

Green Urgency - How Anticipation of Future Climate Measures Revert the Green Paradox

Florian Habermacher

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University of St. Gallen - Swiss Institute of International Economics and Applied Economic Research

Abstract

The green paradox states that a CO₂-tax introduced today would aggravate climate change, as the level of such a tax would be expected to increase fast enough for fuel owners to feel incited to sell their resources on the market as soon as possible. This theory and the related anticipation effects can in some senses represent a strong argument against many a CO₂-tax proposal, as (i) it is true that political feasibility of a CO₂-tax typically limits its initial level to values well below of what would be desirable for climate change protection, and (ii) basic economic theory suggests that producers of oil (and other fuels) will intertemporally optimize their sellings in order to maximize expected overall profit. The green paradox implicitly relies on a business as usual scenario in which oil producers are assumed to be able to sell all their relevant extractable resources over time without any additional future constraints. We show, however, that it does not hold anymore in the case where some alternative climate protection measures or developments are available in the medium-term future: the possibility of such a future development - be it (i) the successful appearance of a backstop technology making fossil fuels redundant, (ii) a broadly applicable carbon capture and storage system, (iii) a global "Super-Kyoto" drastically reducing worldwide demand, or even (iv) a prohibitively high future carbon tax - will be anticipated by oil owners today anyway, which, as our analysis shows, is likely to invert the conclusions that are typically drawn from the green paradox: if the oil owners anticipate the future climate protection measures that are part even of the business as usual scenario (as e.g. a backstop may be developed even without it being promoted for climate reasons), they will try to sell as much as they can already today in any case, and there exists therefore an urgent need for the introduction of a carbon tax today in order to counter the resource owners' desire for excessive sales today. Our analytical analysis yields unambiguous results in favor of a today's CO₂-tax in a simple model where a stringent measure will be introduced at a fixed time in future and where a reduction of cumulative medium term emissions is always considered beneficial. It seems, however, that more detailed models lead to less unambiguous results and that solving them will require numerical simulations - they are part of our future plans.

Clean Development Mechanism, Foreign Direct Investment and Development Aid: a comparative analysis

Iva Hristova

Abstract

This paper aims to draw a comparison between the financial flows created within the CDM, and those resulting from FDI and Development Aid. First, we present a global overview of the volumes, the major recipient and emitter countries and their evolution through the years. Then we focus on the determinants of these flows and the existing similarities and differences. As the existing empirical literature on FDI and development Aid's determinants is quite rich, our estimations would focus mainly on CDMs. The final purpose of this study is also to check whether CDM, FDI and development Aid may have a crowding-out effect or they can represent a complementary investment solution.

Creating Incentives for Demand Response

Andreas Ulbig, ETH Power Systems Laboratory

An intelligently designed time-varying tariff scheme can be an effective tool for influencing the actions of price-responsive end-consumers, a subset of demand response (DR), be it in the framework of demand-side management (DSM) schemes or smart-metering. All these end-consumers have in common that they are trying to minimise their cost function of electricity consumption.

Therefore, a properly designed tariff scheme can be seen as a tool, because information about forecasted critical load situations and volatile spot market prices is straightforwardly priced into the proposed end-consumer tariff. In this context, the tariff scheme would act as a control signal, providing the necessary price information and hence the economic incentive for end-consumers to react accordingly.

In the case of an end-consumer which is a participant of a DSM or smart metering scheme, by reducing, increasing or shifting his consumption. And in the case of a electric storage unit at the end-consumer side, be it in the form of electric vehicle batteries or other storage technologies, by charging or discharging at appropriate times. Within such a tariff regime, grid-friendly behaviour of end-consumers is rewarded.

Recent wide-spread deployment of smart meters in several European countries, for example in Italy and Sweden, has created the necessary prerequisite for the introduction of sophisticated time-varying tariff schemes for end-consumers. Since price-responsive consumers have an economic motivation to minimise their cost function for electricity consumption, a well-designed variable tariff scheme can align the individual interest of those consumers to behave cost-optimally with the superordinate aims of alleviating critical load situations. Furthermore, the recently occurring unusual price fluctuations at the spot markets, i.e. high negative spot prices, could be mitigated, since price-elastic loads can be seen as a crucial buffer in case of a mismatch in demand and supply.

