The use of tax instruments to deal with air pollution in Portugal

Ecological modernisation and the use of NEPIs *

Resumo

The Portuguese example might allow to extend the argument used by Jänicke that a country's environmental performance depends on its basic preconditions for ecological modernisation. The analysis of two taxes that the OECD/EEA database would allow to classify as NEPIs, the motor vehicle tax and the tax on petroleum products, seems to support the hypothesis that the number and/or performance of the NEPIs, namely tax instruments, is also influenced by the level of ecological modernisation observed in a country.

The basic variables that Jänicke claims to influence the ecological modernisation capacity of a country seem to have played an active role in hindering the environmental performance of the two taxes analysed. And this is so despite the fact that these are instruments that potentially could serve well environmental policy goals, due to the close connection they hold, through their tax base, with an important national problem, the pollution caused by road transport. In the case of the motor vehicle tax the relevant factors seem to have been the lack of consensus ability and of strategy proficiency. As far as the tax on petroleum products is concerned the problem seems to reside in the level of economic performance of the country and its lack of innovation capacity, with an important role being played by the institutional context.

The use of New Environmental Policy Instruments (NEPIs) is usually supported theoretically by an ecological modernization approach. Thus, it is interesting to investigate the relationship between the use of NEPIs (in terms of number of instruments adopted and their adequate design to deal with environmental problems) and the level of ecological modernisation observed in a country. This relationship seems to be bidirectional. On one hand, it is possible to measure how much ecologically modernised a country is according to the NEPIs it uses. On the other hand, the level of modernisation observed in a country affects its use of NEPIs. Here it will be attempted an assessment of the Portuguese case according to the latter approach.

This paper focuses on the use of one kind of NEPI, eco-taxes, in a country that is expected to have a low level of ecological modernisation, Portugal. The Portuguese case supports the hypothesis that there is a connection between the level of ecological modernisation observed in a country and its use of NEPIs to deal with environmental problems. Air pollution is one of the areas where the use of tax instruments is most common in environmental policy programmes around the world. And, according to the OECD/EEA database, it is possible to find an abundant number of these instruments in Portugal [1]. There are five taxes that the database includes in this category: the motor vehicle tax (IA), the municipal tax on vehicles (IMV), the tax on petroleum products (ISP), the circulation tax and the truck tax.

However, it is argued that none of these instruments is designed to obtain an environmental effect being rather mere revenue raisers. Thus, these instruments either cannot be considered NEPIs at all or are non-effective NEPIs. The most representative of these taxes in terms of revenue and dimension of the tax base, the motor vehicle tax and the tax on petroleum products, will be singled out to develop this argument. These two taxes will be used to

demonstrate the hypothesis that not only the number but also the design, and consequently performance, of the tax instruments is affected by the ecological modernisation of the country.

The connection between the use of NEPIs and ecological modernisation

The ecological modernisation logic focuses on reducing resource consumption and generating less waste, "while creating employment and improving economic welfare" [2]. The goal becomes business-as-usual with the lowest amount of environmental damage and the use of the opportunities arising along the process to enhance economic performance. In this qualitatively different kind of economic growth, instruments that promise 'win-win solutions' and 'no-regret policies' [3] take the forefront of the political agenda. Furthermore, the flexibility and reliance on the market inherent to these instruments make them more compatible with the 'partnership and participation' feature found in the ecological modernisation thought than command-and-control regulation. Thus, the wave of ecological modernisation spread the use of economic instruments, namely taxes, as tools of environmental policy in an attempt to improve simultaneously ecological and economic efficiency.
Economic instruments, such as taxes, were shown to provide the most powerful means of regulating pollution in a market economy, ensuring economic efficiency and forcing the development of cleaner technologies. Later a social economic policy of Ecological Tax Reform (ETR) was also to be associated with German 'ecological modernism' [4]. This economic and political debate, in the latter forum, tended soon to be associated with the idea of 'double dividend', in the sense that a % tax shift from social goods, as labour, into social bads, as pollution, would bring gains in the form of not only environmental improvement but also unemployment reduction and welfare increase [5].

The level of ecological modernisation in Portugal

As an environmental policy programme, ecological modernisation is argued to be contingent upon optimism in science and technology, confidence in human resourcefulness, and strong respect for expert appraisal [6]. Furthermore, a nation's ecological modernisation capacity is said to depend on four basic variables: economic performance, consensus ability, innovation capability and strategy proficiency [7]. After an analysis of these variables in the Portuguese case, we suggest that the country should be ranked as having a low level of 'ecological modernisation capacity'.
A development of the referred four basic variables leads us to a main set of relevant factors to assess the 'modernisation capacity' of a nation concerning the environment. A country's achieved level of institutional and technological problem-solving capabilities is dependent on: first, the strength, competence and constellation of both governmental and non-governmental proponents and opponents of environmental protection (*actors*); second, the cognitive-informal, political institutional and economic-technological framework conditions (*structural framework conditions*); third, the strategy, will and skill of proponents (*strategy*); fourth, the situative opportunities, such as the sudden strengthening of position offered to environmental proponents by severe environmental catastrophes or the diffusion of positive environmental action taken in neighbouring states (*situative contexts*); and, fifth, the structure of the environmental problem, whether for instances is directly experienced by the public or a likely future occurrence if action is not taken (*the character of the problem*) [8].
Based on the mentioned aspects, next it will be attempted an assessment of the 'ecological modernisation capacity' of Portugal, especially as far as the use of tax instruments is concerned. The country shows a low level of linkage between technology infrastructures and enterprises and the latter display little concern with R&D, product design and development[9]. And among one of the main barriers to innovation identified by a 1992

survey was the difficulty in recruiting skilled labour [10]. Furthermore, Portugal is among the countries with the lowest share of expenditure on innovation [11]. This might express a low optimism in science and human resourcefulness.

