The Greek Electricity Market Reforms: Political and Regulatory Considerations

Nikolaos Danias[b,1], J. Kim Swales[a,b,2] and Peter McGregor[a,b,c,3]

Fraser of Allander Institute[a], Department of Economics[b] and

the Strathclyde International Public Policy Institute (SIPPI)[c],

University of Strathclyde, Glasgow, UK.

July 2013

Abstract

The paper tracks the evolution of the Greek electricity market since the beginning of the liberalization process. Its progress is benchmarked against the criteria suggested by Littlechild (2006b). The Littlechild framework highlights key remaining deficiencies in the stances and policies adopted which need to be resolved in order for liberalization to proceed successfully. The focus is on the agendas of the Greek government, other domestic political forces and the European Union. A central requirement is the clear commitment to liberalization by the Greek government. In particular the government needs to give up political control over the previous vertically integrated, state-controlled electricity firm, Public Power Company (PPC), and allow more decision making powers and genuine independence to the market regulator. Liberalization is rendered more difficult by the present financial and economic crisis in Greece.

Keywords: Electricity market reforms, Liberalization, Regulatory policy

1. Introduction

After the establishment of Public Power Company (PPC) in 1950 and its absorption of smaller local Greek electricity firms after 1956, the Greek electricity industry was organized as a vertically integrated state owned monopoly. In this monopolistic market PPC covered all electricity industry activities in Greece: it owned and operated all the infrastructure and the assets of the industry. In 1996 a decision was taken for the industry to proceed with liberalization. This decision came as part of a requirement of the European Union, introduced through European Directives 96/92/EC, 2003/54/EC and 2009/72/EC (European Parliament and the Council of the European Union, 1996; 2003; 2009). However, this liberalization has proved very much a work in progress: the market is still not operating in a fully liberalized way.

We examine the journey taken from the previous monopolistic market setting to a liberalized form of market operation. We discuss the ways in which political agendas may influence decisions taken in the Greek electricity market and how this affects the efficiency of the market operation and has, up to now, blocked full liberalization.

Section 2 discusses the limited existing research on the issue and describes the current electricity market setting. Section 3 outlines the standard reform model given in Littlechild (2006b) and uses this as a benchmark against which to compare the performance and the progress of the Greek electricity market reform. Section 4 reflects on the problematic areas of this reform. Although Greece has achieved most of the Littlechild benchmarks, it falls down on a small number of crucial criteria. Section 5 concludes by identifying institutional factors that inhibit the evolution of electricity market reforms in Greece.

2. Previous work

There is a substantial literature on electricity market reform focusing primarily on the UK experience (See, for example Green and Newbery, 1997; Newbery, 2006; Newbery and Pollitt, 1997; and Pollitt, 2012). However, there is only a limited literature on the Greek electricity market since liberalization. Andrianesis et al. (2011), which describes the organization and the operation of the market, is the most relevant. However, it deals only with specific issues and not with the political economy of the Greek electricity market or the efficiency of its overall operation.

Iliadou (2009) outlines the evolution of the Greek electricity market from the start of the reform. It approaches the market transformation from a political economy perspective but differs from the present paper on two counts. First, it does not cover the most recent time period. Second, it has a legal focus and so does not investigate the incentives behind market changes. The present paper benchmarks the move to liberalization against a market reform model and investigates the extent to which this evolution is the result of a well-structured policy towards a new form of market organization in the electricity industry.

Finally, there is very little research on electricity supply markets in general: the most notable work comes from Littlechild (1998; 2002; 2006a; 2009). Electricity supply markets seem to be the most difficult to liberalize and there is only a limited literature on their operation. As far as the Greek electricity supply market is concerned, the present paper provides an overview of its operation and of the problems that have occurred as it moves towards full liberalization.

3. Benchmarking Greek electricity liberalisation

The approach that we take is to benchmark the performance of the liberalized electricity industry in Greece against the standard model for electricity market reform as presented by Littlechild (2006b), who identifies 10 provisions for liberalisation.[i] Table 1 indicates the Greek electricity market's progress against these provisions.

Table 1: Greek electricity liberalization measured against the Littlechild (2006b) criteria.			
	Reform elements	**Progress**	**Comments**
1	Separation of competitive and monopolistic sectors	Yes	The four sectors of the electricity industry (Generation, Transmission, Distribution and Supply) have been unbundled and are operated separately.
2	Increasing the number of market participants	No	Licenced market participants are numerous. However only a small number of active generators play a significant role and the number of active supply market participants is even lower.
3	Setting a system operator	Yes	The market operator was initially the Hellenic Transmission System Operator (HTSO) under Law 2773/1999. Law 4001/2011 established the market operator as the Operator Of Electricity Market (OOEM).
4	Service market arrangements in the wholesale market	Yes	Ancillary services mechanisms are set and the system is balanced in a real-time basis. No bilateral contracts are allowed between electricity generators and suppliers.
5	Access to the grid and location of new generation capacity	Yes	Access to the grid is provided to all suppliers. Location of new generation capacity is planned by the Transmission Operator and the Market Regulator.
6	Tariffs unbundling competitive and monopolistic charges	Yes	Retail electricity tariffs incorporate separate charges for competitive and monopolistic activities. Competitive activities are the electricity generation and supply and monopolistic activities are the electricity transmission and distribution.
7	Arrangement of transitionary mechanisms in retail markets	Yes	With Law 4001/2011, arrangements are in place for Supplier of Last Resort and for Supplier of Overall Service. Also, regulated tariffs are still used in Low Voltage.
8	Creation of independent regulator, with the purpose of promoting competition and applying incentive regulation	Yes/No	Regulatory Authority for Energy (RAE) is the electricity market regulator. However, the independence of the regulator is a topic to be discussed, as it appears that the regulator is open to political influence. Also, the powers of the regulator are limited with respect to some issues.
9	Transition mechanisms for potential problems	Yes	Problems are addressed by RAE and the Ministry of Environment, Energy and Climate Change.
10	Liberalization aiming at performance enhancement and reducing use of political agendas	No	Electricity market is moving in this direction. But despite that movement, there is resistance to fully eliminating political control.