Determinants of the voting behavior of municipalities in energy related issues: The example of the canton of Zurich

Kathrin Volkart, ETH Zurich, e-mail: volkartk@student.ethz.ch

Abstract

This study analyzes the voting behavior of the municipalities in the canton of Zurich in energy related issues. The goal is to find the determinants of the voting behavior based on the characteristics of the municipalities in order to suggest relevant fields for politico-economic measures which could influence the energy use and the related challenges. For three votes, two on mobility and one on nuclear energy, the decisive characteristics were determined by the application of Probit models. It was found that political opinion, wealth and educational level in the municipalities influenced the results of all three votes. Additionally, age and subdivision by public transportation for the votes on mobility, respectively the type of municipality for the vote on nuclear energy have proven to influence the voting results. This lead to the conclusion, that education is an important factor for levying higher vehicle taxes, the establishment of large rail road projects and the critical reflection on energy technologies. Nevertheless other factors such as the provision of public transportation or the creation of an economically stimulating environment are expected to be successful measures in order to levy taxes for the internalization of mobility's external costs and to encourage the opposition on controversial energy technologies. Finally, left-wing parties seem to bear responsibility regarding the influence on energy use and its related challenges.

Promoting renewables cost-effectively:

Empirical analysis of photovoltaic power production in Switzerland

Johannes Vogel, University of Bern, e-mail: johannes.vogel@students.unibe.ch

Abstract

Electricity generation based on photovoltaic (PV) technology has not yet reached market maturity demonstrated by current high production costs. In order to ensure an economic, environmentally-compatible and diversified electricity supply in the long term, the Swiss legislator adopted a cost-covering feed-in remuneration system for renewable energy sources in 2007. Such feed-in tariff systems can easily suffer from cost-ineffectivities since substantial variances in specific output and costs appear among operators. The present study seeks to identify cost-ineffectivities among roof-mounted photovoltaic power plants registered with the Swiss promotion system 'KEV'. In the framework of an empirical analysis, a sample of 65 plants was investigated with regard to actual investment costs. Moreover, a stochastic total cost frontier function was estimated. The present study provides empirical evidence for the existence of cost-ineffectivities inherent in the system. This can be substantiated by a share of 60% of investors realizing so-called 'resource rents' which are defined as surplus returns above the value of input factors.

CRETENAND Nicolas

The facilitation of small hydropower in Switzerland:

Is pump-storage an option?

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Ecole Polytechnique Fédérale de Lausanne (EPFL)

Abstract

The presentation aims to contribute towards further shaping of the institutional framework in Switzerland in order to facilitate the development of small hydropower (<10MW). The context of the research is the current liberalisation process of the electricity sector, the forthcoming electricity gap and the government's aim to increase the weight of renewable energy sources (RES), as well as post-Kyoto regulation.

In 2008, small hydropower (SHP) produced 5.4 % of the total Swiss electricity production. The SHP potential is only partially tapped and current estimates show that the use of this potential could be increased by 60-100 %. SHP has, generally, a higher energy payback ratio and lower production costs than other RES, and should therefore be further facilitated.

With the introduction of the feed-in tariffs in 2009 and the current adaptations (increased funding, simplified procedures, VAT removal), the financial facilitation of SHP is well supported. In addition, the label electricity "Naturemade" can contribute to facilitate financially SHP. The main challenges of the facilitation are institutional (reducing transaction costs, spatial planning approach for new plants development, quality guarantee). Based on the literature of co-evolution between technologies and institutions, and based on the coherence framework, ideas are developed of how to improve the institutional framework.

Firstly, the dynamics of the electricity sector have to be considered such as the trend of decentralisation and the need of additional storage capacities to absorb within the infrastructure the stochastic electricity production from wind and solar sources.

Secondly, the application of the coherence framework to the SHP case shows that institutions have to be coherent in size and scope with the technology. More standardisation is required to reduce transaction costs. On the technical side, standards could contribute to a technical standardisation of SHP thus improving the quality of the implementation of the technology. This is necessary as with the liberalisation new actors have entered the market without having all the needed competencies. Furthermore, the idea of including pump-storage power plants below 10 MW within the institutional framework which facilitates SHP is developed. The deployment of such plants could be boosted within multipurpose infrastructure and the rehabilitation of existing plants. It would contribute to decentralised grid balancing considering current trends in grid operating ("smart grids").