There is a clear unbalance of forces in the constellation of both governmental and non-governmental agents in favour of the opponents of environmental protection, especially of environmental taxes (ET). Environmental interests are scattered among the programmes of all political parties and don't have strong representatives. The political institutional framework along the 1990s was unfavourable to the pursuit of environmental goals. The Ministry of the Environment (ME) has been politically weak in relative terms. The informal network was also not favourable to the environmental tax approach due to the strong socio-political influence of the industry lobby vis-à-vis the environmental one. Moreover, the latter does not provide a block support for the use of environmental taxes.

The Green Party, created in 1981, is politically weak, having experienced a decreasing representation since 1987 when it had members elected for the parliament for the first time. This has been a result of its progressive hollowing out of the environmental component and to the 'greening' of the main parties. Furthermore, its geneses closely linked to the Communist Party [12] makes it very concerned with distributional issues. Thus, fearing the regressive impact often pointed out to an environmental tax approach, it has not openly supported the latter.

NGOs are not very influential within the policy making process, due to the low level of environmental activism [13] and are restrained in their proposals by the need to grow their base of influence and satisfy their financial needs. Their financial dependency on contracts by the industry, among others, does not make it easy to propose the use of ET when both the consumers and the industry see those as new sources of costs [14]. Hence, even when the NGOs support the introduction of environmental taxes, they don't promote them strongly enough, despite recognising that the lack of an effective use of environmental taxes in Portugal is in great part due to the lack of political will [15]. It is more common the engagement on campaigns at the international level than at the national level [16].

The Portuguese industry was able to resist to higher environmental standards until very recently. The power the industry has over the political power can be noticed in the lenient and incoherent existing environmental legislation and in the lack of an effective compliance with it. The pressure from interest groups trying to benefit from especially favourable regimes and the multiplicity of authorities who hold competence (not always very clearly defined) over the issues make the law a patchwork. The environmental indicators and the number of complains to the ECJ for non-compliance with EU environmental regulation show that the reduced number of sanctions for environmental law infringements is not a sign of compliance but of Government's passivity in applying the PPP. The control is unsatisfying and the fines are low enough to make the pollution profitable.

The power of the industry over the environmental lobby can be exemplified with some examples. It is believed the government agreed to keep secret each producer level of pollution, disclosing only regional averages, where the possible infractions of the law will be hidden, and, in exchange, the industry would implement voluntarily emission control mechanisms [17]. And the pressure done by the oil refineries' lobby in an effort to postpone as long as possible the needed investments to reduce the lead content of gasoline seems to have been, together with the revenue concerns of the Ministry of Finance, responsible for the delay in the ban of dirty gasoline from the market (June 2000) [18].

Inside the Government the Ministry of Environment needs to get into alliances with other ministries to overcome the industrial lobby represented by the Ministry of Industry and the Ministry of Economy. This lack of power has introduced some distortions in the market by leaving unpunished the lack of environmental compliance of some industrial polluters.

In spite of all the promises from the Ministry of Environment that the agreements signed with the industry would be strictly imposed [19], there was a complier-pays principle instead of a PPP [20], damaging the trust of the industry on the government. This has been, in part, a consequence of the lack of a co-ordinated approach within the government and the lack of environmental concerns outside the Ministry of Environment [21]. At institutional level, there is no formal co-ordinating procedure in place for relations between the Ministry of Environment and either the Ministry of Industry and Energy or the Ministry of Transports. Any requests for arbitration are referred to the Council of Ministers [22].

Ecological modernisation makes an appeal for innovation, being the latter understood as the way in which firms and entrepreneurs create value by exploiting change. The economic--technological framework conditions in Portugal do not seem adequate to an approach that looks for new ways of dealing with environmental degradation by focusing around clean technology, pollution prevention and the multidimensional complexity of the environmental problem. The low human resources qualification and training was identified as relevant in the poor performance of some sectors of the Portuguese economy [23]. There seems to be a lack of capabilities for generating and managing continuous technical and organisational change [24]. Furthermore, the issue of technology management is accessed as a limitation on building capabilities [25]. The relative small dimension of Portugal makes it particularly dependent on processes of sharing and diffusion of knowledge. However, the situation of Portugal in this regard is considered clearly deficient [26].

The *situative* contexts have also not been favourable to a tax approach to the air pollution problem despite its building-up importance, especially as far as the transport sector is concerned. Until the end of the 1990s, in Portugal the pressure to deal with air pollution was not enough to strengthen the adoption of stricter policies. In the beginning of the 1990s, Portugal held one of the lowest levels of air pollution emissions per inhabitant in Europe [27] and there is no memory of severe environmental catastrophes related to this aspect in the country.

Furthermore, the external pressure to strengthen the national policy is relatively recent. The country joined the European Community only in 1986, and anyway most of the mandatory regulation issued by the European institutions affecting air quality standards dates from the end of the 1990s, namely, the regulation of specific fuel quality (*v.g.*, Directive 98/70/EC and) and technical standards applied to vehicles (*v.g.*, Directive 1999/96/EC). The imposition by EU Directives of limits to air polluting substances is from 2001. And, in August 2003, the Kyoto Protocol on greenhouse gas emissions was still waiting the Russian signature to come into effect.