3.1 *"Vertical separation of competitive and regulated monopoly sectors to facilitate competition and regulation."*

In the potentially competitive parts of the market, firms should be able to transfer any efficiency advantage to consumers through lower retail tariffs. This effort can be impeded by an established firm that also operates in the monopolist sectors of the market employing cross-subsidization, thereby creating market asymmetries. The sector unbundling also aids the regulator's role in a number of ways. First, incentive regulation can be applied more easily and more straightforwardly to all parts of the market. Second, the regulator has the option of adopting different strategies for the regulation of each sector. Third, the identification of anti-competitive practices is facilitated.

Figures 1 and 2 show the structural changes in the Greek electricity market accompanying liberalisation. The monopolistic firm, PPC, was initially split into two. One firm retained the name PPC and controlled the potentially competitive activities of the market (electricity generation and supply) as well as electricity distribution. The other firm was called the Hellenic Transmission System Operator (HTSO) (Journal of the Greek Government, 1999). This firm controlled and operated the electricity transmission system, held the daily electricity auctions and was also responsible for the operation of the wholesale electricity market.

These two firms were both further split in 2011 with Law 4001/2011 resulting in four firms (Journal of the Greek Government, 2011). PPC has kept the competitive activities of the market (electricity generation and supply) and a new firm, Hellenic Electricity Distribution Network Operator (HEDNO), owns the electricity distribution network and is responsible for its operation. HTSO was also split in two firms. The Operator of Electricity Market (OOEM) operates the wholesale electricity market and the Independent Power Transmission Operator (IPTO) owns and operates the electricity transmission network. However, it is crucial to point out that the Greek government maintains effective ownership and control over these four firms.

Figure 1
The separation of PPC into different firms in the liberalized electricity market

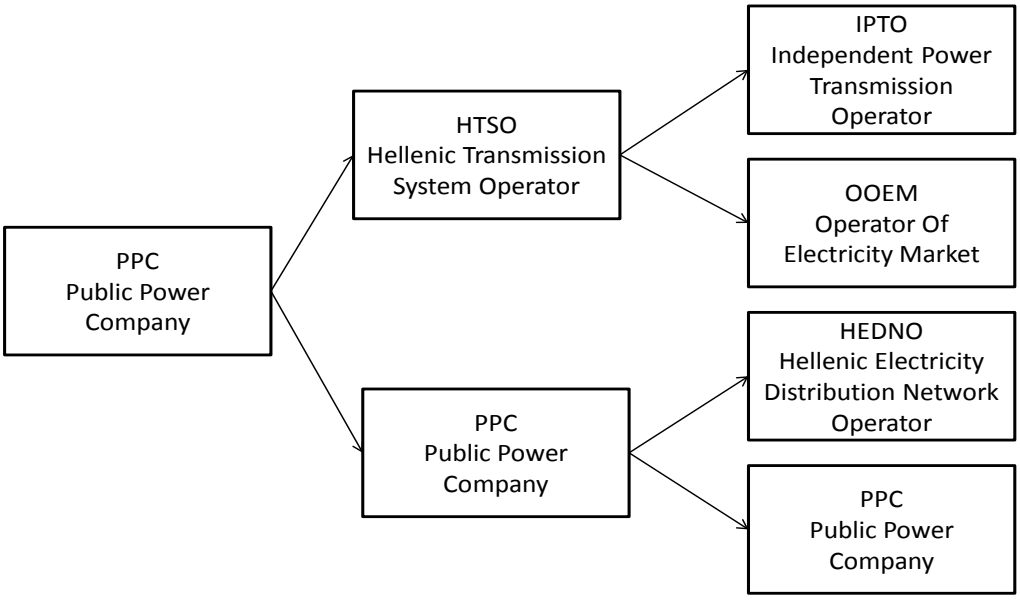
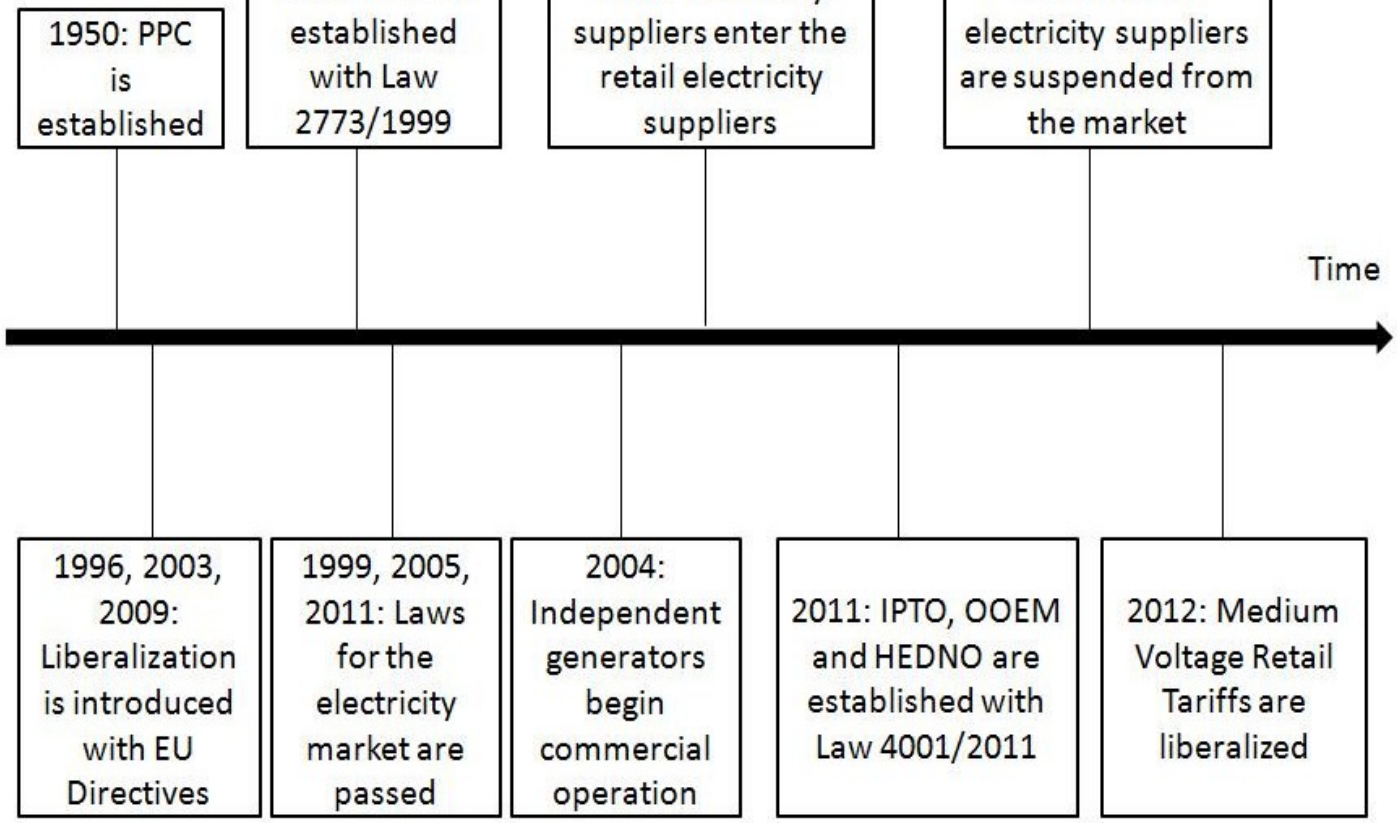


