

MARKET POWER IN RESTRUCTURED ELECTRICITY
MARKETS IN THE UNITED STATES :
WHICH LESSONS FOR EUROPE ?

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Abstract

One issue that arises with the move to open some electric activities to competition is market power. The shift to reliance on competitive market prices instead of regulated rates raises the possibility that some firms could drive up prices by exercising market power. This paper focuses on the issue of market power of generators in the restructured electric power industry in the United States. This analysis seems to be highly relevant to study in the era of changes in Europe. There are lively discussions about how the American experience of electricity sector could be used by Europeans.

This paper is divided in three sections. In the first section, we will define the notion of market power in the restructured electricity industry. In the second section, we will discuss market power in American electricity markets in the USA. Several economics studies revealed that market power in wholesale transactions had been exercised in electricity markets in different regions. With the move toward deregulation, analysis of market power is coming to Europe more slowly than in the United States. In the third section, we will wonder which lessons of the American experience can be helpful for the current European market evolution.

INTRODUCTION

The structure of the electric industry until now has been largely a natural monopoly with regulatory oversight to ensure reliable and affordable electric power to the residential, commercial and industrial sectors. The monopoly structure was created to avoid costs of duplication of services and increase efficiencies in serving customers. Worldwide, energy network industries are now undergoing a **transition from regulated to competitive markets**. A new era has begun: in some segments of value chains, monopoly activities are open to competition. Deregulatory initiatives have been taken in natural gas and electric power industries to eliminate traditional constraints and protectionism. Regulatory oversight has been substituted for competition to limit inefficiencies and to ensure monopoly utilities did not abuse their monopoly power. The pace of liberalization and the route towards it geographically varies. The European electric power industry is in its early stages of transition towards a competitive energy market. In the United States, for the last two decades, electric and natural gas industries have progressively experienced major changes in terms of organization and competitiveness.

One issue that arises with the move to open some electric activities to competition is **market power**. This issue is of particular interest to policymakers and legislators as they consider electric industry restructuring. The exploitation of market power can significantly erode the consumer benefits that would be expected to result from the transition from regulated to competitive markets. The wave of worldwide electricity market restructuring has brought this issue to a forefront. The shift to reliance on competitive market prices instead of regulated rates raises the possibility that some firms could drive up prices by exercising market power.

In Economics, **market power is defined** as the ability of a firm to profitably raise prices above competitive levels and maintain those prices for a significant time period. There has been a great deal of discussion recently about how to best analyze the potential for market power in restructured

electricity markets. The theoretical literature identifies two types of market power : vertical and horizontal. Concerns related to **vertical market power** are more commonly understood. Some mechanisms for addressing the possible vertical link between generators and transmission grid are widely accepted even if they are not yet successfully everywhere applied. More and more debates are on the **horizontal market power** in generation activity which is one of the central issues surrounding electricity industry restructuring in the United States and progressively in Europe. The fear is that wholesale firms will manipulate prices in certain areas and/or during a certain time.

This paper focuses on the issue of **market power of generators in the restructured electric power industry in the United States**. This analysis seems to be highly relevant to study in the era of changes in Europe. There are lively discussions about how the American experience of electricity sector could be used by Europeans. **This paper is divided in three sections :**

- In the first section, we will **define the notion of market power** in theory and applied in restructured electricity industry.
- In the second section, we will **discuss market power in American electricity markets**.
- In the third section, we will **study several current antitrust cases in the United States** related to market power and we will wonder what are the **lessons for Europe**.

SECTION 1 : DEFINITION OF MARKET POWER IN RESTRUCTURED ELECTRICITY MARKETS

1.1 / Market power in theory

In Economics, a firm is said to have market power when it can set a price greater than Marginal Cost (MC) and still receive positive sales¹. In theory, **in a perfect competitive market**, market power is not a problem, because no single firm, or small group of firms, can determine market prices. Instead, all sellers are "*price-takers*," who assume that their own production and purchase decisions do not affect the market price. They do not control prices and they react to them in making production and investment decisions.