The adoption of tax instruments to especifically deal with air pollution problems has been an experience that in the Scandinavian countries dates back to the early 1990s, with the introduction of emission taxes and the differentiation of energy taxes according to the polluting capacity of the energy source, but that in most other European countries is recent and mainly post-middle 1990s [28]. At the EU level there were sucessive failures to adopt a CO2/energy tax. The diffusion of positive environmental action taken through the use of NEPIs in neighbouring states cannot, thus, be accounted for as having a strong influence on the design of the Portuguese air quality policy prior to the second half of the 1990s. Moreover, by then some Scandinavian countries, like Sweden, were taking a cautious approach to the environmental tax strategy due to the economic costs feared by the national industry.

The character of the air pollution problem is global, which despite enhancing the citizens' awareness about it also dilutes its direct experience by the public as a 'national problem'. Moreover, some of the consequences pointed out to air emissions, like climate change, are experienced as likely future occurrence in case of lack of action. And this action is perceived, namely by the national agents, as more morally binding to other more developed countries than to Portugal. A perception illustrated by the political lobby in which the

country engaged to get the 27 per cent of GHG emissions increase assigned to Portugal within the EU programme to comply with the Kyoto target.
The raise of the sea level in coastal zones in a country with 900 km of coastline highly populated (60% of the population) can be considered an important threat, but the connection between air pollution and shoreline retreat is not clearly set neither for the decision-makers nor for the layman. Also, the changes related with sea level rise are slow and almost imperceptible. Hence, due to a very restricted public awareness on sea level rise impact potential and the lack of relevant studies, the hazard is frequently considered minimum. Furthermore, the changes observed are often attributed to interventions in the hydrographyc basins, harbour jetties, breakwaters and hard shore protection structures [29].

The instruments

The linkage between a country's environmental performance and its basic preconditions for ecological modernisation [30] is extended here to the sub-case of policy instruments. It is argued that the low modernisation capacity hold by a country affects negatively its performance in terms of NEPIs use. It is expected to find a reduced number of such instruments in the national portfolio of environmental policy instruments. Furthermore, it is believed that the design of the existent NEPIs will not be the most adequate to deal with the environmental problem addressed. The Portuguese case seems to support this argument. The object of the analysis are two tax instruments that according to the OECD/EEA database are NEPIs aimed at dealing with air pollution. The exam shows that the four basic variables pointed out as affecting the ecological modernisation capacity of a country have played an active role in the environmental performance of the two instruments. Both of them are potential good instruments to deal with the serious national environmental problem expressed in the amount of polluting emissions coming from road transport. This is so due to the close linkage their tax base has with the source of the problem. However, it is noticed that not only they have not been able to improve or stabilise the environmental performance of the transport sector but also, at least in the case of the motor vehicle tax, they seem to have been contributing to its worsening. Moreover, the reason for this seems to be the effect the low consensus ability, strategy proficiency, economic performance and innovation capability found in the country have had on these instruments' life.
There is a strong reliance of the country on indirect taxes as source of revenue. The result is that energy and transport taxation schemes are quite high but also blind to the environmental impact of the taxed behaviour. This feature of the tax regime is partially explained by the low level of income, the very inefficient tax administration [31], and the, consequent, increased risk of tax evasion associated to a higher percentage of payroll tax burden. Consumption taxes are easier and cheaper to collect and entail a lower probability of fraud than the ones levied on income. Furthermore, it was also relevant the traditional Portuguese 'low labour cost' strategy to promote economic growth, with few attention being paid to technological innovation. The environmentally related tax revenue is, hence, mainly represented by transport taxes (IA, IMV, ICC) (3%) and energy taxes (ISP) (7%), being the pollution taxes non-significant [32].
In Portugal there is no tax levied on polluting emissions, the fuel tax is not differentiated according to the environmental impact of the fuel except for lead and sulphur and there is no energy tax on the industry. The transport sector is mainly dependent on oil and the industry shows a pattern of resource wastefulness (energy inefficiency and high production of residues) [33]. These features are probably a result of the lack of technological innovation capacity found in the country. Such a context might explain the lack of political will

together with a lobby from the industry to avoid the introduction of the mentioned kinds of instruments, which are found in other European countries.

The motor vehicle tax (IA)

The taxation of vehicles in Portugal has been distorting the market options, both against the national economy and the environment, creating sources of inefficiency. The two taxes to consider here are the IA and the IMV. The highest tax burden lays in the vehicle acquisition through the IA. And neither the IMV nor the IA provides any relevant positive environmental stimulus. The IMV is an annual recurrent tax charged by the municipalities according to vehicle type. The differentiation is done according to fuel (lower for diesel), motor power and age, being lower the older the car is. Due to its low level, few relevant effects are expected to be associated to this tax, which mainly works as source of revenue for local authorities. Hence, I shall focus my analysis on the IA. The IA is a specific single-tax levied on light motor vehicles imported or newly acquired. The rate is determinate according to cylinder capacity brackets and type of motor vehicle (DL n.º 40/93, 18 February). There is no differentiation according to fuel efficiency or polluting emissions.