The current research focuses on the latter idea of SHP with storage capacity to adjust production to demand, and where feasible, pump capacity to absorb stochastic production. The objective is to develop a methodology to assess qualitatively the SHP pump-storage potential in Switzerland, and in case of a significant potential, to design the institutional framework to facilitate such an implementation.

MODELLING OF THE EUROPEAN BIOFUEL SUPPLY, INTRA- AND EXTRA-EUROPEAN EXCHANGES, CROSSING EFFECTS WITH PETROLEUM MARKETS, AND "CARBON CONSTRAINT"

MELISSA CLODIC¹

ABSTRACT. Concerns about the energy supply security and the environment are the main reasons of the current biofuel production boost in several countries, and in the European Union in particular. Three pillars sustain the European biofuel development: enhancement of the energy supply, reduction of greenhouse gas emissions and sustainment of the agricultural sector. The purpose of this thesis, focusing on the European Union, is to contribute to the biofuel economic and environmental cost&benefit analysis. By estimating the biofuel supply, depending on scenarios, we can analyse impacts of policies - such as the implementation of a carbon tax or biofuel incorporation mandatories - on biofuel and by-product production, agricultural land use, GES emissions, intra- and extra-European exchanges and competition with the food sector. Moreover we can determine the optimal biofuel development, environmentally and economically consistent, assuming that biofuels are profitable in the future. In parallel, it gives us an idea of the biofuel competitiveness.

The nature of the biofuel production chain, affecting the pattern of both the energy demand and the agricultural resource use, motivates us to employ a soft coupling modelling approach between three static economic mathematical programming models, representing the main three parts of the whole biofuel production chain. This later is decomposed into the agricultural sector producing resources, the transforming industry sector converting resources into biofuels, and the refinery sector blending biofuels with conventional hydrocarbons for marketing. We focus particularly on the vertical dimension of the issue. Two of them, the European agricultural supply model AROPAj, developed by INRA, and the European refinery model OURSE, developed by IFP, are existing and experimented models, which have been updated and improved for the coupling. The first one maximise the profit of each representative agricultural agent under constraints, and the second one minimise the European refinery sector costs under constraints including the demand constraint. The third model is a new modelling focusing on the transforming industry sector, maximising the profit of the biofuel industrial sector under constraints. This approach keeps the aggregated level of the three modelling results over the European Union, and takes into account the geographical dimension as well as the crossing effects between sectors and some of the feedback effects. By georeferencing the modeled agents of each involving sector, we point the spatial dimension too. It is essential to interpret the exchange flux between sectors in order to consider the transport costs in our analysis and to determine the biofuel supply and consumption areas. In addition to these vertical and spatial dimensions, we also consider the horizontal dimensions by taking into account the various potential resources and biofuels (bioethanol from common crops such as beets, maize and wheat ; ETBE from bioethanol ; crude oilseeds (mostly rapeseeds, sunflowers and soybeans) ; biodiesel from oilseeds, used or animal oils ; lignocellulosic bioethanol, NexBtL from oilseeds ; BtL from biomass or waste.), as well as the associated by-products.

Depending on scenarios, results can be achieved in a short term run as well as long term run thanks to the activation of investment variables. So this thesis develops a framework, modelling the complex current European biofuel context, which could be assimilated to a partial equilibrium approach of the biofuel sector.

¹UMR Economie Publique INRA-AgroParisTech (Thiverval Grignon, FRANCE) and IFP (Rueil-Malmaison, FRANCE), melissa.cloclic@gmail.com

On the International Distribution of National Taxes on Oil Products

1. INTRODUCTION

The statistical dispersion of taxes on oil products has attracted scholars' interest on the factors driving governments' adoption of those taxes. Surprisingly, the empirical and theoretical literatures dealing with the issue of oil taxation have followed different trajectories.

A natural first hypothesis is that countries set their domestic taxes on oil products in order to raise revenues as well as to correct external effects of oil use, as for instance local pollution and roads' congestion. The underlying theories for such motives of taxation have been developed in the public economics literature and are well known under the terms "Ramsey taxation" and "Pigovian taxation".