In more specific game theoretic formalization, market power arises when one or more firms can deviate profitability and unilaterally from the competitive outcome (Holt 1989). In sealed bid-offer markets, if a firm can profitably and unitarily increase its offers above its costs (or equivalently not submit offers for some units entirely) such that the market price rises above the competitive level, then the firm is said to be able to extent market power (Rassenti, Smith & Wilson 2000). More generally, in electricity power industry, an enterprise is said to have market power when it acts in a manner that is intended to change market prices and can maintain prices at a non-competitive level for a significant time period. This firm can profitably influence prices by raising its bid above its variable cost or otherwise reducing its output in order to drive up prices and earn a higher level of total profit notwithstanding the loss of profit on the potential output it withholds (Borenstein, Bushnel, Knittel & Wolfram 2001).

1.2 / Market power in electric power activities

Any attempt to measure or understand the potential for market power must begin with a clear definition of the relevant market² that identifies both the geographic area and the products included. The relevant geographic market is the area in which customers can feasibly find alternatives to a particular supplier. The relevant product market refers to potential alternatives to any supplier's product that would place a limit on the ability of that supplier to raise prices.

In markets where consumers can easily substitute other products or buy the same product at other locations, a firm's market power potential will generally be low. The definition of the relevant market for the purpose of market power evaluation can be difficult and it is **especially problematic in the electricity industry** for two main reasons :

¹ For an excellent discussion on market power in general, see McFalls (1998).

² We will not discuss about the theory of relevant market (a revision is considered on this subject).

- Electricity markets are **dynamic and can change just a few minutes**, creating opportunities to exercise market power even though the market may be very competitive under most circumstances.

- There is also very little opportunity for **real-time demand response** in electricity markets. As prices rise for any given product, the quantity demanded will fall, making it more difficult for producers to exercise their market power. In current retail electricity markets, very few end-use consumers face real-time prices³, or have the opportunity to be compensated at the market-clearing price for reducing their demand below the usual level.

Historically, utilities were vertically integrated from generation to distribution activities. With the reforms in the United States, power utilities were forced to divest and take ride of some generation units to be able to sale electricity to end users. Existing vertically-integrated utilities had been required to divest their generation and transmission assets in order to alleviate market power. Past monopoly status must not confer competitive advantages to utilities or their subsidiaries. Fair and open competition will be impossible if one entity maintains monopoly ownership over all aspects of the utility system. Requiring a distribution of assets among independent companies will enhance competition and help to protect consumers from the potential abuses of monopoly control. In order to protect against such abuses, utilities have been required to separate their generation, transmission, and distribution assets into distinct and unaffiliated corporate entities. The result is to completely separated upstream and downstream activities with a transmission grid that is still regulated⁴. In Europe the move toward deregulation is very different as we will see in the third section.

With the restructuring reforms in the United States, suspicions of market power are pointed out at different levels of operations and more precisely they are more important in two activities : generation and transmission. The generation sector, under the responsibility of federal authorities, is the only one to be fully competitive. Retail sales sector is not yet fully open to competition in all states. The theoretical literature identifies **two types of market power**, horizontal and vertical. **Horizontal market power** is exercised when a firm profitably drives up prices through its control of a single activity, such as electricity generation, where it owns a significant share of the total capacity available to the market, or a significant share of capacity “at the margin” (higher-cost capacity that tends to set the market price). **Vertical market power** is exercised when a firm involved in two related activities, such as electricity generation and transmission, uses its dominance in one area to raise prices and increase profits for the overall enterprise.

Currently, in the electricity industry, the main issue is the role of wholesale companies with generation capacities. Indeed, **in generation**, market power could be due to :

- one seller having a disproportionate amount of generation in the relevant market,
- transmission constraints that limit import capability in a certain area,
- or running certain generating units to maintain reliability (or for other reasons) regardless of whether they are the least expensive during that period of time.

It is interesting to note that the latter two potential sources of generation market power are independent of ownership.

