2007). Nevertheless, it seems that the concern of the Commission is elsewhere, since it requires **minimum tax levels**, rather than maximum.

Some would also argue tax competition between EU Member States leads to a kind of **race to the bottom**, which is equally harmful for all. The harmonization is hence supposed to prevent idle competition between EU countries and to allow them to focus on common strategies *vis à vis* non-EU countries. While this argument failed to succeed in harmonizing income and corporate taxes, it has been politically successful in other areas – energy taxes, but also value added tax. One can hardly find evidence in support of the “harmonization is better” thesis, since countries with lower income and corporate taxes are doing much better in terms of economic growth. Why should matters be different when it comes to energy taxes?

Still another argument in favor of harmonization is available for those who perceive energy as a kind of “**essential facility**”: it is an input to almost every economic activity that allows for no substitute. As such, goes that argument familiar to scholars of competition law, it should be provided at the same price to all competitors, hence leveling the playing field. The emptiness of the argument is probably better seen when you consider that labor is also an “essential facility”, as is capital. And if prices of every “essential facility” ought to be harmonized, why not then enforce a common wage rate or interest rate throughout Europe in order to level the playing field? And should we not push the argument even further to include health or educational services?

Energy depletion, petrol chocks and future generations

Another frequent concern related to energy consumption is the fear of exhausting the resources at the expense of future generations (Barresi 1997, Weiss 1989). A catastrophic scenario describes increasing economic perturbation due to the depletion of resources. The market is here supposed to behave myopically, unable to deal with such

The market is here supposed to behave myopically, unable to deal with such long term consequences and the government is seen by many as the only solution to this intergenerational solidarity problem.

long term consequences and the government is seen by many as the only solution to this intergenerational solidarity problem. Taxation is then called to the rescue to correct myopic behavior, forcing market participants to take into account unpleasant realities.

Such fears and corresponding calls for regulation are not new. They can be traced back at least to Thomas Malthus who expressed them for the first time in the economic literature and they have been coming back to life again and again in different versions (for instance, Stanley Jevons and “the coal problem” in the 1870s, or the Meadows report a century later). Thus, the initial concern about the coal depletion has been replaced by the fear of the end of oil. This reasoning has already proved to be wrong in the past. The coal reserves have not been exhausted because people have found other sources of energy and there was no general hunger due to the exhausting of foods, as Malthus predicted at the end of the 18th century. This way of thinking underestimates innovation and technology development, as well as humans’ ability to foresee and adapt their behavior to the changing environment. Even if oil was to come to an end - and for the moment, it seems that such is not the case²⁴ – this, by itself, would create tremendous incentives for any individual or company to develop alternative sources of energy. There is no need for the government to provide further incentives, as long as we let markets vehicle the information to investors. Trying to redirect research efforts, resources and investments on arbitrarily chosen alternative energies is at best a waste of time and, at worst, plainly harmful, as was well illustrated by the world corn crisis of past years.²⁵

Furthermore, there is no reason to believe that politicians and governments are more concerned with future generations than market actors are. Because of their elections agenda, governments tend to reason with short, three or four years, decision-making horizons. For instance, they typically will be more interested in increasing the percentage of “alternative energy” before the end of their mandate than in the economic sustainability of those alternatives (see next point below). Moreover, they are led to make different concessions in favor of the strongest lobbies. Markets, at the opposite, are likely to address long term problems in a more satisfactory way: They commonly evaluate

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²⁴ Oil depletion concerns are based on estimations of conventional crude oil in already discovered oilfields. Unconventional crude oil deposits (like those found in heavy bitumen), which are plentiful and undiscovered yet oilfields, do not figure in the estimations (Arnott 2002, Bradley and Fulmer 2004).