Figure 2
The Timeline of the Greek electricity industry: From monopoly to liberalization



3.2*"Horizontal restructuring to create an adequate number of competing generators and suppliers."*

The new liberalized market structure incorporates the notion of competition between the market players. In order for this to be effective, there should be an adequate number of market participants. However, this element of the market reform has been particularly difficult to achieve, especially as far as electricity retail supply is concerned. In 2010 there were 1,271 licensed electricity generators in the records of the Regulatory Authority for Energy (RAE, 2010). By June 2013 the number had increased significantly. The number of licenced electricity generators using Renewable Energy Sources (RES) alone being 2,670 and the number of licences for hybrid power stations standing at 17 (RAE, 2013). Most of these are fringe firms, which have very limited generating capacity. There are, however, three independent firms (Elpedison, Heron, Mytilineos) that own 7 large natural-gas fired electricity generating plants. These are shown in Table 2. These generators, along with PPC and another two firms that own large electricity generator licences, Enelco and Motor Oil Hellas Korinthos Refineries, are the 9 generators that appear in the OOEM records (OOEM, 2013a).

The independent electricity generators elect to build natural gas-fired stations. Whilst natural gas-fired units are a relatively cost-efficient solution, there are in fact few alternatives, given that lignite-fired units are owned and operated solely by PPC. This might be a problem as the market expansion in electricity generation will add only natural gas-fired and smaller new Renewable Energy Source-Electricity (RES-E) units. PPC has exclusive possession and control of lignite-fired units and large hydroelectric plants. This means that the state-owned company has access to very low cost electricity generation. This aids PPC in its retention of significant market power.

Table 2: Greek Independent Natural Gas-Fired Generators. Sources: (Iliadou, 2009; RAE, 2010; OOEM, 2013a; DEPA, 2012; Motor Oil Hellas, 2012; Elpedison, 2012)

Owner	**Natural Gas Fired Independent Power Plants**	**Licensed Generation Capacity (MW)**	**Start of operation**
Elpedison	Elpedison Thessaloniki	390.00	May 2005
Elpedison	Elpedison Thisvi	421.60	April 2010
Heron	Heron I Thermoilektriki	187.46	Summer 2004
Heron	Heron II Viotias	435.00	January 2010
Mytilineos	Protergia	444.48	November 2010
Mytilineos	Korinthos Power	436.60	March 2012
Mytilineos	Alouminion	334.00	May 2008

New independent suppliers have been reluctant to enter the Greek electricity market and serve all of the customer categories. Rather they have entered only those small segments of the market that are the most profitable. This situation has been sustained by the retail tariffs of PPC that, for certain customer categories, have been set at levels so low that competition would be impossible. These particular tariffs do not necessarily generate positive profits for the supplier. On the other hand, other customer categories faced higher retail electricity tariffs, which provide the opportunity for profits. These specific customer categories attracted entry from new suppliers. In the past, the policy of price-discrimination across different electricity consumers could be part of an income redistribution and indirect taxation policy. However, the transitionary period from the one market form to another has shown that such a policy is much harder to retain once there are new independent suppliers which compete for market share.

19 electricity suppliers and 31 traders are registered in the records of the Operator of Electricity Market (OOEM, 2013b, 2013c). Of the 19 listed suppliers, 17 are

electricity firms and the other 2 are the “Supplier of Overall Service” and the “Supplier of Last Resort”. These last two roles are currently undertaken by PPC. The new suppliers have not developed business activity that covers all sections of the Greek electricity market but rather supply only selected profitable parts of the market, leaving all the other market segments to be covered by PPC.

Little can be done about the fact that some parts of the market are more attractive than others, given the retail electricity tariffs that each customer category faces. But the regulator could attempt to introduce rules and regulations that ensure that firms participate in multiple market segments simultaneously. However such regulations can be bypassed by firms offering unattractive customer categories high tariffs that exceed those of the competition, which would lead to almost non-existent market penetration for these specific customer categories. So the issue is not to attempt to force electricity suppliers to serve the whole market, but rather to create a market setting that is attractive to independent suppliers.