1.3/ Traditional estimation with concentration measures

The fundamental measure of the exercise of market power is the **price-cost margin**⁵, which measures the degree to which prices exceed marginal costs. Prices above MC lead to both inefficient allocations and potentially to inequitable transfers from customers to producers. In most industries, analysts are unable to measure price-cost margins, because costs are usually the private information of producers. Often **concentration measures** are used instead as a first screen for the potential for market power.

³ Even if there are some attempts to have end-users facing real time pricing.

⁴ Transmission stays regulated by federal authorities even if reforms have been enacted (Order 888 & 889 in 1996 and Order 2000 in 1999).

⁵ The price-cost margin, often referred to as the Lerner index defined as $(P - MC) / P$.

Authorities concerned with market power have long relied on projected changes in concentration measures as a significant part of their analyses of the impact of structural changes in market. Although the guidelines that were developed by the Department of Justice (DOJ) and adopted by the FERC make clear that concentration measures should form only a component of a market power analysis, it is also common for both FERC and DOJ to use concentration measures as a screening tool. For example, the market power analysis of market based rates for electrical energy in both California and PJM (Pennsylvania New Jersey Maryland) pool was dominated by concentration measures (Joskow & Frame 1997). Even if it was clear that concentration ratios should be only one of the tools, in reality the American authorities based their judgements mainly on this tool.

Concentration measures the degree of market domination using market share data. Market dominance is defined as the degree of monopoly market power exhibited by a firm in a competitive market. By looking at the concentration in a market, authorities can assess whether the firms in the relevant market have market power. If a market concentration falls into a “*safe level*” often no further analysis is pursued. Concentration is affected by two factors : the number of firms in the market, and their relative size.

More researches have been based upon concentration and its apparent effects than on any other factor in the field of industrial organization. To correctly calculate market power, a specific geographic area and a relevant product market must be defined, then an appropriate methodology selected to measure market power. Even in case of mergers, the Horizontal Merger Guidelines issued jointly by the DOJ and the Federal Trade Commission (FTC) use the HHI as a primary screening tool to identify whether markets are likely to have enough competitors to be workably competitive following a proposed merger. Despite all the critics, in a revision of the Horizontal Merger Guidelines⁶ in 1998, FERC introduced the concept of an analytic screen that would permit a comparison of pre-merger and post – merger concentration by still relying upon HHI.

Empirical studies on wholesale markets using concentration measures⁷

Many research papers pointed out high concentration ratios in the US electricity market. Schmalensee and Golub (1984) have calculated HHI values for electricity markets throughout the United States for 170 generation markets serving nearly three-quarters of the total population. They find a significant number of instances where market concentration measured by the HHI is in the “*danger zone*”. While the data used by Schmalensee and Golub do not reflect the increased market role of independent power since 19780, there is little doubt that updated HHI calculations would identify some highly concentrated markets. A recent study by Cardell, Hitt and Hogan (1997) suggests that electricity markets are still highly concentrated today. Using 1994’s year data and a narrower definition, they calculate HHI values for 112 regions in the United States. Although this analysis does not reflect the recent wave of mergers and divestitures, approximately 90 % of these regions have HHI values above 2500. HHI indices only identify situations where some firms may possess enough market power to interfere with workable competition. They cannot indicate whether firms will actually exercise that market power or the possible implications for prices and profits.

In the 90’s, several empirical studies underline the evolution of the concentration in the electricity generation sector in the United States. There has been a substantial growth in market concentration that has **parallel the decline in the economic regulation of electricity**. It has been achieved through acquisitions, horizontal and vertical mergers, cross-industry mergers, and alliances. Most of these analyses pointed out the risk of market power of firms in such environment.

Although industry concentration and individual firm markets share are often correlated with market power, this is not always the case. There are many factors beyond the number and size of firms in a market that impact the degree of competition within an industry. Concentration measures indicate the current distribution of sales or capacity, but cannot tell what will happen to prices when one firm reduces its output. This is a critical question in the electricity market where the product is not really

⁶ Called Revised Major Filing Requirements.

⁷ We limit our presentation to the main studies and we do not include studies on mergers and acquisitions.

storable and short run demand is relatively inelastic. Because of these factors, concentration measures can often be an inappropriate.