The Ramsey taxation theory addresses the problem of a government concerned with social welfare but in the need of collecting a given amount of tax revenues. The literature originated with Ramsey (1927) and Pigou (1928) and was consolidated by Baumol and Bradford (1970) and Atkinson and Stiglitz (1980), among others. Its most famous result is the "inverse elasticity rule" stating that, under not-so-restrictive conditions, commodity taxes that minimize the deadweight loss are inversely proportional to the price elasticity of demand on each market. From this rule, it follows that a tax should be all the higher the greater the need to raise revenue and the lower demand elasticity. It is often noted that oil demand is relatively price inelastic (Berndt and Wood, 1975; Pindyck, 1979; Krichene, 2002). The need to raise revenues is directly linked to the use of oil: infrastructure construction and maintenance are expensive and make up for 1-2% GDP in OECD countries and for a much higher fraction in underdeveloped countries (e.g. 15% in Libya, Source: World Road Statistics, 2009).¹ It is also an attractive in-

¹Financing infrastructure construction via a tax on oil satisfies the benefit principle by Musgrave and

strument to raise revenue for other types of government expenditures due to its low cost of administration and low possibilities of fraud. With petroleum consumption accounting for about 1-3.5% percent of GDP, it is a potential source of significant government expenditure. Thus, the theory calls for relatively high oil taxes.

Pigovian taxation consists of setting a tax in such a way as to correct a market failure due to an external effect generated by the production or the use of a commodity. This literature originated with Pigou (1912 and 1920) and was developed by Baumol (1972). In essence, a Pigovian tax internalizes the external damages (benefits) and should be set equal to the marginal damage (benefits) evaluated at the optimal quantity. The most cited external effects of fuel use are pollution and congestion; they call for positive taxes reflecting the magnitude of externalities caused.

The empirical literature on oil taxation further decomposes these two main motives into several testable aspects. The need to finance road infrastructure construction and maintenance and the need to raise revenue to decrease governmental debt or deficit count among the Ramsey taxation motive. In addition, the revenue raised is shaped by the elasticity of demand for oil, the ability of consumers to substitute for other means of transport and the tax levels set by neighboring countries² Pigou taxation, on the other hand, motivates taxation of local and global externalities, such as air pollution and global warming, and congestions from traffic.

Rietveld and van Woudenberg (2005) are the first to conduct a rigorous analysis on the empirical significance of each of these aspects of taxation. Subsequent studies on petroleum taxation have worked on refining further aspects of taxation such as the role of tax competition (Paizs, 2007), the political business cycles in tax setting deci-

Musgrave (1989) according to whom users of a public good should pay in accordance to their utilization rates

²The revenue raised from oil taxation is also determined by some political economy factors such as the degree to which political interest groups can avoid taxation on petroleum products, the stance of the political business cycle allowing for changes in tax rates and the color of the government in power.

sions (Decker and Wohar, 2007) and gasoline consumption and substitution possibilities (Hammer et al., 2004; Liddle and Lung, 2008). Noteworthy and important for the interpretation of the results, however, is the choice of the variable representing the underlying motive: Often, different motives are represented by the same variable, leading to diverging conclusions in the literature.

Among the various motives for taxation, the pure revenue raising motive has been declared to explain the greatest fraction of variation in taxes. Rietveld and van Woudenberg (2005) even find that due to the little significance of the other motives, taxes on petroleum products are "just one source" of revenue. This result has been confirmed in a comparable way by Paizs (2007) and Hammer et al. (2004). Liddle and Lung (2008) are even able to show that the need to raise revenue cause (in the sense of Granger, 1969) gasoline taxes.³

Only little evidence has been found for the link between size of infrastructure and taxes on oil (Rietveld and van Woudenberg, 2005; Decker and Wohar, 2007). Only when using a more general proxy, like GDP / capita, a highly significant and positive coefficient can be found (Paizs, 2007). Elasticity of demand has been proxied by income. In line with the ability to pay principle, Rietveld and van Woudenberg (2005) and Dunkerley (2010) find income measures to be significant for the sample comprising European countries but insignificant for countries outside of Europe. Thus, richer countries within Europe set higher taxes, *ceteris paribus*. Outside of Europe, this relation does not hold. This result may also indicate that the effective impact of a tax on petroleum products within Europe is progressive whereas it is rather regressive in the US, UK or developing countries (Zhang and Baranzani, 2001).

