

An overview of the Portuguese electricity market

Paula Ferreira (**Corresponding author**)

Department of Production and Systems, University of Minho

Azurém

4800-058 Guimarães

Portugal

Tel: +351253511670

Fax: +351253510343

Email: paulaf@dps.uminho.pt

Madalena Araújo

Department of Production and Systems, University of Minho

Azurém

4800-058 Guimarães

Portugal

Tel: +351253511670

Fax: +351253510343

Email: mmaraujo@dps.uminho.pt

M.E.J. O'Kelly

EirGrid plc.

Ireland

Email: eddie.okelly@eirgrid.com

ABSTRACT

The electricity market in Portugal was recently opened to all consumers. However, it remains highly concentrated in terms of control of production and supply and the long-term power purchase arrangements still coexist with free market. This paper discusses the electricity market restructuring process in Portugal, presenting its main marks over the past years and the present situation. The evolution of the electricity prices in Portugal is analysed, and a comparison with EU-15 is presented. Special attention is given to Spain due to the possibility of cross-border competition in the future arising from the formation of the Iberian electricity market.

Keywords: Electricity, liberalisation, Portugal.

1. INTRODUCTION

In 1995, the European Union (EU) published a White Paper (European Commission, 1995) where the goals of the European energy policy were outlined: overall competitiveness, security of energy supply and environmental protection. The liberalisation of the internal market for electricity and natural gas was stated as a primary and central aim. Since then, important steps have been taken to meet liberalisation objectives in the energy market. The electricity directive 96/92/EC and the gas directive 98/30/CE were adopted, laying down the rules to allow for real competition and to give consumers a free choice of energy suppliers. In 2003, the directives 2003/54/EC and 2003/55/EC, concerning common rules for the internal electricity and natural gas markets, respectively, replaced these directives.

The EU supports that the implementation of the Directive 96/92/EC brought benefits in terms of efficiency gains, price reductions, higher standards of service

and increased competitiveness. However, it also points the need to focus on the risk of market dominance and predatory behaviour (Directive 2003/54/EC) and considers that Directive 96/92/EC has not been adequate to achieve the objective of competition, even for larger users (Commission of the European Communities, 2005a). The same way the International Energy Agency (IEA, 2001), points that competition is the most effective way to establish sustained incentives to keep costs and prices down.

The MEMO published in 2004 by the European Commission (2004a), pointed out that while the first results of the opening of the European market are positive, much remains to be done to ensure a competitive market. This study and the 2005 report (Commission of the European Communities, 2005a) call attention to the problem of the existence of companies with excessive market power at national level and to the need to promote cross-border exchanges in order to increase the scope for competition.

As Jamasb (2006) points out, a successful reform of the electricity sector can improve the efficiency and offer lower prices, and better quality of service. However these benefits may be undermined by flawed reform design and ineffective regulation and competition. The same way, Newbery (2002) states that for the successful liberalisation of the electricity markets, suppliers must have access to the transmission system, the generation capacity must be adequate and there must be appropriate regulation. Else, liberalisation may lead to higher prices.

The question of the effects of liberalization on competition and the resulting benefits to consumers was already been brought to light by several authors. The arguments in favour of liberalisation include the expectable price reduction for the consumers. For example, a recent simulation study conducted for some European countries, corroborates this view and concludes that the prices in perfect competition scenarios are lower than in high market power scenarios (Lise et al, 2006).

However, some recent examples may be found in the literature challenging the price reduction argument. The Percebois and White (2001) study, compared the UK and French electricity markets and concluded that in the liberalised UK industry the major price reductions achievements were still concentrated in the largest industrial consumers. Also, after 10 years of reforming process in UK, the state-owned French electricity industry was still performing better for most consumer categories. Bower et al (2001) describes the German electricity liberalisation and the subsequent strategic response of the firms, resulting in creation of four dominant firms. The authors conclude that this strategy appears to result in an increase in market power and could lead to greater prices than the competitive levels that initially emerged. The same way, Green (2006) addresses the response of the companies to liberalisation in Europe and calls attention to the problem of the increasing concentration of the European electricity industry due to the companies' expansion across national borders, which may limit the effectiveness of competition (Jamasb and Pollitt , 2006)".

Further reading on these matters may include among many others, Jamasb and Pollitt (2006), reviewing the European electricity liberalisation process; Thomas

(2006), addressing electricity industry reforms also in small European countries; Al-Sunaidy and Green (2006), discussing the electricity deregulation in OECD countries or Jamasb (2006), examining the electricity reform experience in developing countries. These and other works (for example Newbery, 2002 and Haas and Auer, 2006) also describe some of the problems experienced during the market reforms, draw some lessons and point some conditions necessary for the success of this process.

In Portugal, the first move towards the opening of the generation sector was made in 1981. However, only in the middle 1990's was initiated the process of liberalisation for large industrial consumers. Since then the concept of eligibility has been extended to smaller consumers reaching full legal opening of the market in July 2004. However, the eligibility of the household consumers will only be effective in September 2006. Nevertheless, the Portuguese electricity market still presents high levels of concentration and a level of consumer activity, not indicative of a competitive market. The European Commission considers that Portugal is still at the early stages of the development of competition in the electricity market. (European Commission, 2004a).

The focus of this paper is to analyse the present situation of the Portuguese¹ electricity market. The evolution of the Portuguese electricity prices over the past years are examined, and the results are compared with those in the EU-15, and in particular compared with prices in Spain, because of the possibilities of cross-border exchanges of power.

The paper begins by describing briefly the Portuguese electrical system, its degree of market opening and state of competition. In the third section, an analysis of the electricity prices is presented, including the household and industrial consumers. The Portuguese prices are compared with the equivalent EU-15 market and with the Spanish market. The main conclusions are summarised at the end.

2. THE PORTUGUESE ELECTRICITY SYSTEM

The organization of the Portuguese electricity sector was defined by Decree-Law 182/95 to 187/95 and changed by Decree-Laws 56/97 and 198/2000. More recently, Decree-Laws 184/2003 and 185/2003 initiated a revision process of the National Electricity System (NES), addressing the adaptation of the Portuguese system to the new Iberian market (MIBEL). The model is based on the existence of two sub-systems: the public electricity system (PES) and the independent electricity system (IES). Figure 1 represents the general structure of the Portuguese Electricity System.

