THE RESTRUCTURING OF ROMANIAN POWER SECTOR AT THE CROSSROADS: COMPETITIVE MARKETS OR NEO-COLBERTISM?

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Abstract: *Despite efforts made by European Commission to liberalize electricity markets and foster integration, there are still significant barriers to free competition. Until now, Romania was one of the countries that have been compliant to the European Union's electricity directives, being ahead of several older member states in this area. However, reforms have not started to pay out, suggesting that the model of combining state-owned non-competing generators with private/privatized distributors and suppliers may not be the best model of market deregulation. As a result, Romanian authorities have started to talk about plans to restructure the sector, by re-consolidating the unbundled generation companies and the state-owned distribution companies into one national energy company, aiming to create a national champion, competitive on the regional markets. However, these proposals are based on questionable economics and their adoption will have negative effects on market competition and, thus, on consumers.*

Key words: *electricity sector; liberalization; Romania; European Union*

JEL classification: *L22, L43, L51, L94, P23, Q48*

Two opposite forces are currently shaping the future of electricity sector in Europe. On one side, there is the electricity market liberalization policy that the European Commission has pursued in the last ten years, which aims to create a single, competitive internal electricity market across EU. On the other side, at the national level, there is a growing trend toward an interventionist policy of picking and supporting "national champions" in "strategic" sectors, a policy traditionally advocated by France. (Maicent and Navarro, 2006)

In order to liberalize the markets and foster integration, the policy of European Commission, reflected in the EU Electricity Market Directives of 1996 and 2003, and the more recent Green Paper[1], called for vertical unbundling of transmission and distribution operators, gradual opening of the national markets, better regulation of access networks, independence of national regulators, free entry to generation. According to EU Directive[2] 54/2003 by July 2007 the Member Countries should establish a regulated third party access regime to transmission and distribution

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[1] *Green Paper. A European Strategy for Sustainable, Competitive and Secure Energy, COM (2006)105 final, Brusseles, March 8.*

[2] *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*

networks; implement the legal separation of supply from transmission and distribution; open the market for all categories of consumers; establish a regulated regime for cross border trade and set up an independent market regulator. (Jamasb and Politt, 2005)

However, the findings of an electricity sector inquiry launched in 2005 pointed out that "the objectives of market opening have not yet been achieved" and that there are still significant barriers to free competition (European Commission, 2007). In order to address this, the Commission has proposed a third legislative package amending and complementing the existing regulation for the electricity and gas market[3]. The package is designed to address the main "structural failings" of European electricity and gas markets:

- High level of concentration and market power due to insufficient unbundling;
- foreclosure of competition by the vertically integrated monopolists which own network infrastructure and discriminate against new entrants;
- lack of transparency in the wholesale energy sectors which discourages new entry;
- Low levels of cross border trades and integration due to: insufficient interconnector capacity, distorted investment incentives that integrated monopolists have and capacity withdrawals by the incumbent national firms that do not want to encourage competition.

Many of these structural failings have been caused by opposition of several EU member states, notably France and Germany, to deeper reforms, in their attempt to protect the interests of their large, national energy giants and by the evasive manner in which some member countries applied the EU directives.

The "third package" has also to be viewed in the larger context of the new EU energy strategy, set out in the Green Paper and the Commission Communication to the Spring European Council concerning the renewed Growth and Jobs strategy, which has three main objectives: the creation of a competitive a efficient energy sector, security of supply and sustainability. A competitive and integrated energy sector, argues the Commission, is essential for achieving the strategic objectives of security of supply and sustainability.