³However, the conclusion of other motives having almost no additional explanatory power may be the result of using expenditures of GDP as explanatory variable. This variable reveals the degree to which governments tend to raise taxes or already have imposed taxes. In that sense, it is comparable with tax revenue / GDP. A better indicator for the need to raise revenue is debt or deficit as fraction of GDP, possibly introduced with a lag.

Rietveld and van Woudenberg (2005) and Paizs (2007) show that countries compete in taxes on oil with their neighboring countries in order to maximize revenue raised. The competitive tax setting is shaped by the behavior of commuters and their ability to shop abroad. Tax competition is higher in countries where borders are more open (Paizs, 2007), a reason for tax competition having become more severe in Europe after 1995. Outside of Europe, tax competition is much less severe. Tax competition is more pronounced for diesel than for gasoline taxation due to the greater ability of truck driver to make use of arbitrage opportunities (Rietveld and van Woudenberg, 2005). Furthermore, countries of smaller size tend to set taxes below the level of bordering, larger countries. All in all, up to half of the tax changes in the diesel tax rate in Europe can be attributed to tax changes by neighbors (Paizs, 2007).

With respect to the Pigou taxation motive, local air pollution has some influence on tax setting, whereas climate warming or congestion do not seem to drive taxation decisions. Goel and Nelson (1999) find that gasoline tax rates respond to noncompliance to the US Clean Air Act: after signing and not fulfilling the criteria of the contract, politicians increase the tax rate on polluting vehicles. This finding is confirmed in Decker and Wohar (2005): a 10% increase in bad air results in a 1.3 % increase in the diesel tax rate. However, global externalities arising from congestion do only play a minor role for taxation of petroleum (Eduardo and Boccoardo, 2009). Measuring the seriousness of externalities by car density, RW (2005) do not find significant evidence that correction of externalities play a role for taxation levels. Similar results have been found by Eduardo and Boccoardo (2009) who compare optimal GHG tax levels with observed levels. They find that large emission countries are under-taxing motor fuel, indicating the low importance of environmental considerations for tax setting decisions. Thus, while motives following Pigou do not seem to explain a huge fraction of the variation in taxation levels, there is a lot of empirical evidence for taxation decisions being driven by Ramsey taxation motives.

Isolatedly, a strand of the resource economics literature has emphasized the strategic interaction resulting from domestic taxes on non-renewable resources, and on oil in particular. The core of the problem this literature has addressed is how countries set selfishly their domestic taxes on oil in order to maximize national welfare. Moreover, the literature has neglected the existence of governments' revenue constraints, as they exist in the Ramsey taxation problem. From this literature's perspective, optimal taxes reflect a noncooperative Nash equilibrium where no unilateral change in a country's tax can benefit the residents of that country given the taxes imposed by the other countries. The problem is similar to that of the old "optimum tariffs theory", originating with Bickerdike (1906) and consolidated by Graaf (1949-50), which investigated how a country benefits from domestic taxation. In essence, this theory says, one country's domestic tax on a traded commodity aims at manipulating the international price of the commodity in the country's favor (terms-of-trade improvement). Such an exercise of one country's market power through its taxation policy requires that the world supply of the commodity is non-perfectly elastic and culminates with the case of an inelastically supplied commodity. The tax competition problem has received much attention in the theoretical resource economics literature as the exhaustible character of oil implies that oil supply is inelastic in the long run. Perfect inelasticity, or exhaustibility, entails the existence of a pure economic scarcity rent accruing to producers. The tax competition problem can then be interpreted as a "fight for the rent" and has found a particular echo as such.