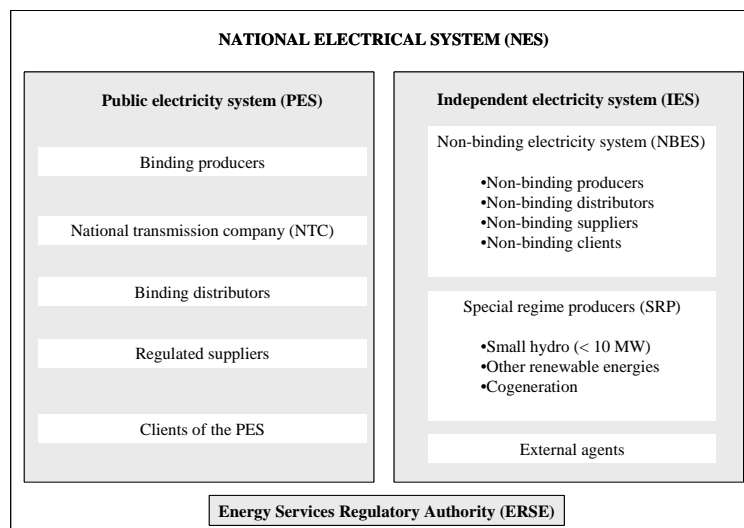


Figure 1- National Electricity System in 2004 (Source: ERSE web page, EDP, 2003 and 2005)

The PES is obliged to assure the supply of electricity to the all-continental territory as a public service system. It comprises the production activity, the national transportation grid and the distribution activity.

The binding producers are bonded to the NTC with an exclusivity long term contract (PPA- Power Purchase Arrangement) and are obliged to exclusively supply the PES. The NTC holds the concession to operate the transmission network with exclusivity as a public service system. Rede Eléctrica Nacional, SA (REN) is presently the company responsible for the electricity transmission in Portugal. The binding Medium Voltage (MV) and High Voltage (HV)² distributors are bonded to the NTC, and may only acquire electricity out of the PES up to a limit of 8% their energy and power requirements. The regulated suppliers are obliged to supply all the PES clients. Decree-Law 185/2003 appointed EDP Distribuição as the regulated supplier and last resource supplier.

The non-binding electricity system (NBES) and the special regime producers (SRP) form the IES. The NBES is organized as a non-regulated market system with free access to the production and MV and HV distribution activities. It comprises the non-binding producers, distributors, suppliers and clients. The non-binding producers and clients may use the PES transmission and distribution grids on payment of a regulated tariff. The external agents are companies legally established in other EU countries entitled to buy or sell electricity. These agents along with suppliers may perform cross border commercial transactions using the interconnections of the transmission grid.

According to the European Union (EU) Directive 2003/54/EC, the member states must assure that all consumers are free to purchase electricity from the supplier of their choice (eligible consumers) after July 2007. The Portuguese legislation is ahead in time. In fact, with the publication in August of Decree-law 192/2004 the small electricity consumers became also eligible. By law, all the consumers located in Continental Portugal may now have access to the NBES, meaning that they may choose their supplier and negotiate their relationship. According to ERSE, the effective free choice for the small consumers will only be possible in

September 2006 (ERSE, 2005a), after the implementation of the computer system necessary for managing the switching supplier procedure.

The SRP include the small hydro generation, the cogeneration and the production from other renewable sources. The public electricity grid is obliged to buy the electricity produced by the SRP during the licence period at prices based on the avoided costs to the PES and on the environmental benefits provided by each one of the energy sources used for electricity production.

ERSE regulates the Portuguese energy sector. One of its main purposes is the regulation of the PES and the relationship between PES and NBES. Some of the generic competences of ERSE include setting tariffs, namely the electricity prices for final Low Voltage (LV) consumers, setting prices for the services of the NTG company and binding distribution companies and issuing codes for commercial relations and grid access.

2.1 The Portuguese liberalisation process

The liberalisation of the electricity market in Portugal followed a process similar to most of other countries. Al-Sunaidy and Green (2006) point out that this process usually starts by allowing the entry of independent power producers with long-term contracts. The creation of an active wholesale market and the opening of retailing to competition came in a later stage. Figure 2 resumes the legal calendar of the Portuguese liberalisation process.

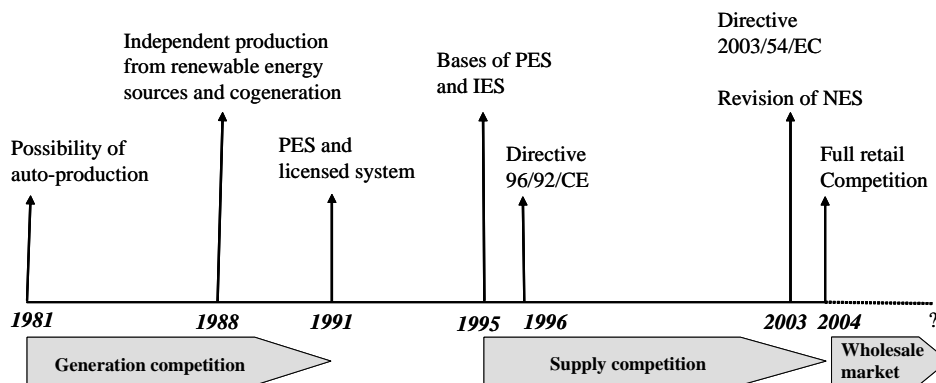


Figure 2- Main legal marks of the liberalisation of the Portuguese electricity market.

In Portugal, in 1981 Decree-Law 20/81 referred for the first time the possibility of electricity auto-production, for entities accessorially producing electricity from renewable energy sources or using technologies that would lead to the reduction of primary energy consumption. In 1986, Decree-Law 149/86 enlarged this concept to plants exclusively producing electricity. However, in 1988 Decree-Law 189/88 recognised that a quicker process was needed and the creation of conditions allowing for the economic viability of the small plants. This Decree-Law replaced the previous ones and established the rules for independent power production, allowing this production from renewable energy sources and cogeneration³.