²⁵ The USA Energy Policy Act of 2005 and the subsequent energy act in 2007, which provided subsidies for the production of grain-based ethanol and production mandates, has been partly responsible for the 243% increase in the price of corn for the past three years and the related global food crisis.

assets and investments on the basis of the actualized stream of future incomes. In fact, although this might sound as a paradox to many, speculators are the best protectors of the interest of future generations: If the net future value of a resource is superior to its present, spot value, they will save on that resource, waiting for more valuable future uses.

But even if all of the previous arguments were valid, the generous concern about future generation is probably misplaced. The point is that we certainly are several times poorer than future generations will be. Therefore, to refrain from oil or other resources consumption today is like transferring revenues from the poor to the rich.

2.2. The cost-effectiveness of fiscal instruments in question

Renewable energies - do we need fiscal stimulus?

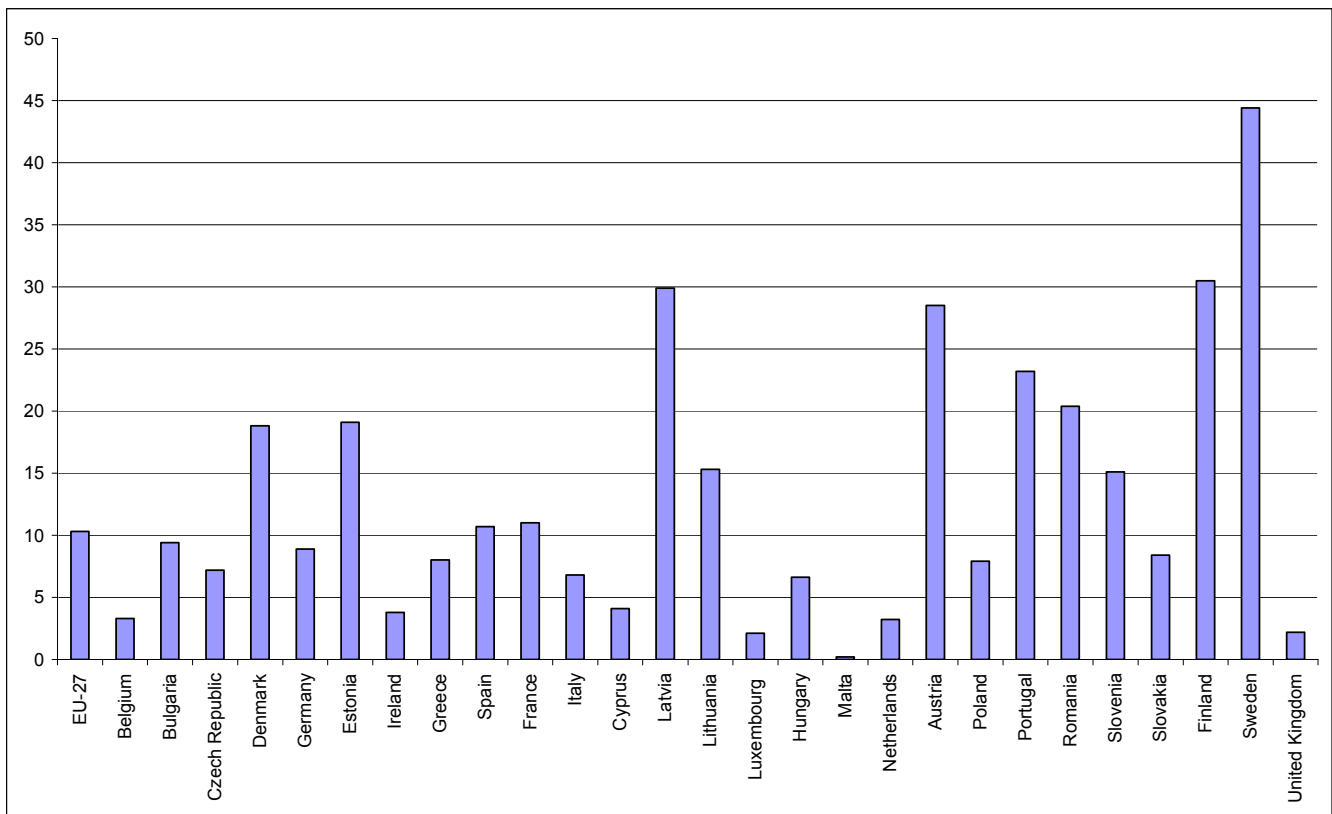
Such measures include capital grants and low interest loans for renewable energy capacity and development of energy technologies, feed-in tariffs (such as obligation to buy from renewable sources under predetermined conditions), and tax credits. It is not clear whether such support has been cost-effective. Indeed, OECD (2004)²⁶ finds that reducing emissions by these means is considerably more costly than the marginal damage caused by those emissions according to most estimates.