Regulated retail electricity tariffs have been a significant element of the market operation. These tariffs are adjusted by the decisions of the Minister responsible for the electricity sector and have an important role in shaping the electricity industry as a whole. The profit margins that retail tariffs produce for the market participants are a crucial determinant of the attractiveness of different market segments of the retail electricity supply. The alleged cross-subsidization between retail tariff categories that existed in the past has distorted the market and resulted in development of competition only in selected parts of it. This leaves the rest of the market to be served by PPC, which bears the obligation to serve the whole market. Such phenomena are being eliminated over time, since tariff restructuring took place at the beggining of both 2011 and 2012 (PPC, 2011a, 2012a-e). Retail tariffs are gradually being removed with the aim of reaching a full liberalization of tariffs that eliminates cross-subsidizations and allows for competition to develop, assuming that there is no exercise of market power in the industry.

However, progress is uncertain. In 2010 PPC was estimated to have a market share of 95.6% in Greek retail electricity supply (RAE, 2012). In 2011 this fell to 92.3% but by 2012 it had risen to 98.5% (PPC, 2012f). It is evident that there is no clear progress to reducing this dominance of PPC in the Greek retail electricity supply market.

3.3 *"Designation of an independent system operator to maintain network stability and facilitate competition."*

A liberalized market requires an independent organization to ensure that the electricity network is operating properly and that the necessary market rules are in place. With Law 2773/1999, an independent system operator was initially introduced with the creation of the Hellenic Transmission System Operator (HTSO) (Journal of the Greek Government, 1999). This firm was simultaneously the wholesale market operator and the transmission system operator. Later in the reform process, with Law 4001/2011, HTSO was split into two firms. These are the Operator Of Electricity Market (OOEM) which runs the wholesale electricity market and the Independent Power Transmission Operator (IPTO) which operates the electricity transmission network. These firms are owned by PPC but are set up to be independent from the mother-firm so that the market conditions remove any bias in the management and operation of the transmission system. The goal is to eliminate barriers to entry in the market and foster competition.

3.4*"Creation of voluntary energy and ancillary services markets and trading arrangements, including contract markets and real-time balancing of the system."*

Given the complicated nature of the electricity industry, a series of arrangements are necessary in order for the market to operate and to provide a high standard of service. These requirements are the result of unique characteristics of electricity as a commodity. Electricity cannot be stored; its delivery is primarily via the grid; and the quality of service is related to continuous delivery within a specific voltage range which matches demand on a minute-by-minute basis. Given that after liberalization the market is served by a number of firms, appropriate trading arrangements turn out to be vital for market operations since without them coordination of the independent firms would be very difficult to achieve. Real-time balancing of the market and ancillary services is already in use in the Greek electricity industry. Contract markets have not been introduced up to this point, since generators and suppliers are not allowed to engage in bilateral transactions for electricity trading. The whole market operation passes through the electricity pool, which is mandatory for all generators and suppliers.

3.5*"Application of regulatory rules to promote access to the transmission network and incentivize efficient location and interconnection of new generation facilities."*

The transmission network is a natural monopoly which serves the firms that participate in the competitive parts of the market. Its operation should take into consideration all the market participants and ensure that all of them are given access to the transmission grid. Access prices to electricity transmission should be set in a way that encourages competition and new entry and also leads new entrants and new power plants to be efficiently located so as to optimize the performance of the whole industry. In Greece, regulation has been set in place to ensure that the conditions for the development of competition are met. Access to the transmission network is provided to all generators and suppliers and the introduction of new power plants takes place through central planning. Any new power plants entering the electricity system need to be approved and licensed by the market regulator.

3.6*"Unbundling of retail tariffs and rules to enable access to the distribution networks in order to promote competition at the retail level."*

To enhance competition, the electricity suppliers should be competing on equal terms and in order for that to happen, retail tariffs should be unbundled. This means that there are separate charges for monopolistic and for competitive activities. Also, all suppliers should have equal access to the distribution network and be able to connect their customers to it. Greek retail electricity tariffs have been unbundled and the bills sent to consumers now separate the charges for the monopolistic activities (which are electricity transmission and distribution) and for the competitive activities (which comprise electricity generation and supply). In this way, the operation of the competitive elements of the market becomes more transparent. Access to the distribution networks is provided to all suppliers by the HEDNO.

3.7*"Specification of arrangements for supplying customers until retail competition is in place."*

The transition from one form of market organization to another might include some periods of service disruption and/or of decreased service quality unless the necessary provisions are in place to prevent that. For this reason, some transitional arrangements

are likely to be required. Arrangements have been made to ensure that the electricity supply will not be interrupted in any way in the initial stages of market liberalization. PPC, being the previous incumbent electricity supplier, has been given the legal obligation to serve the whole electricity market and acts as supplier of last resort to cover for firms that are unable to supply their own customers.

In January 2012, two large independent electricity suppliers (Energa and Hellas Power) lost their electricity supply licences due to financial difficulties, leaving a large part of their supply obligations uncovered (HTSO, 2012). This event demonstrates the weakness of the control and monitoring applied in the Greek electricity market. Being in transition from one market form to another, it was to be expected that not all the market mechanisms would be robust and rigorous. Finding two independent electricity suppliers in such a position and causing larger "spill-over" problems, has alarmed the market operator and the regulatory authority and stricter controls have been imposed. As a result, licences for other firms have also been suspended and the market operates under a much tighter framework (OOEM, 2012a, 2012b).