In 1991, Decree-Law 99/91 established the existence of the Public Electricity System along with the licensed system, opening way to the full competition in generation sector. In 1995, Decree-Laws 182/95 to 187/95 reassessed Decree-Law 99/91, defining the bases of the Public and of the Independent Electricity Systems⁴. The progressive opening of the retail market, between 1995 (Decree-Law 182/95) and 2004 (Decree-Law 192/2004), followed the process.

As for the wholesale market, it is being prepared jointly with Spain. In January 2004, the Portuguese and Spanish governments signed an agreement to develop a common Iberian power market (MIBEL), approved by the Resolution of the Assembly of Republic 33-A/2004. MIBEL was expected to start functioning in April 2004; however the start date has been successively delayed with out any forecasts for the beginning of its operation.

In 2003, Decree-Laws 184/2003 and 185/2003 established the dispositions for the supply, importation and exportation activities in the free Iberian market. Once this market is on operation, electricity will be traded by bi-lateral contracts or on organized market and the PPA will be ceased. However, the anticipation of the end of these contracts implies economical compensations to the involved companies. Decree-Law 240/2004, published in December 2004, presents already the maximum compensation values for the PES power plants.

2.2 Indicators of the Portuguese electricity market

Figure 3 represents the electricity balance for Portugal in 2004⁵. Figure 4 illustrates the value chain and main elements of the Portuguese electricity market, based on the general value chain already described and on the electricity balance. In both figures the position of the EDP Group in the National market is underlined.

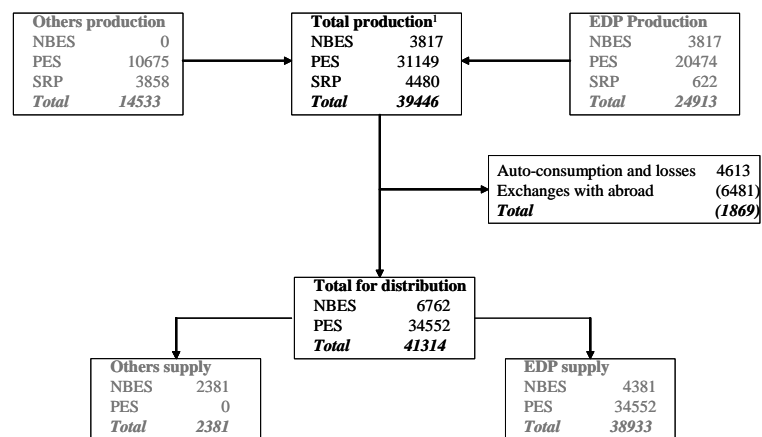


Figure 3- Portuguese electricity balance, 2004 (GWh) (Source: own elaboration from EDP, 2005)

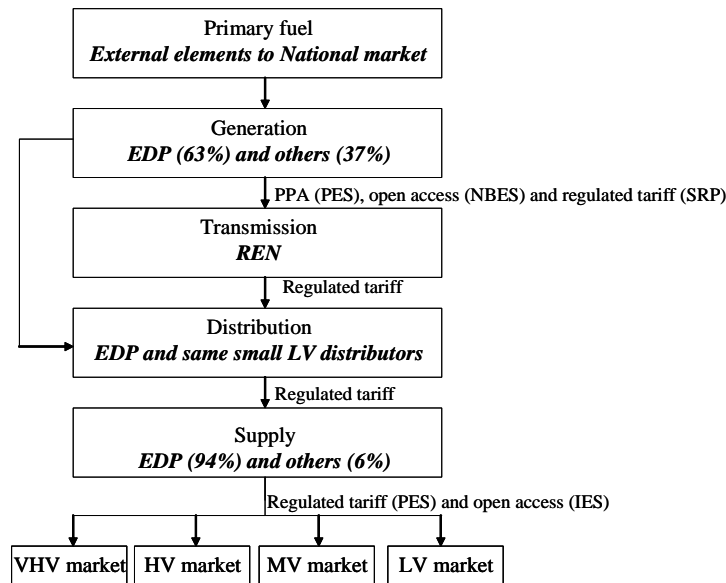


Figure 4- Value chain and main elements of the Portuguese electricity market for 2004 (Source: own elaboration based on Oxera, 2003, EDP, 2004b and EDP, 2005).

According to these figures, in 2004, the PES system represented 79% of the total electricity production of the Portuguese electricity system, followed by the SRP with 11% of the total production and finally the NBES with 10%. The number of non-binding consumers, although rising, still represents a small amount of the total electricity consumption (about 10% of the total electricity for distribution). The EDP Group has a dominant position in the electricity market, being present in all the elements: production, transmission, distribution and supply, both in the public and independent systems. This Group is responsible for 63% of the total electricity production and 94% of the total electricity supply. It also holds the infrastructures of the electricity distribution grid in MV and HV and manages and operates most of the LV distribution grid in Portugal. Additionally, the EDP Group has a 30% shareholding in REN.

2.3 Critical overview

Being considered an eligible consumer by the legislation is the primary condition for a consumer to be able to choose a supplier and participate in the free market. However, it is important to distinguish the eligible market from the truly competitive market. In fact, the European Commission (Commission of the European Communities, 2004 and European Commission, 2004a) observes that the high levels of market power among existing companies represent one of the major obstacles to competition. In order to tackle this problem, the above studies suggest that measures to promote cross border exchanges and improve inter-connection are key requirements for the development of a competitive internal electricity market.

In Portugal, the market is now completely open and even by 2002 the eligible consumers represented already about 54% of the total electricity consumption (EDP, 2003). However, the PES is still the most relevant sub-system of the NES and the EDP Group maintains the effective market dominance, especially for the supply sector. This Group also operates the distribution network, under a regulated system.