Competitive markets provide the necessary signals for investment which leads to supply security in the most cost efficient manner. Similarly, the creation of a competitive internal market will allow the Union's energy companies to operate in a market of a larger dimension, which will improve their ability to contribute to security of supply. At the same time, market forces oblige European operators to use the most cost effective methods of production, which in the appropriate regulatory environment can benefit sustainability. Consumers will be able to choose between different providers and contract schemes, and could thus reduce their electricity costs and adapt their consumption to market developments. Competitive, cost reflective prices will help encourage energy efficiency, which can

[3] *The package, which was introduced on September 19, 2007, includes four documents: a new directive amending Directive 2003/54/EC concerning common rules for the internal market in electricity, a new directive amending Directive 55/2003/EC concerning common rules for the internal market in natural gas, a regulation establishing an Agency for the Cooperation of Energy Regulator, a regulation amending Regulation (EC) No 1228/2003 and a regulation amending Regulation (EC) No 1775/2005.*

reduce the dependence on external suppliers and which supports the Union's objective for sustainability and security of supply (European Commission, 2007)

Romania is one of the countries that have been compliant to the European Union directives, being ahead of several older member states in certain areas of electricity sector reform. So far, in all its strategic and policy documents Romania has expressed its commitment to the objective of creating a competitive and integrated European energy market.

The liberalization efforts undertaken have been significant. Over the 1998-2000 period the vertically integrated, state-owned monopoly was divided into five separate state-owned enterprises: one each for nuclear generation (Nuclearelectrica), hydro generation (Hidroelectrica), thermal generation (Termoelectrica), transmission (Transelectrica), and distribution (Electrica). Since then the distribution function has been further divided into eight regional companies, with five of these privatized to foreign buyers (Electrica Oltenia to CEZ, Electrica Moldova to E.ON, and Electrica Muntenia Sud, Electrica Banat and Electrica Dobrogea to Enel). Termoelectrica has been also further horizontally unbundled. The most important entities that were spun off Termoelectrica were the vertically integrated Energy Complexes, Turceni, Rovinary and Craiova, created in 2004 by integrating the brown coal mine previously belonging to the Oltenia National Lignite Company. Together they account for about 25% of electricity production in Romania. An independent regulatory body, ANRE, has been established and the regulatory reform has advanced significantly. The wholesale market is operating since 2000, although its design has been modified in 2005. The Day Ahead Market, a sub-market of the wholesale market has transacted about 7.7% of the national consumption, a relatively high percentage by European standards. The market opening is on going. Since July 2005 all industrial consumers have been eligible to change their supplier and all consumers are legally eligible to choose their suppliers since July 2007. The market structure that resulted from ten years of successive unbundling is promising. In 2006, on this market there were 61 electricity producers, 104 suppliers, 8 distribution operators, 8 million residential consumers and 600,000 industrial consumers.

However, reforms have not started to pay out yet, mainly due to the fact that competition in the generation sector has failed to emerge. The reason is that most of the generators continued to remain state owned and subject to political and administrative interference from the state. Privatization has been always a sensitive political issue. The most viable generators (hydro power plants, the Energy complexes) that could have attracted the interests of private investors have been deemed of strategic importance and withhold from privatization. The thermo power plants that were listed for sale did not attract the investors interest, given their age, outdated technology and significant need for investments. Given the excess capacity and high reserve margins that exist, at least theoretically, in the Romanian power sector there had been no significant green field investments.

In these circumstances, the sector has been plagued by corruption scandals and by the chronic financial problems of some generators. For example, Termoelectrica had accumulated, by 2005, debts of 1.2 billion Euros mostly due to regulated prices below average costs and to

horizontal unbundling measures that left it without its most efficient generation units. Nuclearelectrica has also accumulated debts of 180 million euros. The managers of low cost generators like Hidroelectrica or Rovinari, have granted long term contracts to politically connected energy suppliers, at prices below the market price and sometimes even below costs.

Current scandals in the sector show that - taking horizontal unbundling and sector's liberalization as given - the model of combining state-owned non-competing generators with private/privatized distributors and suppliers is not the best model of market deregulation. The manager of public companies often pursue other objectives than profit maximization (security of generation, lower prices, etc.) and are under strong political control. In such a model, corruption would always be an issue, even if transparency is maximized or the sector is totally de-politicized.

Also, the scandals-that surfaced in a period when the market is progressing fast toward a competitive model- underline the need for a professional and less politically amenable regulator that would lay out more clearly the rules of the game for all the market participants. Political pressures and the fact that most of the staff of the regulatory agency have close ties with the industry[4] - which suggest a certain degree of regulatory collusion - may account for the limited willingness of the regulator to deal more firmly with the sector's issues.