The IA was initially introduced to restrict the purchase of vehicles, since Portugal had no national car industry. With the new political regime that emerged after 1974, the integration in the EC and the development of a national industry of car components that changed and the IA started to be mainly a revenue raising tax as it is still today. The regulator considered non-democratic the use of the IA to restrict the purchase of vehicles, defending instead its use to internalise the external costs caused by vehicles, among which the environmental damages were mentioned [34]. But environmental concerns have only slowly been pervading the IA regime and are not prevalent in this tax design.

As border regulations from imports were streamlined following the Single Market regulations, a concern was the massive import of second-hand vehicles from other European countries. In Portugal, the imported vehicles represent a high percentage of the yearly total registrations and are mainly second-hand vehicles coming from other EU countries, a great part of which is not equipped with catalyser and uses diesel. The IA is reported to be responsible for the existing market distortion. Since, in terms of EU average, Portugal has one of the lowest before-taxes and highest after-taxes prices for new vehicles. Used vehicles are subject to a lower IA, being the reduction between 18 per cent (for 2 years old vehicles) and 67 per cent (for over 8 years old vehicles) according to the age of the vehicle (the older the vehicle is, the lower will be the tax paid) (article 1, n.º 7, DL 40/93, 18 February). The tendency to import second-hand vehicles dates exactly from 1994, when the IA started to discriminate according to the vehicles' age [35].

The market distortions caused by the IA have induced several pressures for its reform. The motor trade industry has been demanding a change in the IA regime, claiming for a tax burden harmonisation with the other EU countries (arguing the average tax burden in the EU is 15 per cent, while in Portugal is 40 cent [36]) and a neutral taxation (this is, one which does not discriminate against high power engine vehicles) [37]. Several proposals have also been made to introduce further environmental concerns in the IA regime.

From the sole perspective of the government there are strong contradictory interests involved in the reform of the IA. On one hand, there is the political conscience of the need to change the vehicle taxation, due both to the source of inefficiencies and of revenue loss its regime entails[38]. But, on the other hand, there is some resistance from the government to the IA

reform. The vehicle taxation is a critical area for the government due to its high importance as revenue source. And the government fears that its reform may involve a tax revenue loss. The last reform attempt started in 2001 was marked by the government's acknowledgment that a new approach based on the environmental impact associated to vehicle use should replace the old rationale behind vehicle taxation that vehicle ownership and use was a luxury good. The OECD and EU guidelines for a future harmonization of vehicle taxation, which take the CO_2 emissions as a reference point, and the Kyoto protocol commitment were named as relevant aspects in the process. Both the internalisation of externalities and the behavioural conditioning were stated as goals to be pursued via vehicle taxation. Though, it was not aimed a strict internalisation but rather a price signal effect [39].

The Portuguese environmental NGO GEOTA proposed the charge of the IA according to the engine's fuel consumption and the polluting capacity and the safety conditions of the vehicle [40]. It suggested also the exemption or taxation with a reduced tax rate of the vehicles using alternative energy sources [41]. And the left-wing party Bloco de Esquerda proposed a more environmentally targeted IA, being the tax rate defined according to the engine's power, the fuel consumption and the vehicle's age [42]. The Socialist Party, on its turn, defended the need to tax vehicles more heavily along their life than on their acquisition. This way, it was argued, the individuals would keep the financial capacity to replace their vehicles and would not resist so much to sell them when they did not need them anymore [43].

The proposal of the vehicle trade sector would transfer part of the tax burden from the vehicle acquisition to the vehicle use. Such a tax change would not only involve an estimated 40 per cent tax revenue loss in the short term [44], but also promote the transference of financial resources from the central Government to the local authorities. Once the new circulation tax was supposed to replace the IMV, which is a local tax. And the circulation tax was expected to raise more revenues than the IMV, being this rise compensated with the reduction of the IA, which is a national tax. Hence, a conflict between the local power and the central power was inherent to this proposal.

Another possibility for the reform of the IA, which ended up being the most popular among the government, was the maintenance of the existing tax system together with the introduction of a new tax with an environmental dimension. The latter would be a second-generation environmental tax, precisely directed towards the polluting vehicles, which should add to and not replace the existing taxes. This was the solution favoured by the Ministry of Finance (MF), since it suggested an arrangement that would mean the maintenance of the existing tax revenue sources and the acquisition of a new extra source of public resources. And it would keep the power balance between the local power and the central power unchanged. The industrial lobby would not be served with this option and, hence, it was not appreciated by the car industry, as this option would keep the acquisition of second-hand vehicles and second-hand imported vehicles more attractive over new ones.

The interest of several stakeholders claiming for the reform of the vehicle taxation, arguing on its distorting influence on the economy and the environment, went against the interest of the Ministry of Finance on its maintenance. The latter, who take the IA as a good source of revenue and, hence, of power, always conditioned its support for a reform of the vehicle taxation to an absence of revenue loss. Though the several stakeholders joined environmental, competition and single market arguments to replace the existing vehicle taxation, they have not been able to avoid the result preferred by the MF.

The strong interests involved explain the slow progresses reached since the beginning of the 1990s, when the efforts to reform the IA started. The delays have harmed the profits of the motor trade industry, the revenue capacity of the government, due to the postponement of the vehicle demand, and the environment. The clash of interests, the

low strategic proficiency and lack of consensus ability resulted in the successive delay of the reform process and the maintenance of a tax that despite raised on a polluting base has a negative environmental impact.