The European Commission reports (Commission of the European Communities, 2005a and 2005c) expose some problems in the Portuguese electrical system: the excessive market concentration for generation and supply, the existence of long term PPAs, the existence of regulated end user prices, and the accounting unbundling of the distribution from the supply activity. However, in terms of consumer activity, Portugal presents a positive performance. The cumulative volume of electricity consumption having switched reached 16%, since market opening (Commission of the European Communities, 2005c). This value falls behind some countries like UK or Spain, but represents a clear improvement from the previous value of 9% for large eligible industrial users presented in the 2004 report (Commission of the European Communities, 2005b) .

As for electricity production, the Portuguese market is characterized by a very high level of concentration, with the share of the Top 3 producers reaching 76% by the end of 2004 (Commission of the European Communities, 2005b). Of those producers, Group EDP is the largest one and also owns shares in the other two: Tejo Energia and TurboGás. The competition in the production stage relies only on independent producers and import flows. Generators in the PES and SRP do not compete in the market and are paid by administrative established prices (ERSE, 2005b).

The long term PPAs in the Portuguese market contributes to make the process of competition difficult and these contracts need to be reduced or terminated to maximize competitive supply options (Soares, 2003, IEA, 2004). The initial findings of the European Commission inquiry for the energy sector indicate that the long term PPAs are an entry barrier for new entrants in the market. These PPAs have only limited effect on the price formation process on electricity wholesale markets and may be among the main causes for the low volumes of electricity traded on the wholesale markets (European Commission Competition DG, 2006).

Decree-Law 185/2003 establishes a set of transition rules for the creation of the free electricity market and predicts the extinction of these long-term contracts. In December 2004 Decree-Law 240/2004 was published defining the rules for the extinction of PPAs. In January 2005 the Cessation Agreement between CPPE and REN was already signed (EDP, 2005). However, the cessation of these contracts will only be effective after the launching of the organized market.

In fact, the PES producers represent more than 70% of the total installed power in Portugal and have access to these contracts, protecting them from market competition and granting supply exclusivity and fixed rewards for energy sold. This means that new entrants will only be able to compete for the much smaller independent market and even there, they must face the competition from Group EDP already operating in both markets. A competitive wholesale market would reduce the entry barriers for both the independent generators and suppliers because for the moment, independent generators do not supply the largest bulk of the market and independent suppliers do not have access to uncommitted generation from PES generators.

In Portugal, the market share of foreign suppliers in the IES was about 35%, in 2004. The second largest supplier was the Spanish company Endesa, with a total market share in the IES of 27% (ERSE, 2005c). However, considering the total Portuguese electricity consumption, the share of foreign suppliers is only about 6%. In addition, the import capacity represents only 8% of the total installed generation capacity (Commission of the European Communities, 2005c). The low number of active suppliers along with the low levels of interconnection capacity may represent important obstacles to the competition process.

Presently there are no fully independent suppliers. In the IES, the largest supplier is EDP Corporate a company subsidiary of Group EDP, meaning that it has a close relationship with generating companies and distributors. The others suppliers are not affiliate to the Portuguese electricity network, but they are linked to Spanish producers.

The EU endorsed the target for Member States to have a level of electricity interconnection equivalent to at least 10% of their installed production capacity by 2005 (Commission of the European Communities, 2003). The European Commission recognizes the need for the electricity network reinforcement in Portugal-Spain, and this project was included among the nine priority axes of the trans-European electricity network in the EU (European Commission, 2004b).

The International Energy Agency (IEA) is aware that the electricity market in Portugal has developed significantly in the past few years; however, IEA is also concerned that the market remains dominated by EDP. In its recent review for Portugal the IEA (2004) considers the increase of interconnections with Spain as an important initiative for increasing competition in the electricity market in Portugal. It also supports the need to address the question of the concentrated generation at the Iberian level. In fact, only increasing cross border trade may not be the solution due to the grid congestion and to the fact that the generation market in Spain is also highly concentrated, with the two largest companies (Endesa and Iberdrola) representing 51% of the total generation capacity in the Iberian market in 2004.

Portugal is no exception in the EU. The Communication of the European Communities (Commission of the European Communities, 2003) shows an unsatisfactory position in several of the member states in terms of electricity market concentration. This study argues in particular that the slow progress in developing interconnectors between Spain and Portugal and in the completion of an integrated market still means that the largest companies retain a significant degree of control in the segmented markets.

3. ANALISYS OF THE ELECTRICITY PRICES

The liberalisation of the electricity market in Portugal was initiated in 1995 for large consumers, and reached full opening of the market in 2004. The liberalisation process was expected to increase competition, resulting in more favourable tariffs to the end users. In this section, the electricity prices in Portugal over the past years are analysed, compared with those in the EU-15 countries and

in particular with prices in Spain, due to the possibility of competition arising from cross border electricity trade.

3.1 Evolution of the electricity prices in Portugal

Figure 5 and 6 present the evolution of the electricity prices, in Portugal for the household and industrial sector respectively. The study includes the standard consumers defined by the EUROSTAT. The prices were deflated using the GDP prices index. The household prices include taxes and the industrial prices exclude VAT.

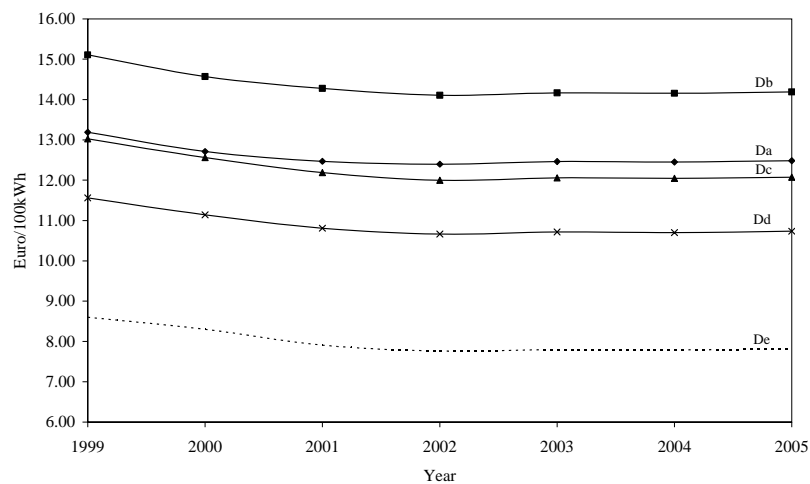


Figure 5- Electricity prices in Portugal for the household sector, 1999 to 2005. Deflated prices, all taxes included. (Source: own elaboration from Eurostat, 2003, 2004a and 2005a data)⁶.