SECTION 2 : MARKET POWER IN THE UNITED STATES

In the United States, the electricity industry, likely the most stable structure in terms of growth forecasts and rates stability, is experiencing a major change. The vertically integrated monopoly suppliers of power services are quickly becoming an image of the past (Joskow 1997). For the last two decades, the electric utility industry has undergone a progressive transformation from a regulated market place, to **one exposed to the influence of market forces**. Since the beginning of the 90's, a "*new age of competition*" has begun : many states, through their regulators, are considering various initiatives of increased wholesale competition for power generation and even direct access to retail customers (Brennan 1996). The power generation function is driven primarily by cost minimization considerations. Transmission is assuming regulated common carrier status, and some local distribution companies emerge as full energy services suppliers.

At the federal level, the generation activity was progressively opened to competition from 1978 (PURPA Act) to 1992 (EPAct) with the creation of competitive wholesale markets. The transmission network, still regulated, was also reformed by the FERC since 1996 (Order 888 et 889) with the creation of Independent System Operators (ISOs). These operators were supposed to manage the grid, assuring a non discriminatory access and inciting to invest in the network. A flourishing competitive market is dependent on increased **wholesale trading transactions**, which in turn is dependent on a comprehensive **transmission system**. After several critics in 2000, federal authorities issued a new order to encourage the development of Regional Transmission Operators (RTOs instead of ISOs⁸). As of the beginning of 2002, there are four regions in the US with independent system operators running spot markets for wholesale electricity, PJM, New England, California and New York⁹.

At the retail level, activities are under the responsibility of the Public Utility Commission (PUC) which explains the diversity of the solutions adopted by states in the opening to competition¹⁰. According to the Energy Information Administration (EIA), as of December 2001, all states were at least in the process of investigating electricity industry restructuring at the PUC level or in the state legislature. Restructuring legislation has been enacted or a comprehensive regulatory order on industry restructuring has been issued in half of the states. Given the California experience, a number of states have slowed down or reversed course **on retail choices**. Several others, Texas and Virginia, are going on the reform of retail activities. With the opening to competition in different levels of operation everywhere in the US, more and more suspicion of market power appeared.

2.1 Empirical studies¹¹ on the electric markets in the United States¹²

At the end of the 90's, analysts have been able to assess the impacts of market power based on data from **California**¹³. These studies suggest that generators in this market may have earned substantial excess revenues due to market power. Borenstein, Bushnell and Wolak (1999) examine the California wholesale market for June-November 1998. They compute the aggregate marginal supply curve based on fuel costs, heat rates, and variable operating and maintenance costs. Using the hourly generation levels from the ISO, they determine the competitive price for each hour. The competitive price is then compared to the hourly (unconstrained) price in the California Power Exchange (PX) to estimate the price-cost markup. For the entire 6-month period, total payments to generators were 29%, or \$494 million, above competitive levels. At certain times, prices were as much as 75% above competitive levels¹⁴. Empirical studies such as those by Wolfram (1998, 1998) and by Borenstein, Bushnell and

⁸ We will see why in this section.

⁹ We do not consider the Texas which is a special case.

¹⁰ To have an up to date situation, see the web site of eia : www.eia.doe.gov.

¹¹ We do not include studies on mergers and acquisitions.

¹² Based on DOE , 2000.

¹³ For the studies on market power in the UK markets during this period, see Wolfram (1998 & 1999), Wolak and Patrick (1997).

¹⁴ Wolak (2000) extended the analysis to include the summer of 1999, resulting in a revised estimate of more than \$800 million in payments above competitive levels to generators during the summers of 1998 and 1999.

Wolak (1999, 2001) measure the extent of market power by first estimating the marginal cost of and then comparing the estimates to prices. However, there are a number of difficulties in attempting to estimate generation costs.