Seen from another angle, it is surely puzzling when the Commission, after expressing its concern for “energy efficiency”, introduces additional regulatory instruments to constraint private firms to behave according to some efficiency criteria. The puzzle comes from the fact that, as pointed out earlier, the most important sources of inefficiencies are to be found in public regulations. Electricity “markets” offer a clear instance of a piling up of subsidies and regulations of all kinds. Governments have systematically controlled the price of electricity hence blurring market signals; the prices are typically too low during high peak consumption hours and too high during low peak hours; some groups/sectors have been paying higher prices for years so that others can pay lower prices (cross-subsidy). According to recent estimations for the USA (Faruqui & Earle 2006), real-price timing would yield considerable savings.

The puzzle comes from the fact that, as pointed out earlier, the most important sources of inefficiencies are to be found in public regulations

²⁶ OECD 2004, Sustainable Development in OECD Countries: Getting the Policies Right, Environment Directorate (Paris).

Figure 6: Share of renewable energy in gross final energy consumption



Source: Eurostat 2008

The “double dividend” argument is misleading

Many economists and politicians stand behind the idea that pollution levies are an efficient instrument to achieve environmental objectives (Baumol and Oates, 1988). Some have gone further in suggesting that environmental taxes may serve to replace more distortionary taxes. They would generate a double dividend – not only a cleaner environment, but also a less distortionary tax system²⁷ (Pearce 1991). In the same vein, the initial proposal for the 2003 EU directive contained recommendations for Member States to use the tax revenues in order to decrease labor costs.

The charms of the double-dividend argument could well be, however, overstated. It is indeed one thing to point out to some secondary, or even third effects of a regulation; it is quite another thing to evaluate its overall effect. There were surely good reasons for economists since Adam Smith to look for the

²⁷ French President Sarkozy recently proposed a similar tax reform, replacing a corporate tax by an ecological one.

most “neutral” way to tax. The idea was then, not to use taxation to change taxpayers’ behavior, but on the contrary to make sure that taxes interfere as little as possible with their daily choices. To engage in the “double-dividend” philosophy is a fatal conceit that reminds us of previous attempts to plan the course of the economy: some (desirable) effects of the taxes are singled out and the rest remains ignored.

*The charms of
the double-
dividend
argument could
well be,
however,
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Economists are, as a matter of fact, even far from having proven the existence of such a double dividend. There are strong theoretical arguments going in the opposite direction and showing that environmental taxes typically exacerbate, rather than alleviate, preexisting tax distortions (Bovenberg & De Mooij 1994). This result holds even if tax revenues are employed to cut preexisting distortionary taxes.

Can externalities be best internalized at a European level?

It is often argued, and we have already mentioned that argument, that energy prices do not reflect the cost of negative externalities such as damages to the health and to the environment associated with energy production and consumption. Typically, people are concerned about CO₂ emissions generated by the industrial use of energy, by transportation and heating. It is also pointed out that ordinary energy taxes “are not related in any systematic way to environmental damage, and they do not meet minimal consistency criteria for so doing”.²⁸ Therefore, energy prices are too low and too much energy is consumed, which offers a reason for government to intervene. The solution usually applied is a tax on the concerned products, which is supposed to internalize the cost of the externalities, that is, it forces consumers to pay the total “social cost” for their energy consumption.²⁹

This approach, once again, neglect the fundamental problem faced by any attempt to plan economic development, namely, it does not rely on realistic assumption regarding the knowledge of the one in charge of planning. The first problem a policy designer meets in that case is to evaluate health and environmental damages caused by each type and use of energy, and to do that for present and future generations. Such

²⁸ Newbery (2005), p. 24.