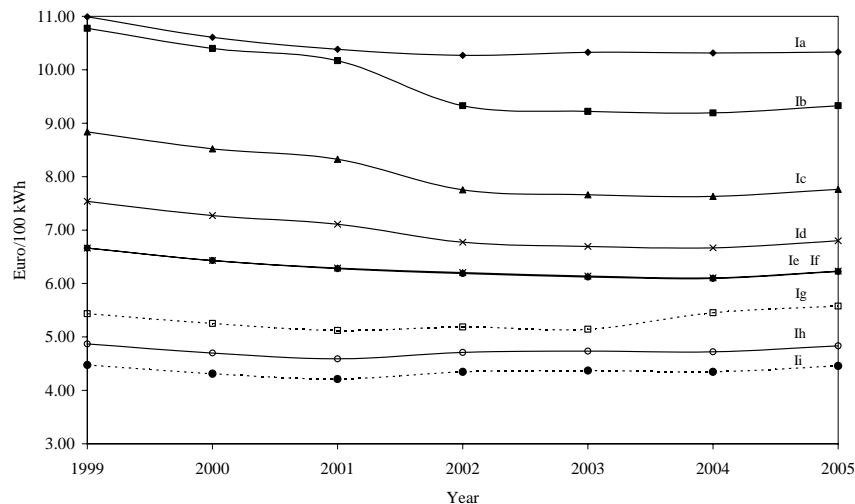


Figure 6- Electricity prices in Portugal for the industrial sector, 1999 to 2005. Deflated prices, VAT excluded. (Source: own elaboration from Eurostat, 2003, 2004b and 2005b data)⁷.

In general, there has been a descending trend for the electricity prices during the five years analysed, for both the household and industrial sectors. For the household sector, the reduction of the average price was 7% during this period. All the consumers benefited, but especially the largest consumers (De) whose

prices were reduced in more than 9% in real terms. The price reduction lied between 6 and 7% for the small and medium consumers.

In the industrial sector the reduction of the average price was 9%, between 1999 and 2005, benefiting once more all the consumers. However, these benefits did not spread almost uniformly among all the segments as happened in the household sector. Medium consumers Ib, Ic and Id obtained the largest prices reductions (15%, 14% and 12% respectively). Small consumers (Ia) benefited from a 6% price reduction. As for large consumers (Ih and Ii), their price reduction was close to 3%. Ig consumers were an exception, experiencing a small price increase.

The smallest price reduction obtained by the largest industrial consumers during the period analysed may be justified by the favourable tariffs available to them. These consumers were the first to have access to the free market, since the middle 1990's. However, IEA (2004) calls attention to another important factor, viz., that the regulated tariffs for the largest consumers are below market prices. Because of this, few of these consumers are willing to purchase electricity in the market. In fact, in 2004 only a few more than 2% of the HV electricity was purchased through the NBES in Portugal against more than 50% of the MV electricity (EDP, 2005). This means that the HV consumers (Ih and Ii) remain in the PES being charged by regulated tariffs. As it is pointed out by the IEA (2004) this fact is counter-intuitive to the experience in liberalised markets where the largest consumers are generally the most active in switching suppliers. But Portugal is not the only country where this happens. The European Commission Competition DG (2006), points that this may be due to an attempt of some Member States to ensure lower price levels for customers. It refers in particular to the complaints from the Spanish electricity suppliers about the level of the regulated tariffs being too low. This is a problem for the future Iberian market and as the IEA (2004) states "... must be resolved at the Iberian level with the elimination of the all regulated electricity rates..".

3.2 Electricity prices in the EU

Following, we present the empirical analysis comparing the Portuguese electricity prices with the EU-15 average and Spain. The study covered also the five household consumer categories and nine industrial consumer categories, defined by EUROSTAT using PPS prices. As Percebois and White (2001), we used prices converted to purchasing power standards (PPS).

Comparing the electricity prices in Portugal with the average prices of the EU-15 markets, it seems that the Portuguese prices are favourable in most consumer categories both for the household and industrial sector. Figure 7 and 8 represent the electricity prices for the household and industrial sector respectively for Portugal (PT), Spain (ES) and EU-15 weighted average⁸, for July 2005 with all taxes included.

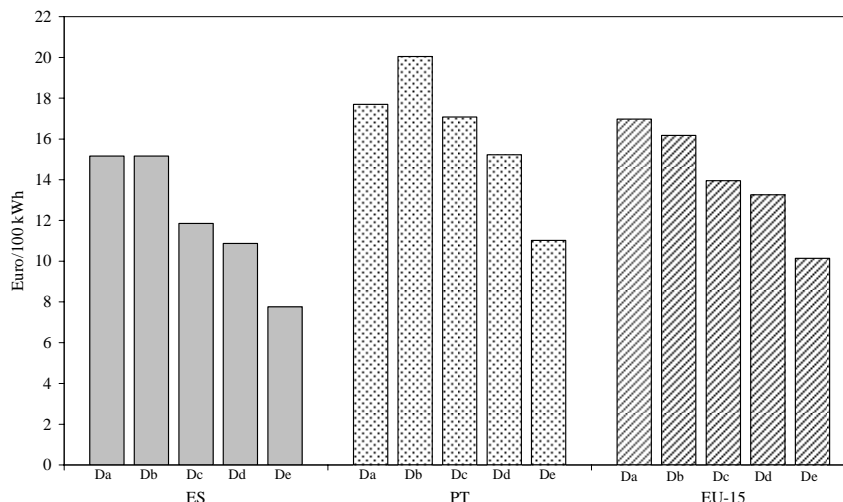


Figure 7- Electricity prices (PPS) in the EU for the household sector, July 2005. All taxes included. (Source: own elaboration from Eurostat, 2005c data).