The tax on petroleum products (ISP)

The high tax component of fuel prices (ISP and VAT) explains why Portugal has the highest ratio of revenue from environmentally related taxes to revenue from other taxes and social contributions in spite of having the lowest level of energy consumption in the EU [45]. But, like in other EU Member States, also in Portugal the real price of energy products has decreased [46], although revenue from energy taxes has increased. The main reason for this is the increase on energy consumption. The energy taxes were not significantly increased but its tax base grew, mainly due to economic development and the political strategy followed. Energy is regarded as a basic consumer right for which the government is responsible and expected to ensure a fair price through regulatory and taxation instruments, which have been keeping the fuel price relatively stable between 1997 and 2002. On times of fuel price increase in the world market, this policy has meant a high public expenditure and a wrong price signal to the market in environmental terms. The three basic aims of general energy policy are, hence, graduated: first, overall competitiveness, second, supply, and, third, environmental protection.

The ISP is mainly a revenue raising tax. This tax accounted, in 2001, for 14.5 per cent of the total tax revenues [47]. The high fuel tax is not mainly explained by environmental concerns towards externalities internalisation or behavioural change but by its administrative simplicity and profitability. The government was accused of disguising revenue motives under environmental arguments. Since the ISP was never able to change behaviours due to the lack of alternatives and its revenues were also not used to create these alternatives [48]. However, it is possible to find in the ISP many of the environmental tax measures existing in the Portuguese tax system. But there were not significant results from the use of these measures. The exception is the improvement reached in sulphur emissions. The ISP has been used to provide incentive to shift demand from leaded petrol to more environmental friendly fuels, but not to increase energy efficiency. And the revenues from transport and energy taxes are not earmarked to environmental actions, with one exception. Until 2001, part of the ISP revenues was assigned to Petrogal, the biggest Portuguese oil refinery to help it to comply with the Auto Oil Programme.

The ISP was not used to invert the unsustainable energy consumption path. The periodical reviews to which the ISP tax rates have been subject were used to compensate for the evolution of the oil price in the world market. The fluctuations of the oil price in the international markets had been, thus, flattened as a result of a political option for revenues and economic stability. The taxpayer supported the cost of the price maintenance and the demand had not to respond to real scarcity for some time. As a result, the benefits from energy conservation efforts, the introduction of the natural gas and the success of the co-generation were more than compensated by a strong growth of the transport sector, particularly in coastal areas.

Diesel fuel is broadly used due to its comparatively low price. The argument used for the lower tax burden on diesel was its productive use. After the analysis of the vehicle sales it is, however, possible to notice that the private use of this fuel is common. This tax incentive to the use of diesel vehicles does not seem to be nullified by the IA, which favours the vehicles using gasoline, as the ones using diesel need a stronger engine to develop the same power and the engine power is a major criterion for the charge of the latter tax.

It was the informal pressure of the European institutions that induced the Portuguese regulator to discriminate between unleaded and leaded gasoline. While in Sweden, *v.g.*, the gasoline taxes differentiated with respect to lead content since 1986 [50], in Portugal that happened only in 1993 (Portaria n. 1109/93, 2 November). On this year it was imposed a minimum tax rate on unleaded petrol lower than the one imposed on leaded petrol. The differential (0,05 Euro) was, however, small. Leaded petrol is not sold in Portugal since June 2000, due to the formal pressure of the European institutions. Until then its tax rate has always been higher than the one imposed on unleaded petrol. And this is one of the reasons said to have delayed the ban of dirty gasoline from the market. Since the total tax revenue – ISP and VAT – from each litter of leaded petrol sold was higher than the one obtained by the sale of one litter of unleaded petrol. The other reason pointed out for the delay has been the pressure from the oil refineries' lobby, which tried to postpone the needed investments as long as they could [51].
The environmental concerns showed by the ISP legislator cannot be taken lightly and the government commitment regarding the eradication of leaded gasoline was already classified as 'soft' [52]. Two evidences of this are given by the way tax differentiation was used. Lead-free gasoline was subject to a rather peculiar system of tax benefits (indirect subsidies) that, in the middle 1990s, enabled unleaded 95/octane to be cheaper than leaded gasoline but unleaded 98/octane to be more expensive than the latter [53]. The second evidence is given by the tax structure of the price for addictivated gasoline between September 2000 and January 2001 [54]. Though the additivated gasoline price was still higher than the unleaded petrol one and the difference between the two was still the same, the ISP on the greener gasoline was higher. The tax on petroleum products is dominated by a fiscal logic and does not include in its design relevant incentives to energy efficiency. The possibility of promoting the use of cleaner energy sources through a consumption shift is also not used, as there is a restricted differentiation of the tax rate according to the environmental impact of the fuel. And, despite the high level at which the tax is set, it does not seem to be able to counteract the growth trend experienced in the private transportation sector, as the real price of energy has been decreasing. Thus, the role of this instrument in terms of environmental policy is negligible. Several factors have contributed to this situation. The low economic performance of the country coupled with the reduced innovation capacity shown by the formal institutional structure, namely the tax administrative body, empowered the fuel tax as revenue raiser. Hence, it is difficult to downgrade the fiscal logic in its design. Furthermore, the green lobby has not been able to increase the importance of the environmental dimension in the design of this tax. The strategy deficiency of the green lobby is due both to lack of will and lack of capacity, being the latter the result of a low representative power. Furthermore, in the case of the green party, its genetic process associated to the communist party introduces contradictory tendencies in the address of the energy taxation issue, as distributive concerns conflict with environmental ones.