²⁹ The so called Pigouvian tax, at the name of the economist Alfred Pigou who developed the idea in 1920.

estimations vary so widely that it is legitimate to ask if they make sense at all.³⁰ In any case, it seems logic that the environmental impact of energy consumptions varies from one place to another. For example, because of traffic intensity and road congestions, the environmental impact of energy consumption in a megalopolis will be different than the same amount of emissions in a less concentrated area. Climate conditions (heat) also seem to play a role in the pollution level, at constant emissions level. It is therefore clear that an energy tax designed at the national or supranational level will be almost for sure too high in rural areas or too low in urban areas. Another reason why a European harmonized energy tax would be a very inappropriate solution to the externalities problem.

It seems logic that the environmental impact of energy consumptions varies from one place to another.

Conclusion

The ambition of this report was to review and explain the EU policy regarding energy taxation. We have tried to analyze the economic ground for this policy and reviewed the strategic concerns such as producer's manipulations, harmful fiscal competition, energy depletion and concerns about future generations. None of them seems to be a sufficient argument for the implementation of common energy taxation at the EU level.

Additionally, we have questioned the cost-effectiveness of fiscal instruments. We tried to demonstrate that those are often ineffective and even worst – counterproductive. This is the case with fiscal stimuli for renewable energies. We also doubt on the soundness of the “double dividend” and externalities arguments.

We can therefore conclude that as far as economics tools for analysis are applied, there is no solid argument for the promotion of common EU energy taxation policy.

A European harmonized energy tax would be a very inappropriate solution to the externalities problem.

³⁰ See Sundqvist Thomas and Soderholm Patrick (2002).

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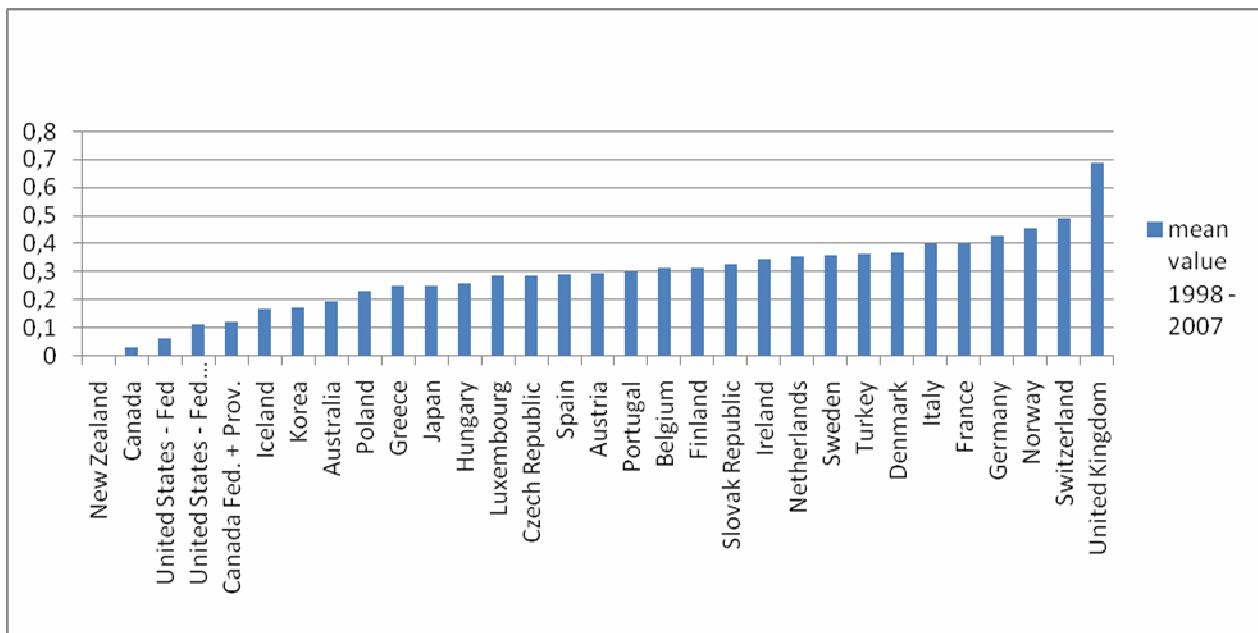
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Annexes