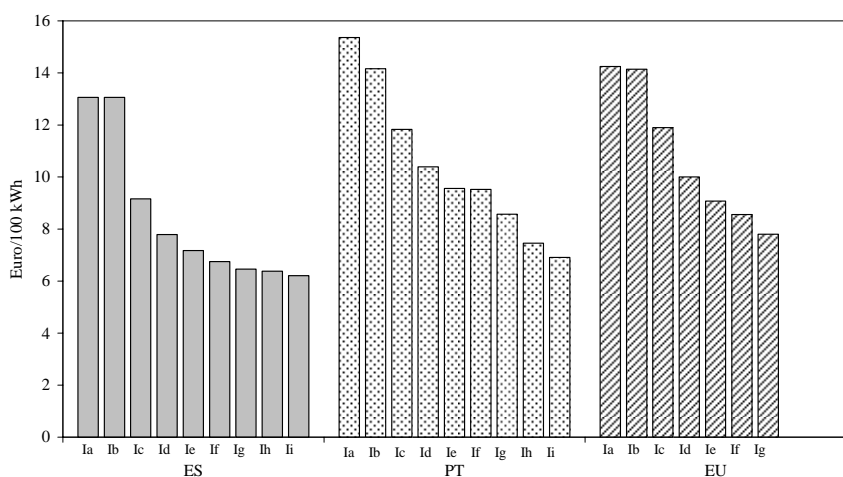


Figure 8- Electricity prices (PPS) in the EU for the industrial sector, July 2005. All taxes included. (Source: own elaboration from Eurostat, 2005c data).

The average household price is about 15% higher in Portugal than the European average, considering prices with all taxes. For this sector, the Portuguese electricity prices are higher than the European ones for all the consumer categories. Also, the prices in Portugal are about 33% higher than the Spanish ones, due to the highly competitive prices of electricity in Spain, which are among the lowest in Europe.

As for the industrial sector, the Portuguese average price is about 5% higher than the European average, considering prices with all taxes. The average Spanish price is also lower than the Portuguese one, and in this case this difference is about 23%.

However, it is also important to note that the electricity taxes in Portugal are amongst the lowest in the EU, representing only a few more than 5% of the total price. Meanwhile, the average electricity taxes in the EU-15 reach about 21%⁹ of

the total price. This means of course that the net prices charged by the Portuguese companies are much higher than the European ones.

Figure 9 and 10 represent again the electricity prices for the household and industrial sector respectively for Portugal, Spain and EU-15 average, for July 2005, but now excluding all taxes, in order to make the comparison independent of the tax system of the countries.

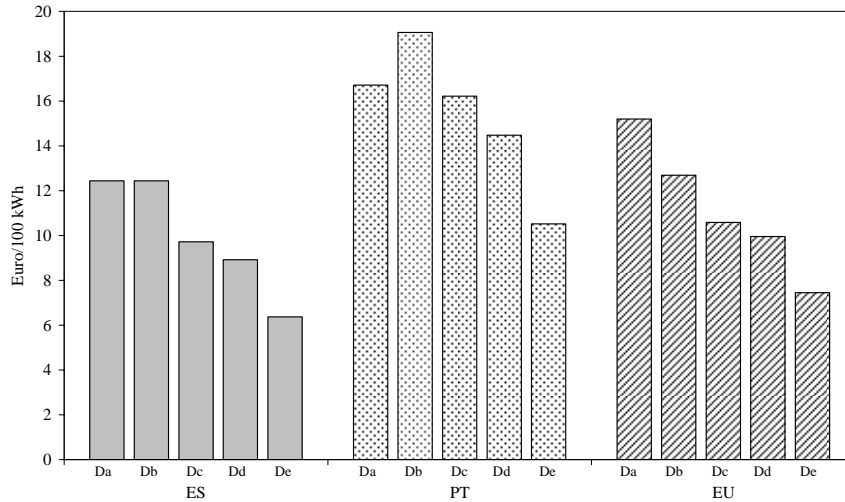


Figure 9- Electricity prices (PPS) in the EU for the household sector, July 2005. Taxes excluded. (Source: own elaboration from Eurostat, 2005c data).

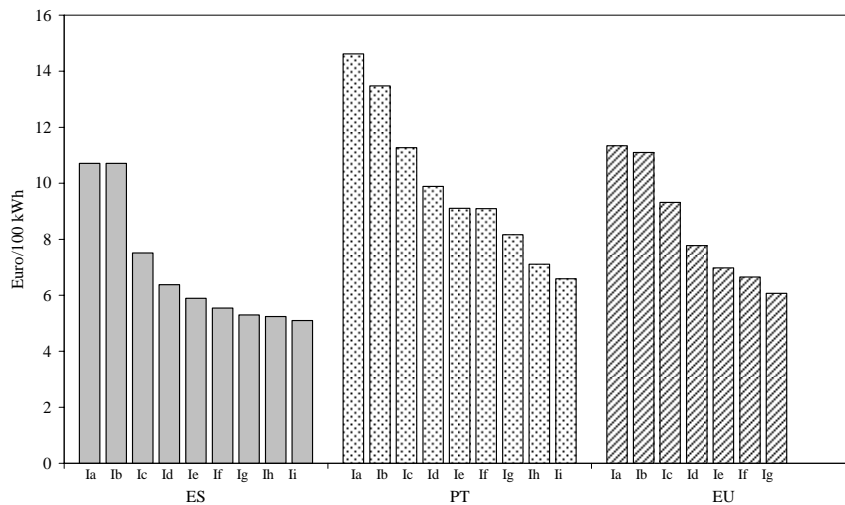


Figure 10- Electricity prices (PPS) in the EU for the industrial sector, July 2005. Taxes excluded. (Source: own elaboration from Eurostat, 2005c data).

Considering these net values, it is possible to conclude that, the average Portuguese price for the household sector is about 38% higher than the EU average. The price charged to small household consumers (Da) presents the smaller differential (about 10%), but all the other consumer categories prices are between 40 and 50% higher than the European average. The average Spanish price is 54% lower than the Portuguese average, reaching differences higher than 60% for large household consumers.