The environmental performance of the instruments

The energy and transport sectors are directly linked to economic development. The environmental impact of these sectors in Portugal shows the country was not able to decouple economic growth from environmental damage and follow a sustainable development track. This is so in spite of the high tax burden on the polluting bases more directly responsible for them (fuel consumption and vehicle use). Important environmental problems in Portugal are connected to energy consumption and the transport sector. The high average age of vehicles, the great traffic intensity and the low fuel-efficiency and strong oil dependence of the transport sector makes it responsible for a big share of the

energy consumption and the atmospheric pollutants. Between 1980 and 1999, the average age of passenger cars increased in the EU-15, with the consequent slowing down of the penetration rate of modern cleaner technologies. In 1998, Portugal held the highest value (11 years) far away from the EU-15 average (7 years). Furthermore, the energy pricing does not successfully internalise environmental externalities neither reflect relative scarcity [55]. Portugal shows an unsustainable evolution pattern in air pollution. Compared with most European OECD Member countries Portugal had by the beginning of the 1990s low atmospheric emissions in terms of population but was close to the European average in terms of GDP, and rates of growth in emission levels were generally higher than the average. By the end of the 1990s, Portugal had not yet decoupled its air pollutants emissions from economic growth, and car traffic and related CO2 emissions had increased at rates higher than those of GDP. The country was not able to reduce its NOx and NMVOC emissions, which main source is the road transport sector. And it was in fact the EU Member State that experienced the highest increase in this kind of emissions during the period 1980-1998, only closely followed by Spain with a 15 per cent increase [56]. Portugal is well above its linear Kyoto target path, and still requires a significant effort to meet its targets [57].

Overall, little progress has been made in improving energy efficiency [58]. The country kept on being the EU Member State with the lowest energy efficiency. Unlike most other OECD Member countries, which have continued to reduce the linkage between growth and energy use, in Portugal economic growth has become increasingly dependent on access to energy supplies [59]. In Portugal the growth in energy sales (+139%) was well above the EU average (+45%) [60]. The biggest energy consumers are the transport sector and the industry, which in the beginning of the 1990s represented 80 per cent of final energy consumption [61]. But in general, and for the period 1985-1998, demand for petrol and diesel fuels for use by road vehicles was the main driving force behind the rise in total energy consumption. In 1999, road was the biggest energy consumer sector, representing around 72 per cent of transport energy consumption [62].

Although the rate of vehicles per inhabitant is still one of the lowest in the EU, the country's commuting pattern is overfocused on private automobiles. The boost in demand is not only due to changes in travel patterns but also to higher incomes, and to a fall in transport prices in real terms [63]. This trend was a result of the general decline in world oil prices, as well as price ceilings on diesel fuel, gasoline and fuel oil and did not conduct to energy efficiency. In 1998, for example, among the EU Member States unleaded fuel prices were highest in Sweden and lowest in Portugal. Diesel prices followed a similar pattern [64]. The decline in real motor fuel prices helped lower the cost of road transport, which was an important factor in stimulating demand for transport, whose external costs were decreasingly reflected in prices [65].

It is possible to conclude that, despite the close linkage of the tax bases of the motor vehicle tax and the tax on petroleum products to major national environmental problems, the instruments analysed show a deficient environmental performance. This seems to result from their inadequate design to deal with the environmental problems in question. The same variables that affect the ecological modernisation capacity of the country have apparently influenced the features of the two taxes, reducing their contribution to the solution of the problems they potentially were able to deal with.

Tentative conclusions

The Portuguese example might allow to extend the argument used by Jänicke that a country's environmental performance depends on its basic preconditions for ecological modernisation. The analysis of two taxes that the OECD/EEA database would allow to

classify as NEPIs, the motor vehicle tax and the tax on petroleum products, seems to support the hypothesis that the number and/or performance of the NEPIs, namely tax instruments, is also influenced by the level of ecological modernisation observed in a country. The basic variables that Jänicke claims to influence the ecological modernisation capacity of a country seem to have played an active role in hindering the environmental performance of the two taxes analysed. And this is so despite the fact that these are instruments that potentially could serve well environmental policy goals, due to the close connection they hold, through their tax base, with an important national problem, the pollution caused by road transport.

In the case of the motor vehicle tax the relevant factors seem to have been the lack of consensus ability and of strategy proficiency. There is a long-time and broadly-based criticism to this tax, which is considered to have been distorting the market options, both against the national economy and the environment, creating sources of inefficiency. Thus, several reform proposals have been made. However, the strong interests involved in this process have so far not been able to reach an agreement. As a consequence, though the existent tax regime is harmful to the interests of most stakeholders, it was not possible yet to bring up a more satisfactory result.

As far as the tax on petroleum products is concerned the problem seems to reside in the level of economic performance of the country and its lack of innovation capacity, with an important role being played by the institutional context. The obsolete national tax administrative structure together with the low economic performance of the country forces the government to take as its main tax revenue source indirect taxes. And the tax on petroleum products is the second biggest provider of revenue among indirect taxes. Hence, it is difficult to introduce in this instrument a rationality that has inherent a reduction of its revenue capacity. Furthermore, in a lower level, it is possible to root the problem also in the strategy deficiency of the green lobby, which was not able to overcome its genetic process and consequently holds a conflicting agenda in the issue of energy taxation.

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[3] OECD database, www.oecd.org/env/tax-database; EUROPEAN ENVIRONMENTAL AGENCY, *Environmental Taxes*, Environmental Signals 2002, 2002, p. 127.