This event has highlighted the difficulty of regulating and monitoring an electricity market. The models for electricity market reform outline the steps that a market regulator can take to lead it towards liberalization (Littlechild, 2006b; Joskow, 2006; Joskow and Noll, 1999). However, these prescriptions are provided in a generic way and do not specify a detailed implementation process. This means that the introduction of market reforms remains a challenging task. Putting these "standard reform models" into practice requires technical, legal, accounting and economic solutions for a wide range of issues. These solutions are dependent on the specific economic, institutional, political and social framework as well as on the market organizations prior to the liberalization (Sioshansi, 2008a, 2008b).

3.8 *"Creation of independent regulatory agencies with adequate information, staff and powers, and duties to implement incentive regulation and promote competition."*

Liberalization needs an independent authority that is responsible for monitoring and controlling the market's operation in order to protect the interests of the consumers and firms that participate in the market. At the same time, the regulator will be

enforcing incentive regulations in order to achieve efficiencies that can be transferred to the consumers.

The Greek electricity market is regulated by the independent Regulatory Authority for Energy (RAE) that has a number of responsibilities with regards to the energy sectors in Greece. Law 2773/1999 created the RAE (Journal of the Greek Government, 1999) and Law 4001/2011 established its role and responsibilities, specifically around the areas of: participation in the long-run energy planning for Greece; security of supply; licencing for energy activities; infrastructure development and monitoring; tariff setting for non-competitive activities; monitoring distribution and transmission operators; certifying electricity firms; access to interconnections; monitoring energy markets; imposition of rules on the energy markets; protection of consumers; and energy market development (Journal of the Greek Government, 2011). However, on many occasions this regulatory authority has not been powerful enough to make important decisions regarding the energy sectors. Such decisions are mostly taken by the ministry that is responsible for energy issues, which is currently the Ministry of Environment, Energy and Climate Change. This regulatory arrangement renders decisions regarding the energy sectors in general and the electricity market in particular, still susceptible to political influences.

3.9 *"Provision of transition mechanisms that anticipate and respond to problems and support the transition rather than hinder it."*

The transition to the new market setting requires that specific problems that arise during that time are addressed so that the process is not stopped. Appropriate mechanisms have been used and adjustments made throughout the period of the Greek market reform. These have come through a structured approach, with the gradual introduction of market rules and their appropriate adjustment to serve the market and its evolution. Changes in the way that the Daily Dispatch Scheme is determined are introduced gradually and each major change in the market operation rules is identified by a "Reporting Day". Each "Reporting Day" is thereby a step in the evolution of the market operation.

3.10 *"Privatization to enhance performance and reduce the ability of the state to use these enterprises to pursue costly political agendas."*

The element of privatization is crucial in market reform. Privatized firms are more sensitive to efficiency and performance issues and the expectation is that the gains from this performance, under the pressure of competition, can be transferred to the market. At the same time, with privatization the ability of the State to use the electricity industry to serve political goal is severely reduced.

In the past, Greek publicly-owned utilities have constituted an important tool in the hands of the government. This tool has been used in the delivery of a number of policies, which includes the operation of the electricity market to implement "social" policies through setting retail electricity tariffs at low levels. At present, the desire to fully liberalize the electricity industry appears to be very weak. We focus on four factors: the continuing high level of public ownership in the electricity industry; the role of the European Commission in the Greek electricity liberalization; the power of the PPC Workers Union; and the exclusive right that PPC has to generate electricity from lignite and the large hydroelectric plants.

First, the Greek State is the owner of the majority of PPC shares (meaning that OOEM, HEDNO and IPTO are also under state control). It might be thought that PPC, being nominally a private firm, seeks to maximize value and profits. Given that PPC's value is expected to be higher when it is a monopolist, the state's majority shareholding immediately generates a potential tension in the government's attempt to introduce competition. However, as we note in Section 3.2, profit and value maximization are not necessarily the main objective for a state-controlled PPC. Rather the importance of PPC's ownership and governance status is rather that PPC typically does not act in the way that an independent monopolist would. In particular, the government can use PPC as an instrument of income redistribution, but this implies that tariffs are applied at such a low level that new entrants would find the market unattractive. In that case, the ownership of PPC acts as an obstacle to the market evolution and to the introduction of competition. In order for the state to achieve market liberalization, whilst maintaining ownership of the incumbent firm, it has to resist the temptation of utilizing PPC for political, rather than commercial, aims.

Second, as outlined in the introduction, Greece initiated electricity market liberalization as a result of EU directives. Unlike, say, the UK, liberalization was not driven by a domestic political agenda. Therefore there might be less genuine enthusiasm for its rapid implementation.

Third, publicly owned firms, PPC amongst them, have formed strong workers' unions and Greek political parties have developed affiliations with these unions. The negotiating strength of the PPC Union of Workers is supported by their ability to shut down the Greek electricity system (PPC, 2011b). The interests of the PPC workers, as expressed by their Union, are not aligned with the EU liberalizing agenda in Greek electricity generation and supply. Having powerful unions on one side and the EU requirements on the other, Greek governments have proved reluctant to proceed decisively in either direction. They do not wish to lose any political capital. But this does not mean that they pursue a middle-ground solution. Rather it means that no steps are taken in any direction, thereby postponing the reforms for some future time. This significantly slows down the market reform process.

Fourth, in Greek electricity generation, new entrants are currently only employing natural gas fired power plants or new RES-E units. The use of lignite as a fuel for thermal power plants and the ownership and control of large hydroelectric units remains with PPC. This asymmetry is inherited from to the previous monopolistic market structure of the electricity generation sector. The political forces within the country must decide whether access to lignite and to large hydroelectric units is to be given to the rest of the market players, thereby further opening up the market and encouraging competition, The sale or rental of existing lignite or large hydroelectric plants, or allowing the construction of similar plants by new entrants are possible policy options.