Borenstein, Bushnell & Knittel (1997) analyze the potential for market power in **New Jersey**. Because of transmission constraints both within and into the PJM power pool, New Jersey (“PJM-East”) may at times be a small, geographically distinct market, providing opportunities for generators to exercise market power. This analysis investigates the potential for the five major New Jersey utilities to raise prices by reducing their output, assuming that the surrounding markets (New York and “PJM-West”) are perfectly competitive and will sell into the New Jersey market when possible, given prices and transmission constraints. They find that market prices begin to exceed competitive levels when demand in New Jersey rises above 14,500 MW (peak demand for New Jersey is assumed to be 16,500 MW in 2000 for this analysis). At this level of demand, potential price increases due to market power range from just a few percentage points to a factor of 4.

Colorado is another region in which the potential for market power has been analyzed. Sweester (1998) notes that transmission constraints and the presence of a dominant firm may provide opportunities to exercise market power in eastern Colorado. He examines the mitigating effects of various policy options or market developments.

In a study realized in **March 2000, the DOE** focused directly on the interrelationship between concentration and market power. New simulations of U.S. regional power markets using the DOE method (POEMS)¹⁵ confirm that market power can be profitably exploited in some parts of the United States. In markets where concentration is high and transmission constraints impede imports of power from distant generators, firms can employ a simple market power bidding strategy to cut output and increase net revenues from generation by driving up the market price of electricity. The exploitation of market power can have a significant impact on wholesale power prices, which is in most regions the component of the total delivered electricity prices paid by consumers.

Because the electricity industry has been historically dominated by vertically integrated regulated monopolies, authorities have primarily been concerned with vertical market power (generation – transmission). The main question is to have an organization efficient of the grid with the insurance of non discriminatory access and investments in the network. The final aim is to avoid to have market power used by generators because of transmission constrains, asymmetries of information.... At the end of the 90s, such market power issues have been tried to be resolved with the issuance of Orders 888 and 889 by FERC in 1996. Order 888 requires FERC jurisdictional IOUs to provide access to their transmission systems to all eligible requesters under prices, terms and conditions comparable to transmission services the utility provides to itself. Order 889 sets up standards of conduct to ensure that a utility cannot use private information about transmission to gain an advantage in competitive markets.

An **Independent System Operator** should have provided a means for mitigating or eliminating market power issues with respect to transmission. Any ISO developed in the restructuring process was supposed to be nondiscriminatory and truly independent, with no financial or political interests in the generation aspect of the business. The goal was to further limit the chances for potential market influence of a generator also controlling the transmission of its electric power. Nevertheless, transmission congestion continues to be the enemy. To cite the FTC’s concept, “*transient market power*” appeared, created by transmission congestion that shrinks markets and creates the kind of load pockets that encourage market manipulation. Moreover, everywhere you look, the markets are in turmoil in the regions that have set up ISOs and single-price power exchanges, allegations are flying this way and that about anticompetitive bidding practice, price manipulation and trading distorted by market power. The independent and non profitable organism failed (even if in some areas ISOs work

¹⁵ Details about the Department of Energy’s Policy Office Electricity Modeling System (POEMS) in DOE (2000)

well in some American areas) . That is one of the reasons why the FERC is pushing to the creation of RTOs which are a profitable organism that owns and manages the transmission lines.

In their **Order 2000** (of December 1999), energy authorities decided to promote the development of RTOs, and stop the development of ISOs. In fact, the manager of the grid should be incited to be efficient, to realize profits, to be able to promote and realize investments to avoid congestion. Indeed, an ISO is a non profit network administrator who has the freedom to establish transmission prices and the scheduling of power transfers. Ownership of the underlying network still remains with utilities and the same utilities expect to furnish capital for expansion. One of the common points between RTO and ISO is there is an independent administrator handling the network functions such as pricing and scheduling. However, RTOs are expected to earn a profit from the sale of transmission and ancillary services. RTOs embody the separation of control over grid operations from those using the grid. FERC established a timetable for initial utility compliance, called for an end to vertically integrated supply systems. FERC also imposed a 5% cap on active ownership of an RTO by a market participant and a 15% cap on active ownership of an RTO participants. Commission's vision is to create four (but possibly six) RTOs, one each in the Northeast, Southeast, Midwest and West. Many observers thought that FERC's vision is unrealistic and very difficult to realize¹⁶.