The industrial sector tells quite a similar story. The Portuguese prices are amongst the highest in the EU, for all the consumer segments analysed. The average electricity price in Portugal is 28% higher than the European one. The average Spanish price is 43% lower than the Portuguese one, reaching the largest differences for medium industrial consumers (more than 50% for Ic, Id, Ie, If and Ig). The Portuguese prices for large (Ih, Ii) and small (Ia, Ib) industrial consumers is between 20 and 35% higher than the Spanish ones.

A similar situation was already discovered in the monopolistic natural gas sector in Portugal, where the gas companies charged net prices much higher than the European ones (Ferreira et al, 2004). As the electricity sector is already liberalised, a more favourable situation in terms of prices might have been expected. However, these results corroborate what was already stated: a liberalised market does not necessarily equate to a truly competitive one.

The IEA (2001) also calls attention to this issue, supporting that attention should be paid to the divestitures and to the opening of national markets to international competition. This organism and Glachant (2003) underline that regulatory reform alone is not enough for competition to emerge. As the European Commission (Commission of the European Communities, 2005b) states “A successful competitive market is more likely to develop where there are a sufficient number of players in both the generation and supply market...”, otherwise it will result in “..greater regulation of wholesale and retail markets than is necessary or desirable”.

The proximity with Spain and the lower prices charged by the Spanish electricity companies, represent an essential pressure factor for the achievement of reduced tariffs and for the creation of a competitive electricity market in electricity in Portugal. However, it will be necessary to ensure the development of adequate interconnection capacity and its fair allocation (IEA, 2004), along with the imposition of legal and regulatory measures, in order to allow these Spanish companies to compete in the electricity market in Portugal.

4. CONCLUSIONS AND FINAL COMMENTS

Since July 2004 all Portuguese consumers are allowed to access the free electricity market. However, the market is still highly concentrated, with the EDP Group playing a dominant role across all the market elements. The implementation of MIBEL and the increase of the electricity transfer capacity between Portugal and Spain are major incentives for the development of competition in the electricity market in Portugal.

Electricity market activity remains low with most of the consumers remaining in the PES. In addition, the highly concentrated market and the reduced tax rate, allow the Portuguese electricity companies to maintain net tariffs higher than the European ones. The average electricity prices in Portugal are also greater than those in Spain. Therefore as the IEA (2004) points out, there is a significant potential for a decrease in wholesale market price, once the Iberian market begins operation.

The Portuguese electricity industry has gone through dramatic changes (Soares, 2003). However, most of the issues raised in the European Commission Competition DG (2006) report still represent a major problem for the Portuguese industry and may have adverse effect on the liberalisation process.

The existence of PPA and lack of a competitive wholesale market, forces most of the Portuguese electricity to be traded on contract. Additionally, the market is still highly concentrated giving scope for market power, with the incumbent company operating both in the regulated and independent market. Although the legal unbundling of Group EDP is assured, the group subsidiaries companies are still major players in generation, distribution and supply activities.

The cross-border acquisitions may also represent in the future an additional concern for the development of competition from Spanish companies. In fact, recently Iberdrola increased its stake in the Group EDP to 9.5% and it is now the second major shareholder of the Portuguese Group. Also, Endesa owns a 35% stake in Tejo Energia, the third largest generator company and owner of one of the two Portuguese coal power plants.

The Portuguese government supports the liberalisation of the energy markets in order to increase overall competitiveness of the economy. Resolution of Ministries 63/2003 states "... The liberalisation of the market, which is not an end by itself, is a way to obtaining larger efficiencies at both the production and energy consumption levels, allowing increased service quality and more competitive prices". The same way, the following Resolution of Ministries 169/2005 points that the liberalisation is essential to better serving industrial and household consumers and that above all, the process aims at improving the consumers' access to energy and consequently reducing the energy bills.

The present legislation, already allowed for the 100% legal opening of the market. However, this measure is not sufficient to assure the achievement of the proposed objectives. The success of the process is strongly dependent on the creation of conditions promoting a truly competitive market, characterized by a large number of competitors in generation and supply, reduced market shares and high rates of consumer switching, both in the household and industrial sectors.

The launching of MIBEL, the increase of cross-border transactions, the end of PPA and efficient regulation are decisively important for the effective liberalisation of the Portuguese electricity market. In the future, the authors intend to follow closely the price policies of the electricity companies analysing the development of competition from National companies and clarifying the importance of the foreign competitors. This future research may bring new contributions to the debate on the impact of liberalisation on the electricity prices.

FOOTNOTES

¹ This study focus only in Mainland Portugal.

² Very high voltage (VHV)- Voltage ranging between phases whose effective value is higher than 110 kV.

High voltage (HV)- Voltage ranging between phases whose effective value is higher than 45 kV and lower than, or equal to, 110 kV.

Medium voltage (MV)- Voltage ranging between phases whose effective value is higher than 1 kV and equal to, or lower than, 45 kV.

Low Voltage (LV)- Voltage ranging between phases whose effective value is equal to, or higher than, 1 kV and contracted power equal to, or lower than, 41.4 kVA.

Source: ERSE (2005b).

³ Since its publication, Decree-Law 189/88 suffered some changes published in subsequent text laws.

⁴ Since its publication, Decree-Law 182/95 suffered some changes published in subsequent Decrees-Law.

⁵ The numbers refer only to the electricity injected in the national grid. The figure does not consider the electricity produced and consumed by independent consumers using private installations.

⁶ Household sector: Da- 3kW contracted power; 600 kWh/year consumption; Db- 3 to 4 kW contracted power; 1200 kWh/year consumption; Dc- 4 to 9 kW contracted power; 3500 kWh/year consumption (1300 kWh/year night); Dd- 6 to 9 kW contracted power; 7500 kWh/year consumption (2500 kWh/year night); De- 9 kW contracted power; 20000 kWh/year consumption (15000 kWh/year night).