So far the Government has dealt with the financial problems of the sector by providing successive waves of state aid, in the form of public debt write-offs and subsidies for debt repayment towards private creditors, of more than 1 billion Euros. In accordance with the pre-accession procedure, the aids have been authorized by Romania's Competition Council as being compatible with the *acquis communautaire* because they represented compensations to an undertaking operating a service of general economic interest. However, these authorizations decisions raised many question marks about their conformity with the European legislation.[5]

However, after accession, state aids should be notified to and authorized by the European Commission. It is doubtful that the Commission will agree anymore with any new state aid and therefore it becomes crucial for this company that a decision is made about its prospects in the market. It is likely that due to this change in state aids authorization procedures the sector will need to undergo severe adjustments in the near future.

Foreseeing or not some of these issues, in the past two years, the Romanian Government has started to talk about plans to restructure the generation sector in order to render some troubled generators financially viable. The restructuring plans have also been spurred by the very large investments that thermo power plants need to undertake in order to comply with the EU environmental standards.

The solution most seriously considered has been that of re-consolidating the unbundled generation companies by grouping the most viable generators (the hydro plants, the Energy Complexes and

[4] *Most of them come from the industry. ANRE and Hidroelectrica even share the same building*

[5] *As an example, if the undertaking which is to discharge public service obligations is not chosen pursuant to a public procurement procedure, which would allow for the selection of the tenderer capable of providing those services at the least cost to the community (which was not the case for Termoelectrica), then the level of compensation needed must be determined based on an analysis of the costs of a typical undertaking, well run and adequately equipped. Or, in this case, the involved costs were Termoelectrica's costs, probably substantially higher than those of a "typical undertaking" in the sector.*

possibly the nuclear producer, Nuclearelectrica) together with other less efficient thermo generators in 1-3 larger companies. The idea the was to group generators in order to create companies with similar (low) *average* costs and market shares that, was argued, could successfully compete against each other. Implicitly, under this plan, the less efficient thermo generators would be cross subsidized by the more efficient units of the company. The investment needs of the consolidated companies would presumably be financed from the rents accruing to the inframarginal generators.

At the end 2006, the Romanian Ministry of Economy and Commerce signed a contract with the consultant Parsons Brinkerhoff Power (UK) and the Institute for Power Studies and Design (Romania) in order to explore the re-organization of the generation along these lines. A preliminary study of the Institute was submitted to the Government last summer. In the spring of 2007 the consultants submitted five proposals, each with two or three scenarios, of grouping the hydro, nuclear and thermo generators in 3 or more companies based on a set of criteria such as: the market share; levelized costs of the generators and their investment needs in the 2007- 2012 period. According to the study the preferred solution was to create five companies, among which a "strategic" state-owned generator, that would own Nuclearelectrica, RAAN and the two largest hydro power plants in Romania, Portile de Fier I and II (which account together for about 40% of the hydro generation in Romania).

For a while the plans to re-concentrate the industry seem to have been abandoned. An earlier version of the Energy Strategy released by the Government in May 2007 talked about "re-grouping of the generators mainly by natural aggregation as a result of privatization of thermo and hydro power plants"

However, in September 2007, things have taken a surprising and more dramatic turn. Romanian authorities have announced plans to create a national energy company, which would bundle not only most of the energy producers but also the distribution companies that are still state owned, with the intention of creating a strong national champion in the regional markets, following the model of CEZ and ENEL.

If implemented, such measures would represent a big step back for the electricity market reform in Romania and a significant departure from the doctrine of competitive electricity markets to which Romania has subscribed so far. This is a major change of policy that may suddenly render worthless ten years of reform because it would dissipate most of its potential benefits, which derive chiefly from the effects of competition on generators.

The reason why the policy of "national champions" has all of the sudden such an appeal for the Romanian government is yet uncertain. It is possible that Romanian political class has never really been committed to the ideas of competitive energy markets but felt compelled to formally embrace them in order to join the EU, obligations of which now they feel partially relieved. For the Romanian politicians, the energy sector may represent a too important source of rents and a too powerful political instrument to let go. However, it may also be the case that the plans of re-concentrating the sector are genuinely viewed by the government as the only viable solution for electricity sector in the present circumstances. In this case, they are based on flawed economic reasoning. Let's first review some economic fundamentals.