A seminal contribution in this area is that by Bergstrom (1982). He showed, in a model of oil depletion with zero extraction costs, that a country should choose its constant-rate, domestic commodity tax on oil according to a "rule relating the equilibrium excise tax rates to demand elasticities and market shares". This rule implies that oil-importing countries should impose a positive tax on oil while oil-exporting countries should set a negative tax on the resource⁴. As a result of this non-cooperative

⁴Bergstrom focused on oil-importing countries and omitted to comment on the second part of the proposition. However, this is immediate from Bergstrom's analysis and quite logical from the optimum tariffs theory's perspective.

equilibrium, the final price of oil in importing countries is above the international price of oil while it is below this level in oil-exporting countries. A well-known corollary of Bergstrom's result is that, if the consuming and producing regions were perfectly disjoint and if the consuming countries were coordinated, the latter would, with sufficiently high domestic taxes, extract the entire oil rent of the producing countries. In Brander and Djajic (1983), the exporting country can use the resource by itself, as in Bergstrom's general case, and the lower tariffs in that country is interpreted as a credible threat to prevent the importing country to capture the entire rent. Following Bergstrom's influential contribution, Amundsen and Schoob (1999), Rubio and Escriche (2001), Liski and Tahvonen (2004) and Daubanes and Grimaud (2009, unpublished) have introduced a pollution externality of the use of the resource and explored how the rent extraction possibility and the willingness to regulate pollution combine to determine countries' optimal taxes on the resource⁵.

Would the application of the "optimum tariffs theory" to oil taxation have any relevance in the real world? Could this theory help explain the international distribution of oil taxes? Two elements suggest the answer to these questions should be positive. First, the "optimum tariffs theory" has recently received renewed attention in Broda et al. (2008) who empirically showed the importance of the market power (or terms-of-trade) motive in taxation decisions by finding strong evidence that countries' market power and supply elasticity are crucial factors of domestic tariffs. Second, this theory seems to have a crucial explanatory advantage. Basic observations on the international distribution of oil taxes suggest that importers tax oil while exporters subsidize oil, i.e. in other words they set a domestic price lower than the international price at which they export. This feature is very consistent with Bergstrom's theoretical predictions and the optimum tariffs theory while neither the Ramsey taxation motive nor the Pigovian taxation motive (given that externalities related to oil use are negative) can predict negative taxes on oil. Rietveld and van Woudenberg (2005) introduce a dummy for OPEC membership for their empirical model to be consistent with extremely low oil prices in oil-exporting

⁵Developments on those papers to be added here.

countries, controlling for the "presence of alternative tax base". It can also be interpreted as the recognition that standard public finance applied to oil taxation cannot account for subsidies. Eduardo and Bocco (2009) argue that "the imposition of a tariff on oil may be a rational response by OECD countries to the OPEC cartel" but they do not reconcile this theory in their empirical estimation.

Although the Bergstrom motive has been tested in earlier papers, these studies focus exclusively on market power as driver of taxation, neglecting the proven importance of Ramsey and Pigou motives for taxation. In Bergstrom (1982) and Daubanes and Lasserre (2010), exported (imported) quantities as fraction of world oil consumption is used as market power but find only little empirical evidence for the case of unilaterally and non-cooperatively acting countries. Interestingly, explanatory power of the Bergstrom motive improves considerably as groups of countries are assumed to cooperate in the "fight for the rent". Gupta et al. (2002) shows that, even if limited, there is some possibility for exporters with large market power to influence world market prices.

In this paper, we want to reconcile the empirical and the theoretical literatures on the factors of domestic oil taxation. Our contribution is twofold. In a first part, we show how Ramsey taxation and strategic optimum taxation theoretically combine to determine the optimum domestic taxes on oil. In a second part, we revisit the empirical literature on the factors of domestic oil taxation by considering variables that are considered by the "optimum tariffs theory" to be crucial.