4. The Littlechild model revisited

It appears that at least seven out of the ten provisions of the Littlechild model have been fully met in Greece, so that one might think that the electricity industry is close to successful liberalization. However at present a large part of the Greek electricity market is not attracting new entrants, implying that the liberalization is severely limited. It is clear that the ten requirements of the Littlechild model do not all have the

same status. This is represented in Figure 3, where the problematic requirements 2, 8 and 10 from the Littlechild model (as indicated in Table 1) are shown in a framework that also includes the rest of the requirements.

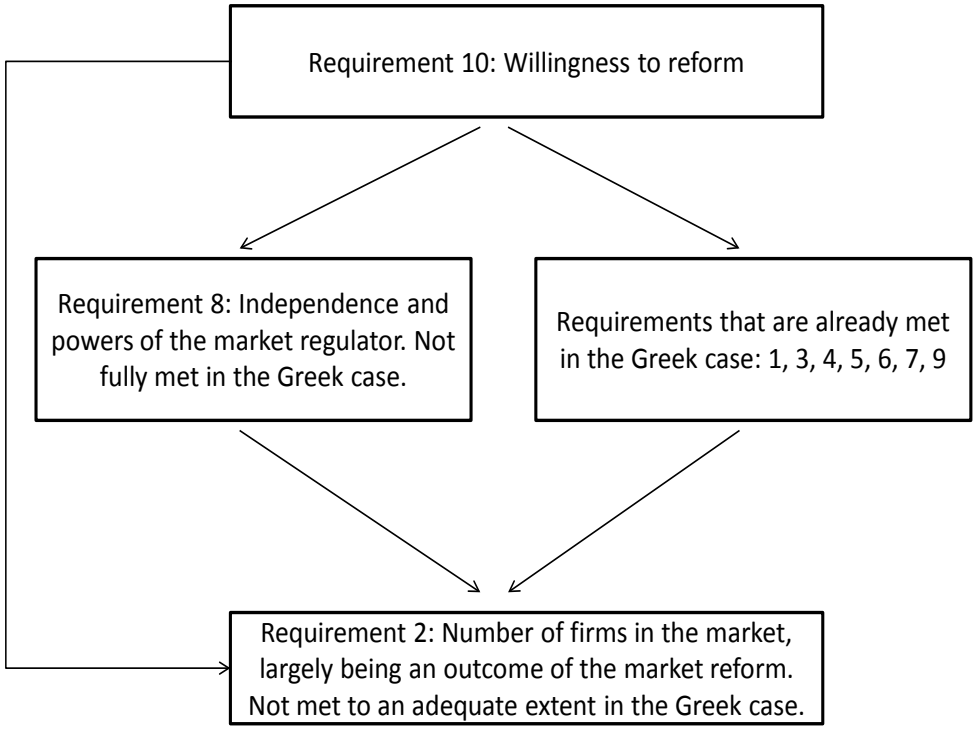
First, requirement 10, which refers to the willingness of politicians to give up control of the electricity sector, is the crucial motivating one. The willingness to proceed with the reform should be the starting point and the guiding force for the implementation of the liberalization process. The political will to support the market reform is critical.

Second, requirement 2, the creation of an adequate number of competing generators and suppliers, is a measure of the success of the market reform. That is to say, it is an outcome of the liberalization process, and not an enabling step. The fact that this requirement has not been fully met implies that the liberalization process is at present not succeeding in Greece.

Third, the remaining eight requirements act in a facilitating manner. However, of these facilitating factors, requirement 8, the creation of an independent regulator, plays a central role. Meeting this requirement in full would imply that requirement 10 is also met (at least in part). This is because a fully independent regulator would shift control of the electricity industry away from direct political influence. However, as in Greece, choosing to meet requirement 8 in a way that does not actually give the regulator control of the market is a stance that allows political forces to comply with the letter, but not the spirit, of the Littlechild approach.

The State has extensive control over the regulatory authority. In addition, important electricity market decisions are taken by the Ministry of Environment, Energy and Climate Change. The Greek electricity market is therefore still strongly influenced by the State. The State can impose controls and restrictions through its market-regulating role. But it can also shape important decisions by using its ownership of PPC and the firms that PPC controls. Liberalization explicitly means that direct state control is lost. A lack of progress in the three benchmarks of the Littlechild model which Greece is not presently meeting appears to have circumscribed the process of electricity industry reform.

Figure 3
The Littlechild requirements and their relationship in the Greek case (numbering of the requirements is consistent with Table 1)



Under the argument that political forces are failing to support market liberalization, there may be some very specific reasons in the Greek case as to why the reform process and the change in the electricity sector are occurring so slowly. One is the general economic climate in Greece with the economy currently in a major recession which began in 2010 (Arghyrou and Tsoukalas, 2011; Featherstone, 2011; Zahariadis, 2012; Arghyrou and Kontonikas, 2012). The suggestion that the economic recession could have impacted the electricity reforms is very credible. In this very negative economic climate, radically reduced liquidity in the banking system has reduced the ability of firms to use debt to fund their activities because bank credit is not widely available. Also, where credit is available, interest rates are higher than they would have been without the crisis, since the ability of the banks themselves to borrow money has been undermined and they have to pay higher risk premiums to their own lenders. Additionally, the reduced income amongst the wider population means that any potential new electricity supplier faces a higher risk of bad debt. Other sources of concern for potential investors during the Greek recession relate to taxation as well as

exchange rate risks. The joint occurrence of these risks makes for a very unattractive market setting, which does nothing to encourage new entrants to the market.

The political positions that are adopted in Greece, in combination with the current negative economic climate that Greece faces, suggests two possible explanations for the slow rate of electricity liberalization in Greece. Either Greek policymakers do not wish electricity market liberalization to occur; or they wish it to proceed but are hindered by the current recession. In the former case, a more fundamental issue arises. This is where countries that constitute part of the European Union do not align their policies and agendas with those of the EU as a whole. However, whichever of the two explanations actually applies, successful implementation will require a major change in the overall stance taken by Greek governments in completely committing to liberalization and the full implementation of the remaining Littlechild criteria.