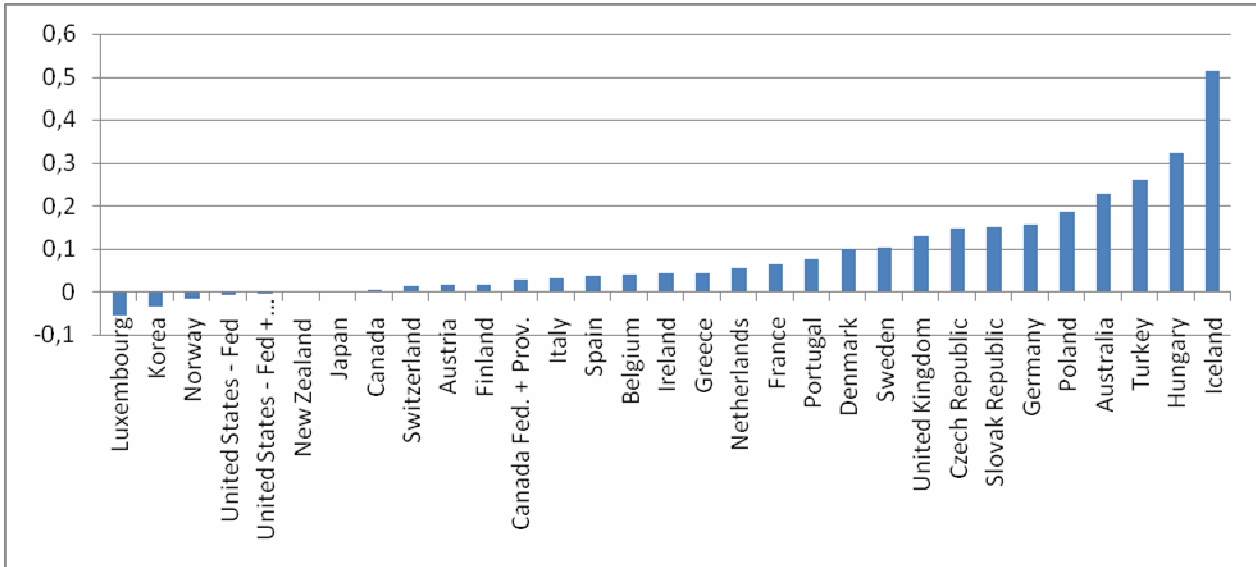
Taxes on diesel and unleaded petrol in OECD countries

Diesel taxes in OECD countries (EUR/liter)



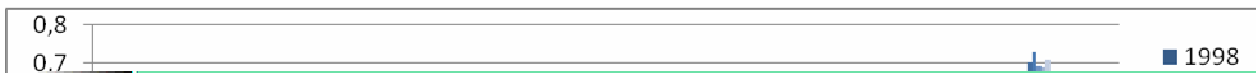
Source: OECD database

Diesel tax increase/decrease 1998 to 2007 (EUR /liter)