[2] GOULDSON and MURPHY, "Ecological Modernisation: restructuring industrial economies", in M. Jacobs (ed.), *Greening the Millennium: the New Politics of the Environment*, Oxford: Blackwell, 1997, p. 75.

[3] OECD, *Environmental and Economics: The Results of the International Conference on Environmental Economics*, Paris: OECD, 1985, p. 10; J. S. DRYZEK, *The Politics of the Earth: Environmental Discourses*, Oxford: Oxford University Press, 1997, p. 145; and GOULDSON and MURPHY, 1997, p. 74.

[4] MIKAEL SKOU ANDERSEN and ILMO MASSA, *Ecological Modernization – Origins, Dilemmas and Future Directions*, Journal of Environmental Policy & Planning, vol. 2, 2000, pp. 337-345, p. 341.

[5] See, v.g., EUROPEAN COMMISSION, COM/93/700 final, 05.12.1993, COM (97) 30 final, 1997.

[6] MAURIE J. COHEN, (2000), *Ecological Modernisation, Environmental Knowledge and National Character: A Preliminary Analysis of the Netherlands*, Environmental Politics, vol. 9, N. 1, Spring 2000, pp. 77-106, p. 99.

[7] M. JÄNICKE, *Erfolgsbedingungen von Umweltpolitick in internationalen Vergleich*, Zeitschrift für Umwelt politik, N. 3, pp. 213-231, 1990; MIKAEL SKOU ANDERSEN, *Governance by Green Taxes. Making Pollution Prevention Pay*, Manchester University Press, 1994.

[8] WEIDNER and JÄNICKE, *Capacity Building in National Environmental Policy. A Comparative Study of 17 Countries*, Berlin, 2002, first chapter.

[9] CISEP/MIE, *Inovação indústria Portuguesa: Observatório MIE*, report by CISEP/ISEG/UTL the Centre of Research on Portuguese Economics from the Higher Institute of Economics and Management, Lisboa: Portuguese Ministry of Industry and Energy, 1992.

[10] *Idem.*

[11] OECD, STI Scoreboard 2001, http://www1.oecd.org/publications/e-book/92-2001-04-1-2987/PDF 5CA11.pdf.

[12] M. O'NEILL, *Green Parties and Political Change in Contemporary Europe*, Aldershot: Ashgate, 1997, p. 273.

[13] PUREZA, *Os Tribunais e os Novos Espasmos da Cidadania: O Exemplo do Direito do Ambiente em Portugal*, Colóquio Comemorativo dos 20 anos da RCCS. Justiça e cidadania – por uma justiça mais democrática, Centro de Estudos Sociais, Lisboa, 1999, 2.e); and MOURA, FERREIRA, CORREIA, TELLES, SOROMENHO-MARQUES, *Ecologia e Ideologia*, Lisboa, 1999, pp. 104 and 108.

[14] FERREIRA DE ALMEIDA, *Os Portugueses e o Ambiente*, Oeiras, Portugal, 2000, pp. 89 and 163.

[15] *V.g.*, FRANCISCO FERREIRA, president of Quercus, a Portuguese environmental NGO, June 1998.

[16] See, *v.g.*, http://www.eeb.org/activities/env_fiscal_reform/newsletter-7.pdf, and http://www.foes-ev.de/GBNnews2/3artikel4.html.

[17] SCHMIDT, *Portugal Ambiental. Casos & Causas*, Oeiras, Portugal, 1999, p. 44.

[18] Jornal Expresso, *Governo quer diminuir peso do chumbo*, 22.11.1997, online edition.

[19] Resolução do Conselho de Ministros n.º 38/95, 21.04.1995, and Law n.º 127-A/97 de 20-12-1997, 4th option – Programa Nacional de Redução das Emissões das Grandes Instalações de Combustão. See, also, Jornal Expresso, *Elisa Ferreira assina últimos contratos de despoluição industrial*, 07.02.1998, online edition.

[20] F. MAÇÃS, "Os Acordos Sectoriais como um Instrumento da Política Ambiental", RevCEDOUA, Ano III, N. 1, pp. 37 and ff., 2000, p. 50.

[21] See, *v.g.*, Jornal Expresso, *Esgotos do Vale do Ave em causa. Ministério do Ambiente multa câmaras socialistas*, 29.08.1998; *À mercê do asfalto*, 24.10.1998; *Ministério multa Ministério*, 06.11.1998; and *Costas negras*, 20.01.2001, online edition.

[22] OECD, *OECD Environmental Performance Reviews. Portugal*, Paris: OECD, 1993, p. 95.

[23] M. GODINHO, *Innovation Diffusion in the Portuguese and Italian Clothing Industry*, Doctoral dissertation, SRU University of Sussex, Brighton, 1993.

[24] M. LARANJA, *Innovation and Technology Transfer in Portugal – Problems and Perspectives*, poster-paper presented in the International Conference 'Technology Policy and Less Developed R&D Systems in Europe', Seville (Spain), 17-18 October 1997, p. 18.

[25] COOMBS and FONTES, (1993), *Research and Technology Management in Enterprises: issues for Community Policy – Case Study on Portugal*, SAST Project N. 8, European Commission DGXIII, Luxembourg.

[26] P. CONCEIÇÃO, and M. HEITOR, *Engineering and Technology for Innovation in Portugal: a study on the dynamics of technological change. A preliminary summary*, Center for Innovation, Technology and Policy Research,

IN+, Instituto Superior Técnico, Lisboa, June 2000, http://in3.dem.ist.utl.pt/, p. 10; and EUROSTAT, *Towards a European Research Area. Science, Technology and Innovation. Key Figures 2000*, Luxembourg, 2000.