It is important not to forget the existence or absence of market power are a **temporal** and constantly changing phenomenon. For example, a market power problem that results from transmission constraints may be a problem only on the two or three highest use days of the year. Even market power problems resulting from generation dominance may change from day to day, week to week, or month to month. During some periods of time the ability to import power may be unrestricted. It is important not to ignore this temporal dimension of the problem. That explains why it is so difficult for authorities to estimate horizontal market power of wholesale actors.

2.3/ New methods adopted by American authorities to evaluate market power of generators

In the United States, solutions to limit or mitigate vertical market power in transmission are understood in theory even if they are not successfully applied. The FERC worked on this direction with its Order 2000. About the specific market power of generators the situation is different. The FERC has to face several critics about concentration measures as main screen tools, allegations during peak demand in California and northeast... American authorities published in 2001 new detailed rules on how to estimate such manipulation of prices.

In case of Mergers with a generator

In mid-November 2000, the FERC issued **Order 642**, its final rule on filing requirements for mergers involving utilities. For horizontal deals¹⁷, the new rule reaffirms the use of the Competitive Analysis Screen (CAS), as set forth in "**Appendix A**" of FERC's 1996 merger policy statement. Among other things, the CAS analyzes which suppliers can participate as sellers within a given destination market (both before and after the proposed merger) to allow the commission to weigh the effect of the deal on wholesale power markets.

The rule also reaffirms reliance on the HHI statistic for identifying those horizontal mergers that have major competitive impacts. However, noting that the CAS is conservative, the order states that the mere presence of CAS violations (HHI increases above acceptable levels) will not necessarily cause rejection of a merger or require mitigation measures in order to gain merger approval. Market conditions, ease of entry and market rules, and technical conditions each can cast light on whether a particular merger may harm competition. As mentioned above, market share and HHI are unable to capture the dynamics of competition in restructured power markets.

¹⁶ The FERC has dropped its Dec. 15-2001 deadline for utilities to create four RTOs and said it would give each region more time.

¹⁷ Order 642 establishes the filing requirements for vertical mergers, chiefly between gas and electric companies, that may foster market power at an "upstream" level which enables a firm to charge anticompetitive prices in a second "downstream" market. And while the rule reiterates many of the requirements for horizontal mergers (HHI statistics, the CAS, and effects on competition), it also adds some unique requirements for approving vertical deals.

Transaction on wholesale markets

In December 2001, the FERC adopted new rules to measure market power, as a condition for approving some mergers and granting utilities **the right to trade power in the wholesale market**. FERC's commissioners said the new test would improve a system that allowed a meltdown to take place in the California market last winter, when wholesale power prices soared to record highs amid tight supplies. Commissioners agreed to produce a **new market power test based on supply margin assessments (SMA), which examines a company's importance in serving peak electricity loads**¹⁸. Indeed if a firm is big enough to control the market at the time, the FERC will look at this company.

FERC has ruled that some companies can no longer charge unregulated market-based rates (MBR) for spot market wholesale transactions. Instead, companies identified as having market power and that are not part of an approved RTO must charge cost-based prices for power that is not committed in a long-term contract, and publicly disclose those cost-based prices. Columbus, Ohio-based American Electric Power, Atlanta-based Southern Company and New Orleans-based Entergy Corp. have been singled out as case studies on which FERC will be immediately applying its new standards for wholesale transactions. The commission has essentially determined that these three utilities hold an unacceptable level of market power in the areas in which they operate. Under FERC's new market power "test," a generator or marketer is viewed as having too much market power if its electricity is "pivotal" during peak demand, which enables the company to demand a price above competitive levels. Regional transmission constraints will also be considered now as a measurement of a company's market power. This is a change from previous standards, by which a company that supplied less than 20% of the power needed in a particular region was freed from rate regulation on the federal level. Since this date, the FERC gave up this ruling but it still thinking on how measure and mitigate market power on wholesale markets.