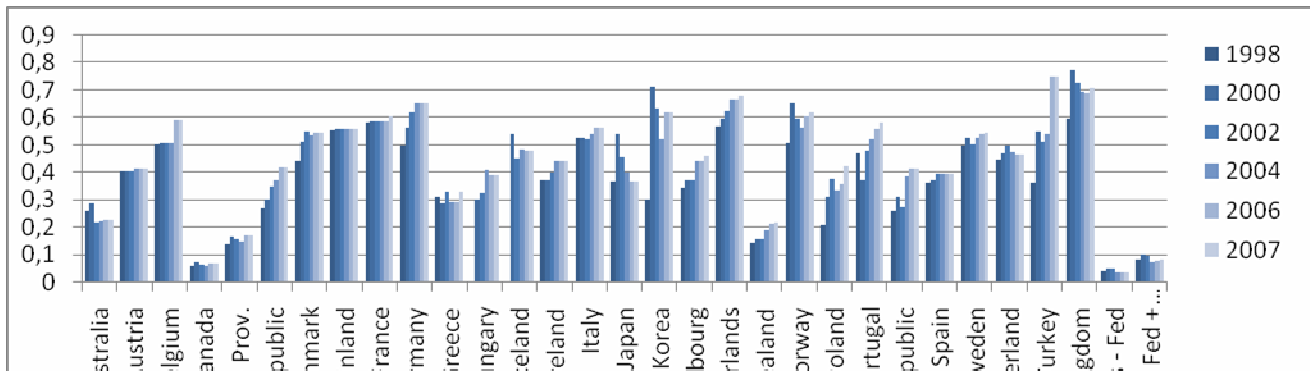


Source: OECD database

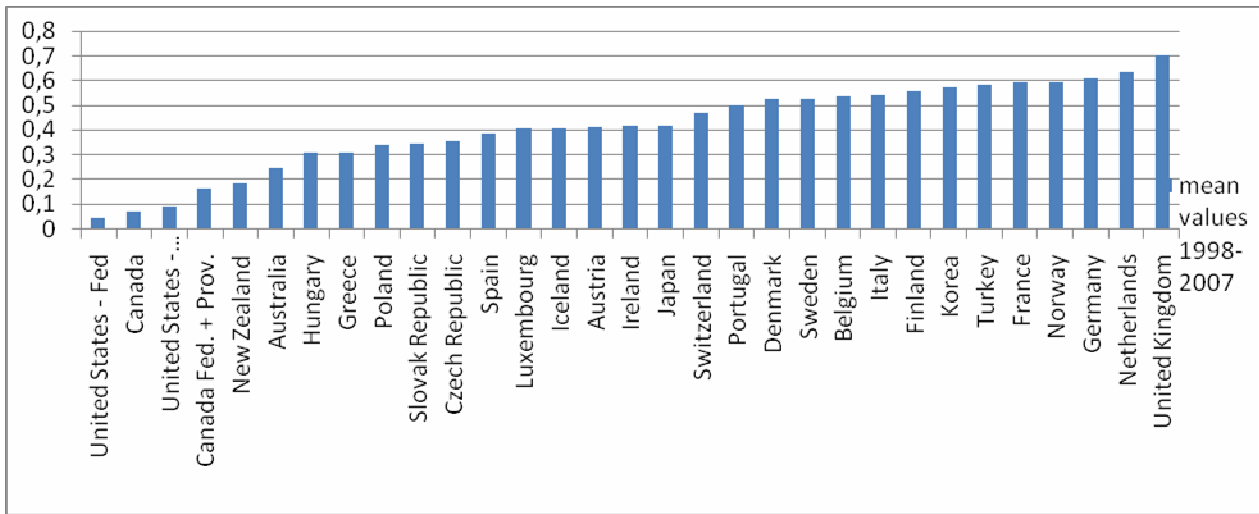
Taxes on diesel in OECD countries 1998-2007 (EUR /liter)



Tax rates for unleaded petrol in OECD countries (EUR/liter)



Unleaded petrol taxes - mean values 1998-2007 (EUR/liter)



Source: OECD database