5. Conclusions

Progress has been made on market reform in the Greek electricity industry but much more needs to be done. The prime motivation behind this reform comes from the European Union, but it is left to Greek governments to implement. There are bound to be some setbacks and adjustments that need to be made as liberalization is implemented. Although seven of the ten Littlechild benchmarks have already been met, some of these benchmarks are much more significant than others and it is these key benchmarks that are at present missing in Greek electricity market liberalization. In particular, the Greek state faces conflicting agendas as it tries to liberalize the market whilst retaining ownership of the previous monopoly provider. The position of the State is compromised as it attempts to adopt liberal practices but at the same time maintains and preserves state ownership in significant parts of the economy.

Greek governments are generally reluctant to proceed on any radical reforms that involve a loss of political capital. Political parties in government are called upon to serve multiple agendas and some social agendas are met through imposing appropriate electricity retail tariffs. But such policies can halt progress on market reform that otherwise would be made. Cross-subsidization makes it very hard for entrant firms to compete in some tariff categories in electricity supply. This discourages the horizontal development of competition in the retail electricity supply

market. Additionally the negative economic climate generated by the current recession in Greece is likely to have an adverse effect on the electricity market reform process. For the Greek government to successfully implement electricity liberalization it needs both to address the required elements of this reform and to simultaneously deal with the current financial crisis.

References

Andrianesis Panagiotis, Pandelis Biskas, George Liberopoulos, (2011), "An overview of Greece's wholesale electricity market with emphasis on ancillary services", Electric Power Systems Research, 81, pp. 1631-1642.

Arghyrou, Michael G., Alexandros Kontonikas, (2012), "The EMU sovereign-debt crisis: Fundamentals, expectations and contagion", Journal of International Financial Markets, Institutions & Money, 22, pp. 658-677.

Arghyrou, Michael G., John D. Tsoukalas, (2011), "The Greek Debt Crisis: Likely Causes, Mechanics and Outcomes", The World Economy, Volume 34, Issue 2, pp. 173-191.

DEPA, (2012), "Power Generation", Available at: http://www.depa.gr/content/article/002003004/115.html , Accessed 05/11/2012. (In Greek).

Elpedison, (2012), "The Power Plants", Available at: www.elpedison.gr , Accessed 12/11/2012.

European Parliament and the Council of the European Union, (1996), "Directive 96/92/EC of the European Parliament and of the Council of 19 December 1996 concerning common rules for the internal market in electricity", Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1997:027:0020:0029:EN:PDF, Accessed 19/11/2012.

European Parliament and the Council of the European Union, (2003), "Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003

concerning common rules for the internal market in electricity and repealing Directive 96/92/EC - Statements made with regard to decommissioning and waste management activities", Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32003L0054:EN:HTML, Accessed 19/11/2012.

European Parliament and the Council of the European Union, (2009), "Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC", Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:211:0055:0093:EN:PDF, Accessed 19/11/2012.

Featherstone, Kevin, (2011), "The Greek Sovereign Debt Crisis and EMU: A Failing State in a Skewed Regime", Journal of Common Market Studies, Volume 49, Number 2, pp. 193-217.

Green, Richard, David M. Newbery, (1997), "Competition in the Electricity Industry in England and Wales", Oxford Review of Economic Policy, Vol. 13, No. 1, pp. 27-46.

Hellenic Transmission System Operator (HTSO), (2012), "Announcement by RAE-HTSO", 24/01/2012, http://www.desmie.gr/more-announcements/anakoinosi/article/659/ , Accessed 05/11/2012. (In Greek).

Iliadou, Ekaterini N., (2009), "Electricity sector reform in Greece", Utilities Policy, 17, pp. 76-87.

Joskow, Paul L., (2006), "Introduction to Electricity Sector Liberalization: Lessons Learned from Cross-Country Studies". In "Electricity Market Reform: An

International Perspective", Fereidoon P. Sioshansi and Wolfgang Pfaffenberger (eds.), Elsevier, pp. 1-32.

Joskow, Paul L., Roger G. Noll, (1999), "The Bell Doctrine: Applications in Telecommunications, Electricity, and Other Network Industries", Stanford Law Review, Vol. 51, No. 5 (May, 1999), pp. 1249-1315.

Journal of the Greek Government, (1999), Law 2773, 22 December 1999, Issue 286, Vol. 1, "Liberalization of the electricity market- Arrangement of energy policy issues and other provisions", pp. 5081-5098. Available at http://www.desmie.gr/fileadmin/user_upload/Files/laws/2773_99.pdf . Accessed 12/11/2012. (In Greek).

Journal of the Greek Government, (2011), Law 4001/2011, 22/08/2011, "On the operation of the Energy Markets of Electricity and Natural Gas, for Research, Generation and Hydrocarbon transportation networks and other arrangements", Vol. 1, No. 179, pp. 3793-3892. (In Greek).

Littlechild, S.C., (1998), "The Generation and Supply of Electricity: The British Experience", In "Competition in Regulated Industries", Dieter Helm and Tim Jenkinson (eds.), Oxford University Press, Oxford, pp. 193-212.

Littlechild, Stephen C., (2002), "Competition in Retail Electricity Supply", DAE Working Paper WP 0227, CMI Working Paper 09, pp. 1-20.

Littlechild, Stephen, (2006a), "Competition and contracts in the Nordic residential electricity markets", Utilities Policy, 14, pp. 135-147.

Littlechild, Stephen, (2006b), “Foreword: The Market versus Regulation”. In “Electricity Market Reform: An International Perspective”, Fereidoon P. Sioshansi and Wolfgang Pfaffenberger (eds.), Elsevier, pp. xvii-xxix.

Littlechild, Stephen, (2009), “Retail competition in electricity markets-expectations, outcomes and economics”, Energy Policy, 37, pp. 759-763.