[27] OECD, *Environmental Performance Review. Portugal.*, Paris: OECD, digital version, 2001.

[28] OECD database, http://www1.oecd.org/scripts/env/ecoInst/index.htm.

[29] DIAS and TABORDA, *Evolução recente do nível médio do mar em Portugal*, Anais do Instituto Hidrográfico, 1988, Vol. 9, pp. 83-97; DIAS and TABORDA, *Tidal Gauge Data in Deducing Secular Trends of Relative Sea Level and Crustal Movements in Portugal*, Journal of Coastal Research, Vol. 8, pp. 655-659; and DIAS, FERREIRA and TABORDA, *Implications of Accelerated Sea-Level Rise (ASLR) for Portugal*, Proceeding of SURVAS Expert Workshop on European Vulnerability and Adaptation to impacts of Accelerated Sea-Level Rise (ASLR), Hamburg, Germany, 19-21 June 2000.

[30] MARTIN JÄNICKE, (1990), pp. 213-231; ANDERSEN, (1994).

[31] CHIARA BRONCHI, and JOSÉ C. GOMES-SANTOS, (2001), *Reforming the Tax System in Portugal*, OECD Economics Department Working Papers, N. 302, p. 6.

[32] OECD, *Revenue Statistics 1965-1998*, Paris: OECD, 1999, and EUROPEAN ENVIRONMENTAL AGENCY, *Environmental taxes*, Copenhagen: EEA, online edition, 2000.

[33] SCHMIDT, (1999), p. 26.

[34] Projecto de Lei n.º 452/VI, Diário da República, II Série-A, 05.11.1994, pp. 32-33.

[35] ACAP, Comunicado de Imprensa n.º 4/99, 27.01.1999.

[36] Jornal Expresso, *Governo agrava IA*, 17.01.1998, online edition.

[37] Jornal Expresso, *Governo muda escalões do IA*, 27.09.1997, online edition.

[38] Projecto de Lei n.º 452/VI, Diário da República, II Série-A, 05.11.1994, pp. 32-33, p. 32; MINISTÉRIO DAS FINANÇAS and SECRETARIA DE ESTADO DOS ASSUNTOS FISCAIS, *Reformas da Tributação Automóvel e do Património*, Coimbra: Almedina, 2002, p. 11.

[39] MINISTÉRIO DAS FINANÇAS and SECRETARIA DE ESTADO DOS ASSUNTOS FISCAIS, (2002), pp. 40-42.

[40] GEOTA, Comunicado de Imprensa relativo ao Imposto Automóvel, January 1998.

[41] GEOTA, *Comunicado sobre Política de Preços da Energia*, Lisboa, 20.12.2000.

[42] GRUPO PARLAMENTAR DO BE, "Um Contrato social e ecológico para o país", November 2000, p. 3.

[43] Projecto de Lei n.º 452/VI, Diário da República, II Série-A, 05.11.1994, pp. 32-33, p. 32.

[44] *Reforma do Imposto Automóvel em Portugal baixa preço dos carros*, CM, online edition, 07.02.2001.

[45] EUROPEAN ENVIRONMENTAL AGENCY, 2000.

[46] INTERNATIONAL ENERGY AGENCY (IEA), *Statistics — Energy Prices and Taxes*, http://www.sourceoecd.org/content/templates/co/co_main_statistics.htm?comm=ieaenerg, 23.03.2003.

[47] Data obtained from the MINISTÉRIO DAS FINANÇAS DE PORTUGAL website.

[48] Reunião Plenária da AR de 31 de Março de 1999, DAR, I Série, N. 67, 1 April 1999, pp. 2477-2478.

[49] OECD, *Economic Surveys. Portugal*, Paris: OECD, 2003, p. 12.

[50] OECD, *The OECD Job Study*, Part II, Paris: OECD, 1994, p. 58.

[51] Jornal Expresso, *Governo quer diminuir peso do chumbo*, 22.11.1997, online edition.

[52] N. LACASTA and P. MARTINS BARATA, *NGOs' Evaluation of 2nd National Communications to the UNFCCC OECD Countries*, September 1997, point 3.

[53] *Ibidem.*

[54] DIRECÇÃO-GERAL DA ENERGIA, (2001), *Preços de energia*, N. 35, January.

[55] BRONCHI and GOMES-SANTOS, (2001), p. 22.

[56] EUROSTAT, News Release, n.º 62/2001, 07.06.2001.

[57] COM(2001) 708 final, p. 26.

[58] OECD, *OECD Economic Surveys. Portugal*, Paris, 2001.

[59] OECD, (1993), p. 88.

[60] EUROSTAT, (2001).

[61] OECD, (1993), p. 88.

[62] EUROPEAN ENVIRONMENTAL AGENCY, *TERM 2002-01 —Energy Consumption, Indicator Fact Sheet*, 2002, p.1.

[63] EEA, *Report on Energy use*, Copenhagen: EEA, online edition, 2000; and IEA, (2003).

[64] EUROPEAN ENVIRONMENTAL AGENCY, *Are we moving in the right direction? Indicators on transport and environmental integration in the EU: TERM 2000*, Environmental issue report nº 12, Indicators 15 (and 16), 2000.

[65] OECD, (1993), p. 97.