On a liberalized market, the price of electricity is determined by the most expensive source of supply necessary to meet demand. The most expensive source of supply is that with the highest *marginal* cost. This is called marginal cost pricing. On the power market there are usually low marginal costs generators, like nuclear, coal and hydro units, and high marginal cost producers, usually the natural gas-fired-units and other fossil fuel units. The industry marginal cost of electricity production is the horizontal sum of the marginal costs of individual generators on the market. The high marginal cost generators typically operate only during peak periods, when demand is high. In order for them to operate, the price during peak demand periods needs to be high enough to cover their fixed costs (including a normal return). The payments that the marginal generator receives in excess of its variable costs when the market is tight are called scarcity rents. During all periods, the facilities with lower marginal costs - the inframarginal generators - receive a market price in excess of their marginal costs. These excess payments received by low marginal costs generators are called inframarginal rents. Therefore, the inframarginal generators receive both inframarginal and scarcity rents. They are used to cover the fixed costs of the generators and represent a very important signal for their investment decision.[6] Other pricing mechanisms can be devised for the electricity market; however, marginal cost pricing has the advantage that, on competitive markets, is welfare maximizing.

A low marginal cost generator is not necessarily a low average cost generator. The average costs are the sum of average fixed costs and average variable costs of generation. Fixed average costs are accounted mainly by capital costs. They depend, among other things, on how intensive the capacity is utilized, on discount rates and on the expected life of the plant. In terms of levelized costs per kWh[7], combined gas cycle turbines often have lower *average* costs than nuclear or hydro generators. Low marginal cost units like nuclear power plants or even hydro plants have high fixed costs and higher levelized costs per kWh. *The failure to understand the distinction between average and marginal costs fuels some popular misconceptions such as that of "cheap" nuclear and hydro electricity.*[8]

The average costs do not matter on a deregulated energy market, in the sense that they do not influence the market price.[9] They are important only for the magnitude of profits/losses that the generators make. The average cost of the generator has no influence on the marginal costs of the units it owns. *Therefore bundling together generators in order to create companies with similar average costs will not keep electricity prices low.*

The idea that, on a free market, there can be no competition among generators with different average costs which seem to underline the consolidation proposals is rooted either in a misunderstanding of marginal cost pricing or in the mistrust in the efficiency of the wholesale market.

[6] *Of course, this is a simplified depiction of the manner in which electricity wholesale market operates.*

[7] *The methodology of levelized costs is used in order to compare the different electricity generation options. The levelize cots can be thought of as the tariffs that the owner of a generator would need to receive over the life of the facility in order to cover the construction and operating costs of a generator based on its expected life and capacity factors.*

[8] *The price of hydro power is also artificially lowered by regulatory arrangement that do not reflect the opportunity costs of water used for generation purposes.*

[9] *The situation is different if the retail prices are regulated, consumers being charged a weighted average of the generator costs. See Van Doren and Taylor, 2004.*

On the electricity market the units that cover the peak load had different cost characteristics than those who cover the base load (the former have lower fixed costs and higher marginal costs). The peak load units do not function frequently and cover their fixed costs from scarcity rents when demand is high. In theory, on the long term, a competitive market will make the scarcity rents exactly cover the fixed cost of peak load units. If the scarcity rents are higher than the fixed costs, supplementary peak load capacity will be added. The extra capacity will reduce the prices during peak load and the scarcity rents. If the scarcity rents will fall toward levels lower than fixed costs this would be a signal that there is extra capacity in the system. This capacity will gradually exit the market increasing the prices to the point they cover the fixed costs of peak loaders. The electricity prices and scarcity rents provide essential signals with respect to the optimal capacity mix of base and peak loaders on the market.