⁷ Industrial sector: Ia- 30kW contracted power; 30000 kWh/year consumption; Ib- 50kW contracted power; 50000 kWh/year consumption; Ic- 100 kW contracted power; 160000 kWh/year consumption; Id- 500kW contracted power; 1250000 kWh/year consumption; Ie- 500 kW contracted power; 2000000 kWh/year consumption; If- 2500 kW contracted power; 10000000 kWh/year consumption; Ig- 4000 kW contracted power; 24000000 kWh/year consumption; Ih- 10000 kW contracted power; 50000000 kWh/year consumption; Ii- 10000 kW contracted power; 70000000 kWh/year consumption.

⁸ Data for industrial consumers Ih and Ii non available for the EU average.

⁹ Own calculations, based on average prices before and after taxes.

REFERENCES

Al-Sunaidy, A. and Green, R., 2006. Electricity deregulation in OECD countries. *Energy*, 31 (6-7), 769-787.

Bower, J., Bunn, D., Wattendrup, C. 2001. A model-based analysis of strategic consolidation electricity industry. *Energy Policy*, 29 (12), 987-1005.

Commission of the European Communities, 2003. Energy infrastructure and security of supply, COM(2003) 743 final, Brussels, 10.12.2003.

Commission of the European Communities, 2004. Third benchmarking report on the implementation of the internal electricity and gas market, Brussels, 01.03.2004.

Commission of the European Communities, 2005a. Annual Report on the Implementation of the Gas and Electricity Internal Market, Brussels, COM(2004) 863 final, 5.1.2005.

Commission of the European Communities, 2005b. Technical annexes to the Report from the Commission on the Implementation of the Gas and Electricity Internal Market, Brussels, SEC(2004) 1720, 5.1.2005.

Commission of the European Communities, 2005c. Technical annex to the Report from the Commission on Progress in Creating the Internal Gas and Electricity Market, Brussels.

EDP 2003. Relatório e Contas 2002 (www.edp.pt) (In Portuguese).

EDP 2005. Relatório e Contas 2004 (www.edp.pt) (In Portuguese).

ERSE 2005a. Comunicado- Consumidores domésticos podem mudar de fornecedor de electricidade a partir de Setembro de 2006”, Lisboa, December 2005 (In Portuguese).

ERSE 2005b. Annual report to the European Commission, Lisboa, Portugal, September 2005.

ERSE 2005c. Desenvolvimento do sistema eléctrico não vinculado-2004, Lisboa, Portugal, March 2005 (In Portuguese).

European Commission 1995. White paper- An energy policy for the European Union, Com(95)682.

European Commission 2004a. Towards a competitive and regulated European electricity and gas market, MEMO.

European Commission 2004b. Tran-European energy networks: TEN-E priority projects, Luxembourg , 10 June 2004.

European Commission Competition DG 2006. Energy sector inquiry- Draft preliminary report., Brussels, 16.02.2006.

Eurostat 2003. Electricity prices. Data 1990-2003, European Commission, Luxembourg.

Eurostat 2004a, Electricity prices for EU households on 1 January 2004, Statistics in Focus, Theme 8- 2/2004.

Eurostat 2004b. Electricity prices for EU industry on 1 January 2004, Statistics in Focus, Theme 8- 3/2004.

Eurostat 2005a. Electricity prices for EU households on 1 January 2005, Statistics in Focus- Energy and Environment, 1/2005.

Eurostat 2005b. Electricity prices for EU industry on 1 January 2005, Statistics in Focus- Energy and Environment, 2/2005.

Eurostat 2005c. Electricity prices for households and industry on 1st July 2005, Statistics in Focus- Energy and Environment, 4/2006.

Ferreira, P., Soares, I. and Araújo, M. 2004. The Portuguese natural gas market in the European context. *European Urban and Regional Studies*, 11(3),261-272.

Glachant, J. 2003. The making of competitive electricity markets in Europe: no single way and no single market, in: Glachant, J and Finon, D. (Eds.), *Competition in European electricity markets*, Edward Elgar Publishing, UK, pp 7-38.

Green, R. 2006. Electricity liberalisation in Europe- how competitive will it be? *Energy Policy* (in press).

Haas, R., Auer, H. 2006. The prerequisites for effective competition in restructured wholesale electricity markets. *Energy*, 31 (6-7), 857-864.

IEA 2001. *Competition in electricity markets*, OECD/IEA, Paris, France

IEA 2003. *The power to choose. Demand response in liberalised electricity markets*, OECD/IEA, Paris, France.

IEA 2004. *Energy Policies of IAE countries- Portugal 2004 Review*, OECD/IEA, Paris, France.

Jamasb, T. and Pollitt, M. 2005. Electricity Market Reform in the European Union: Review of Progress toward Liberalization & Integration. *Energy Journal*, 26, (special issue).

Jamasb, T. 2006. Between the state and market: Electricity sector reform in developing countries. *Utilities Policy*, 14 (1), 14-30.

Jornal de Negócios 2005. Mibel avança até Julho com 5% de energia em 2006, *Jornal de Negócios*, 21.11.2005 (In Portuguese).

Lise, W., Linderhof, V., Kuik, O, Kemfert, C., Ostling, R., Heinzow, T. 2006. A game theoretic model of the Northwestern European electricity market- market power and the environment. *Energy Policy* (in press).

Newbery, D. 2002. European deregulation. Problems of liberalising the electricity industry. *European Economic Review*, 46 (4-5), 919-927.

OXERA 2003. Energy market competition in the EU and G7: The relative extent of energy market competition in the EU and G7, September 2003 (www.dti.gov.uk).

Percebois, J., Wright, P. 2001. Electricity consumers under the state and the private sector: comparing the price performance of the French and UK electricity industries 1990–2000. *Utilities Policy*, 10 (3-4), 167-179.

Soares, M. I. 2003. The Iberian electricity market: towards a common market, in: Glachant, J and Finon, D. (Eds.), *Competition in European electricity markets*, Edward Elgar Publishing, UK, pp 327-350.

Thomas, S. 2006. Electricity industry reforms in smaller European countries and the Nordic experience. *Energy*, 31 (6-7), 788-801.