Motor Oil Hellas, (2012), “Korinthos Power S.A.”, Available at: http://www.moh.gr/Default.aspx?a_id=10576 , Accessed 05/11/2012.

Newbery, David M., (2006), “Electricity Liberalization in Britain and the Evolution of Market Design”. In “Electricity Market Reform: An International Perspective”, Fereidoon P. Sioshansi and Wolfgang Pfaffenberger (eds.), Elsevier, pp. 109-143.

Newbery, David M., M. G. Pollitt, (1997), “The restructuring and privatization of Britain’s CEGB-Was it worth it?”, The Journal of Industrial Economics, Vol. 45, No. 3, pp. 269-303.

Operator Of Electricity Market, (2012a), “Termination of Contract for Transactions in the Daily Energy Programming and delete from the Record of Participants of the holder of Supply Licence REVMAENA”, 30/05/2012, Available at: http://www.lagie.gr/more-announcements/anakoinosi/article/681/ , Accessed 05/11/2012. (In Greek).

Operator Of Electricity Market, (2012b), “Termination of Contract for Transactions in the Daily Energy Programming and delete from the Record of Participants of Supplier ELLINIKI ENALLAKTIKI ENERGIAKI”, 29/05/2012, Available at: http://www.lagie.gr/more-announcements/anakoinosi/article/680/ , Accessed 05/11/2012. (In Greek).

Operator Of Electricity Market, (2013a), “Generators in the participants record”, Available at: http://www.lagie.gr/systima-synallagon/mitroo-symmetechonton/paragogoi/paragogoi-sto-mitroo-symmetechonton/ , Accessed 12/06/2013. (In Greek).

Operator Of Electricity Market, (2013b) “Suppliers in the participants record”, http://www.lagie.gr/systima-synallagon/mitroo-symmetechonton/promitheytes/promitheytes-sto-mitroo-symmetechonton/ , Accessed 12/06/2013. (In Greek).

Operator Of Electricity Market, (2013c) “Traders in the participants record”, http://www.lagie.gr/systima-synallagon/mitroo-symmetechonton/emporoi/emporoi-sto-mitroo-symmetechonton/ , Accessed 12/06/2013. (In Greek).

Pollitt, Michael G., (2012), “Lessons from the history of independent system operators in the energy sector”, Energy Policy, 47, pp. 32-48.

Public Power Company-PPC, (2011a), “Tariffs for competitive and monopolistic charges 2011”, www.dei.gr, Accessed 05/11/2012, Available at: www.dei.gr. (In Greek).

Public Power Company-PPC, (2011b), “Press Releases June 2011”, Includes a Collection of Press Releases that refer to details of electricity supply interruptions during the period 20/06/2011-29/06/2011, Available at: http://www.dei.gr/Default.aspx?id=46572&nt=105&lang=1 , Accessed 05/11/2012. (In Greek).

Public Power Company – PPC, (2012a), “Commercial Tariff 2012, Applies for consumptions after 01.02.2012”, Medium Voltage Tariff, Available at: www.dei.com.gr , Accessed at 05/11/2012. (In Greek).

Public Power Company – PPC, (2012b), “Industrial Tariff 2012, Applies for consumptions after 01.02.2012”, Medium Voltage Tariff, Available at: www.dei.com.gr , Accessed at 05/11/2012. (In Greek).

Public Power Company – PPC, (2012c), “New Medium Voltage Tariffs for 2012”, Press Release, 27/01/2012, Available at: http://www.dei.gr/Default.aspx?id=55622&nt=18&lang=1 , Accessed at: 05/11/2012. (In Greek).

Public Power Company – PPC, (2012d), “Tariff for Farming – Interruptible, Applies for consumptions after 01.02.2012”, Medium Voltage Tariff, Available at: www.dei.com.gr . (In Greek).

Public Power Company – PPC, (2012e), “Tariffs of Competitive and Regulated Charges 2012”, Low Voltage Tariffs, www.dei.gr , Accessed 05/11/2012. (In Greek).

Public Power Company – PPC, (2012f), “Financial Results for the year 2012 for PPC”, 28 March 2013. Accessed at http://www.dei.gr/Default.aspx?id=65313&nt=18&lang=1, Accessed 12/06/2013. (In Greek).

RAE - Regulatory Authority for Energy, (2010), “Records of licences for electricity generation”, Available at: http://www.rae.gr/old/lic/parag_120710.pdf, Last Update 12th July 2010. Accessed 05/11/2012. (In Greek).

RAE - Regulatory Authority for Energy, (2012), “Electrical energy supply & competition”, Available at: http://www.rae.gr/site/categories_new/consumers/know_about/electricity/competition .csp. Accessed 27/11/2012. (In Greek).

RAE - Regulatory Authority for Energy, (2013), “Record of licences”, Available at http://www.rae.gr/site/categories_new/regirsty/licences.csp, Accessed 12/06/2013. (In Greek).

Sioshansi, Fereidoon P., (2008a), “Introduction: Electricity Market Reform – Progress and Remaining Challenges”. In “Competitive Electricity Markets: Design, Implementation, Performance”, Fereidoon P. Sioshansi (ed.), Elsevier.

Sioshansi, Fereidoon P., (2008b), “Competitive Electricity Markets: Questions Remain about Design, Implementation, Performance”, The Electricity Journal, Vol. 21, Issue 2, March 2008, pp. 74-87.

Zahariadis, Nikolaos, (2012), “Complexity, coupling and policy effectiveness: the European response to the Greek sovereign debt crisis”, Journal of Public Policy, Volume 32, Issue 2, pp. 99-116.

FOOTNOTES

[i] Other approaches provide similar prescriptions concerning liberalization (Joskow and Noll, 1999; Joskow, 2006). Reform models do differ but their policy, rather than detailed technical, focus means that their implementation is left for the policymaker to determine. For any given policymaker, following any of the various reform models is likely to lead to a similar outcome.