However, in practice, marginal costs pricing may not be as successful in guiding the investment decisions and assuring the system reliability as the theory claims. The wholesale electricity markets are affected by a series of imperfections that limit the extent to which prices can convey accurate signals with respect to investments in generating capacity. They may lead to investment cycles - periods of overinvestment in capacity followed by periods of underinvestment, reduced reliability and high price volatility. The most important imperfections are: the limited response to price changes on the demand side[10]; non-price rationing of scarce generating capacity due to reliance on non-market mechanisms; incomplete and illiquid forward markets; too short term contracting due to regulatory opportunism and retail market imperfections (Joskow, 2003). Therefore, a certain degree of skepticism with respect to the efficiency of the wholesale electricity market may be warranted.

Even so, probably the most important flaw of the restructuring plan is that it ignores the effect that a concentrated market structure will have on competition in the generation sector. The plan will result in a market with 2-3 large players with significant market power. This translates in higher prices and inefficient allocation of resources in the generation sector. Or, most economists would agree that the bulk market liberalization in the power sector stems from the effects of competition in the generation sector.

There are two main academic arguments for why electricity market liberalization is worth pursuing. They pertain to the static efficiency of the deregulated market. First, on the supply side, competition provides better incentives to the generators to minimize costs, by choosing the right technology, capacity mix and capital labor intensities, and drives prices toward marginal costs. Second, on the demand side, deregulated prices will better signal to consumer the marginal cost of additional consumption, reducing peak-demand, when generation is more costly, and increasing off-peak demand. As a result, the total costs of producing power will be reduced and the competitive market will pass the savings onto consumers. However, empirical evidence points out that demand is extremely inelastic and therefore the demand side benefits of liberalization are modest. So far, liberalization has scarcely involved the use of real time pricing.

[10] *Most do not perceive the price fluctuations on the wholesale market. Even if the fluctuations were perceived the price elasticity of demand would still be very low.*

However, even if real time pricing was fully implemented, the savings to consumers would be very low. Some estimates place them around 2% of the total cost of delivered power (Stoff, 2002)

The benefits of market deregulation have to be weighted against its costs. The costs stem from increase market complexity and, possibly, less reliability, which gives rise to increased risk premiums[11] and regulatory costs. Or, forgoing the effects of competition in the generation sector would make liberalization a pointless and formal exercise: it would mean forgoing most of the benefits while being saddled with its all, at all negligible, costs.

What is market structure and why is the market structure so important? Market structure is an array of properties that, together with demand, determine the strength of competition on the electricity market. When competition is weak, firms have market power: they can and find profitable to charge prices above the competitive levels. The properties of the market are determined by technology and legislation/regulation and refer to: the number of producers; their relative size; the barriers to entry and exit; the degree of vertical integration; the degree of product differentiation, etc.

Market concentration is an important determinant of market power. It measures the extent to which few firms make most of the industry sales. However, other factors like the price elasticity of demand, the generation technology, the reserve margins in the system, the extent of geographic market are equally important.

One of the overriding conclusions of the empirical literature on electricity market deregulation is that the market structure is crucial for the future development of the liberalized markets (Newbery, 2006; Jamasb and Pollitt, 2005; Joskow, 2003). The experience of other countries shows that embarking upon deregulation while retaining a highly concentrated market structure is a dangerous reform path: it delays the whole process and makes its benefits harder to materialize. Regardless how good the institutional design or the quality of regulation is, they can do little to enhance market efficiency if grafted on uncompetitive market structures that are especially hard to regulate and reform ex-post. One of the main lessons that can be drawn from international experience with electricity market deregulation is that:

„No market design will work well if there is not an adequate number of competitive suppliers of generation service or the market power of dominant firms has not been mitigated in some way (i.e. with regulated forward contracts). There should be a large number of competing suppliers of generation service and deep liquid bilateral forward wholesale markets for physical and financial contracts for power" (Joskow, 2003)

Deregulation in England and Wales Electricity Pool provides an interesting illustration. Up to 1996 the electricity market was highly concentrated, the market price being determined by two big producers. Those two producers were exercising their market power gradually increasing the price-cost margins. In 1996, however, the regulator imposed the two companies to divest 6000 MW of capacity in favor of a third company. Moreover, it conditioned the attempt of the three companies to vertically integrate by additional divestitures. After 2001, the Electricity Pool has been replaced by a different market design: NETA (New