As noticed by Dasgupta and Stiglitz (1974), optimum taxation à la Ramsey easily extends to international frameworks as long as supply elasticity is infinite. However, the supply of a non-renewable resource cannot be infinite as it is a flow extracted from a finite stock; actually, a standard Hotelling representation implies that the long-run elasticity of the resource supply is perfectly inelastic. It is thus interesting to study how Ramsey's problem in presence of a non-renewable resource carries over to a multi-country

setting. This requires to introduce two dimensions to the traditional treatment of optimum commodity taxation. First, dealing with a non-renewable imposes an intertemporal consideration. However, we know from Bergstrom (1982) that, under standard assumptions, the intertemporal dimension vanishes while still conveying interesting insight on the taxation problem. Second, the Ramsey problem should be interpreted as a game theoretic problem. The strategy of each government is its set of domestic taxes that he is choosing with the view of maximizing national welfare while raising a given amount of revenue. From Bergstrom's contribution, we know that the strategic aspect of the problem is crucial and will modify the optimal domestic taxes depending on each country's position and power over each market. Our problem actually consists of extending Bergstrom's analysis by imposing a country-specific revenue constraint. In exploring this problem, we abstract from the Pigovian taxation motive. We will argue that its introduction would modify the results in a obvious manner that would be of a minor theoretical interest.

Borrowing standard assumptions from the optimum commodity taxation and the resource economics literatures, we find that Ramsey taxation of regular producible commodities is not altered when treated in a multi-country setting. This is because regular commodities' supplies are assumed to be perfectly elastic, as they should be in a long-term perspective, so that their prices are given to governments, thus unable to manipulate them. However, we can show that the tax on oil that is optimal for a country is jointly determined by Ramsey taxation and Bergstrom's strategic motives. The optimal domestic tax on oil consists of two terms, each representing one taxation motive. This emphasizes that although countries' market power cannot be exercised in taxing commodities whose supplies are perfectly elastic, the "optimum tariffs theory" is particularly relevant for the taxation of oil because of its exhaustible character. This first part strongly suggests the interest of considering factors predicted to be important by the optimum tariffs theory, like countries' market shares on the oil market, when attempting to explain the determinants of domestic taxes on oil.

In the empirical part, we measure the ability of the Bergstrom, Pigou and Ramsey taxation motive to explain actual domestic oil taxes. Following the empirical literature, we consider typical variables predicted to be of importance by the Ramsey taxation theory. But unlike the existing contributions, we include measures of market power predicted to be crucial by the optimum tariffs theory. We find that the rent-capturing motive together with the Ramsey taxation motive explains a high fraction in the variation of petroleum taxes. The Pigou motive, on the contrary, does not seem to be of empirical relevance. Thus, our results extend the current understanding of gasoline taxation.

REFERENCES

Submission of presentation abstract for the 2nd workshop of the SAEF student chapter at the ETH Zurich on Friday, October 1, 2010

Idir Laurent Khier

PhD Candidate, University of Zurich

Addressed aspect of the SAEF workshop:

I. Cross-sector aspects, Regulation and liberalization of network industries

Title of presentation:

Energy liberalization: Assessing the role of the European Union in creating and regulating competitive energy markets with a special focus on Northeastern Europe

Abstract of presentation:

I would use the opportunity to present and discuss the initial findings of my dissertation project that I currently conduct as a visiting PhD student, based on a scholarship of the Swiss National Foundation and the European Union, at the University of Tartu in Estonia. Starting point for my research project was the rather controversial question if the EU matters in energy liberalization and creating a common energy market. The initial findings so far are interesting.

There are doubts concerning the influence of the EU on energy liberalization in member states. A closer look at energy liberalization since the 1990s in Northeastern Europe reveals that energy liberalization was carried out among countries not only at different speed and scope regardless of EU action, but seems to be pushed forward for different political and economical reasons. This reminds us of the political nature of energy liberalization. In retrospect, member states were in the driving seat regarding energy liberalization and, thus, the move from monopolistic to competitive energy markets for electricity and natural gas.

However, differences on how EU member states moved on with liberalization in the past and the aim of the EU to create a common energy market gave rise to a European regulatory framework that is likely to influence the energy sector in Europe in the coming years. However, the current European regulatory framework, i.e. the way the EU is creating and regulating competitive energy markets at national and European level, shows significant drawbacks. In the short- to medium-term, regulatory drawbacks may deter investments in

energy infrastructure and, thus, negatively impact on energy supply security in the EU. In the long-term, governance issues, i.e. lack of political legitimacy and accountability of EU intervention in the energy sector, coupled with increasing energy security concerns at national level may reduce the political support for European energy market integration.