[11] *Although the increased risk premiums would also reduce the bias toward capital intensive generation of regulated utilities.*

Electricity Trading Agreements) based on self-scheduling, voluntary bilateral and day ahead markets, and "pay as you bid" pricing. Meanwhile the de-concentration process in generation sector has accelerated, because of producers' expectations that new entry would significantly erode the high price margins and because of the uncertainty surrounding the remuneration of capacity. Even before NETA was introduced, however, electricity prices dramatically fell due to continuous decreases in market concentration. Newbery (2006) concludes that the experience of England and Wales shows that high prices were mostly a consequence of the concentrated market structure, and not of the market design.

In other countries like Spain and Portugal, the deregulation has been stalled by high concentration in the generation sector, concentration initially encouraged by the Spanish and Portuguese authorities. In fact most of the European national markets remain highly concentrated.

If, on mature markets, the market structure is hard to change ex-post, in Romania, where restructuring is still on going and most generation assets are still public, the Government can still significantly alter it.

The current structure of the Romanian power sector looks promising comparative to that of many other EU members. Romania has fully implemented EU directives and is advanced in its efforts to create a competitive power sector. The concentration in the sector is moderate although Pittman et all (2006) finds that there is scope for market power, especially during the winter season that is the time of peak demand in Romania.[12] The property regime, the inheritance of past regulation which sought to use electricity prices as a tool of social protection, together with political interference in the management of state owned companies have been main obstacles to competition.

However, the situation could dramatically change if the Government embraces the idea of "consolidating" the industry as a solution to its financial problems, especially if it chooses to create no more than 1-3 generation companies. The "consolidated" entities will have significant market power that will be hard to mitigate through regulation. Bundling together hydro and thermo power plants may give generators additional incentives to restrict production and manipulate the market. Such entities may have incentives to restrict the output of their non-baseload plants in order to earn inframarginal rents on the lower cost capacity. Therefore the re-organization may have long run negative effects on market competition. The Romanian consumers, of which some already face relatively high electricity prices by EU standards[13], will have to deal with even higher prices due to increased price-cost margins.

Even if the electricity sectors of most EU countries are currently dominated by 2-3 (sometimes vertically integrated) producers, it would be a mistake to infer that this is a desirable arrangement that Romania should try to mimic, as some have argued. The package of legislation that the European Commission intends to adopt is directed precisely against this unsatisfactory status quo. The rhetoric of the national champions is fallacious and must be resisted because "national champions" do not benefit the

[12] *Even a market with a sufficiently large number of producers may be insufficiently competitive if only few of the generators can change their production as a result of the price signals. In Romania, during winter, more than 70% of the generation is base load due to cogeneration, which could give significant market power to the peak load producers.*

[13] *This refers to industrial consumers.*

consumers and the economy. They mean less competition, higher prices and less choice for the consumers, distorted investments, less reliable infrastructure and a significant potential for political interference and corruption. To the extent they remained state owned and are poorly managed they may become a significant burden for the state budget and "black hole" for the taxpayers money.

The performances of the state controlled generators in Romania have been poor: the generation costs are high, the technology is outdated and there are serious environmental issues that they need to tackle in the next few years. They have been riddled by financial losses, for which they are not entirely to blame, and by corruption scandals. Competition in the generation sector coupled with better governance and property structure stands to deliver significant efficiency gains in this sector, which, in the longer run can be passed to the consumers. Re-concentrating the sector along the scenarios we described could mean forgoing them.

Conclusions

The future competitiveness of the Romanian electricity sector hinges crucially on how the restructuring process will continue. After joining the EU the Romanian generation sector has come under increase pressures to restructure due to both changes in the state aids authorization procedures, which now limit the ability of the Government to support the loss making generators, and to increased investment needs, partially due to the necessity of complying with the EU environmental standards. The recent proposals of "consolidating" the generation sector aim to address these problems. However, these proposals are based on questionable economics and their adoption may significantly distort competition in the future. This would mean forgoing a good part of the efficiencies gains that the liberalization of the electricity markets may bring.

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