Regardless of the political attitude towards energy liberalization and the creation of a common energy market, the present situation calls for addressing and fixing the drawbacks of the current European regulatory framework. It requires politically clarifying the role of the EU in the process of energy liberalization and the energy sector in Europe. Thereby, the euro-crisis provides us with a key lesson. Any failure to identify and address issues related to European regulation causes not only high economic costs but may also result in a political setback for European integration.



ENERGY AND ECONOMIC POVERTY: AN ASSESSMENT BY STUDYING THE CAUSALITY BETWEEN ENERGY CONSUMPTION AND ECONOMIC GROWTH IN THE ECONOMIC COMMUNITY OF WEST AFRICA STATES (ECOWAS)

Nadia Ouédraogo, PhD Student,
Center for Geopolitics of Energy and Raw Materials (CGEMP), University of Paris-Dauphine

Abstract

The increasing attention given to global energy issues and the international policies needed to reduce greenhouse gas emissions have given a renewed stimulus to research interest in the linkages between the energy sector and economic performance at country level.

In this paper a recently developed cointegration test and a modified version of the Granger causality test were applied to investigate the long run and causal relationship between GDP and energy use for 15 West Africa countries from 1980 to 2008 to re-examine the co-movement and causal relationship between GDP and energy consumption according to the short-run and the long-run dynamics of energy consumption and GDP. Additionally, to explore the possibility of further information on the direction of causality we disaggregated energy consumption into its components of petroleum and electricity consumption.

The existence or non-existence of a long run causal relationship between energy consumption and economic growth in these countries should lead to the choice of an optimal energy policy for energy poverty reduction, economic growth and climate mitigation.

Keywords: energy poverty, energy consumption, economic growth, vector error correction model, granger causality, cointegration.

Extension of the EU electricity market and grids to neighboring countries.

Governance of the European external energy policy

Thesis presented by for the Degree of Master in European Interdisciplinary Studies, College of Europe, Natolin Campus, 2010

Supervisor: Christian EGENHOFER, Senior Fellow and head of the Energy and climate programme CEPS, Brussels; Senior Research Fellow & Jean-Monnet Lecturer, Centre for Energy, Petroleum, Mineral Law and Policy (CEPMLP) at University of Dundee, Scotland, UK, christian.egenhofer@ceps.eu

Abstract

Electricity is a productivity resource allowing sustainable economic development of a country, but it is also an attribute of quality of life for citizens. In Europe, electricity is produced at 21 percent from gas, 50 percent of which comes from local resources and 50 percent imported from Algeria, Nigeria, 40 of that latter 50 percent is imported from Russia. In the long term the EU is able to reduce its dependence on gas imports, but its need in electricity will not fall. On the contrary, despite numerous energy efficiency policies at the European level, “total electricity consumption in the residential sector in the EU-25 has grown by 10.8% in the period from 1999 to the entry of ten new Member States.” The EU is more and more attracted to the idea of producing electricity in a cheaper and greener fashion, but not to the detriment of its economical development. The liberalization of the electricity market started in 1996 with the first Directive related to these issues. It created a ground for further electricity regulatory reforms in all countries of the EU including sometimes non-EU Member States. European liberalization reform is creating a new political and economic space between including the EU and all countries which are ready to comply with regulatory rules and other initiative (the Energy Charter Treaty, the Energy Community). Neighboring countries which share immediate ground or sea border would like to participate to the common electricity market entirely or partially. To create a really common electricity market space, it is still necessary to build necessary infrastructure.

Profiles as well as motivation of neighboring countries are extremely different. Several countries are importers of electricity, others – exporters. Moreover, they are neighbors of the EU, and thus they are covered by different instruments of external policy of the EU: either by the European Neighborhood Policy, the pre-accession status, Partnership and Cooperation Agreement, or the Custom Union. All these instruments bear a trade component in addition to other areas of cooperation.

Since the trade of electricity implies the building of transmission, and sometimes generation power infrastructure with reciprocal good conditions for selling and buying, electricity becomes a mutually beneficial issue for both supplier and consumer - in other words, the EU and neighboring countries. Focusing, on one side on European energy security policy, we would like to look at how pursuing its intrinsically pragmatic aim (energy purchase) the EU manages – or not – to accommodate it to its external policy.

Keywords

Electricity, interconnections, European energy policy, the European Neighborhood Policy

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