SECTION 3 : ANTITRUST CASES AND LESSONS FOR EUROPE

The debates in the United States on manipulation of prices and the evolution in the FERC's ruling favored several inquiries on wholesale companies accused of market power. Antitrust inquiries are more and more numerous since 2001. Even if firms haven't been condemned until now in the crisis of California, the authorities have gone on studying electric wholesale transactions all over the United States. The measurement of market power and how to mitigate it must be evaluated on a case-by-case basis. Any mitigation efforts should be specifically directed to the aspect(s) of the supplier's business that gives the supplier undue market power. We can wonder how Europeans can use the American experience.

3.1/ Example of the pilot program of deregulation in Texas¹⁹

Five of six companies investigated for overscheduling power last summer made their names public on March 2001 in response to a request under the Freedom of Information Act by *The Dallas Morning News*. The six companies not only missed power use forecasts in August 2001, but also could have profited from the mistake, according to the oversight division of the Public Utility Commission of Texas (PUCT). The five companies that responded to the paper's request were American Electric Power, Constellation Power Source, Mirant Corp., Reliant Energy Inc., and TXU Corp. What this investigation is all about (and, therefore, what makes it so significant) is concern about **market manipulation that may have occurred during the pilot phase of Texas' deregulation program** last year, which by extension could expose vulnerabilities in the state's deregulated electricity market.

The "*regulatory quirk*" (as it is being called in the Texas press) that is currently being examined by the PUCT relates to the operations of what are known as qualified scheduling entities (QSEs), which have a key role in scheduling power across the four transmission zones in the state. The current investigation is looking into QSE transactions that occurred in August 2001, when Texas was still

¹⁸ Note that some analyst thinks that FERC should re evaluate its position on the potential exercise of market power during off peak periods, see Morris J. (2000).

¹⁹ Based upon some studies realized in the French Trade Office in Houston, some interviews and press articles.

operating its pilot program for electric competition²⁰. It is important to note that the month of August is a peak-demand period for Texas, and typically during this period transmission lines are already overburdened. As noted, under certain circumstances such as peak periods when power must pass over congested transmission lines, missed projections have the potential of generating net revenues for QSEs.

In the initial phase of its investigation (the results of which are now public record), the PUCT analyzed the forecasting behavior of 45 QSEs during a 15-day period in August 2001. According to the findings, one company consistently missed its forecasts by 5 percent to 45 percent, another by 150 percent to 300 percent, and a third by 75,000 % to 400,000 %. The errors reportedly resulted in the six companies included in the investigation receiving at least \$1 million apiece in credits as a direct result of the missed projections, according to the PUCT review. (based on PUCT web site)

At this point the sixth company under investigation by the PUCT has not been identified. According to comments from Rep. Steve Wolens, who co-wrote the Texas deregulation bill, the sixth company could be Enron, which is no longer participating in the Texas' wholesale markets due to its bankruptcy and the fact that it no longer meets financial requirements. Of course, Enron had also been accused of market manipulation in California during the period of late 2000 and early 2001. Among the **companies that are under investigation**, some have responded publicly while others have remained quiet. TXU acknowledged that it had overbooked transactions, but says that it was an "*honest mistake*."

Moreover, the present investigation underlines the concerns that any market manipulation that might have occurred in August 2001 could be the symptom of larger vulnerabilities within Texas' deregulation model. Although it does not appear that any of the charges were passed on to customers, naturally Texas state regulators remain concerned that such vulnerabilities in the system could ultimately increase the cost of power for customers. As the Texas model for electric competition continues to grow, the PUCT will be particularly challenged to ensure that any opening that may enable market manipulation or gaming to occur will be sufficiently closed.

The experience of the pilot program in Texas is very interesting. Authorities thought they made the best model of organization. And in fact there were failures of market designs. As soon as firms can use these failures they will do it.

3.2/ Market power in Europe

With the move toward deregulation, electricity and gas value chains deregulation is coming to **Europe more slowly** than in the United States. Creation of a single European energy market is inevitable with European law requiring it. An unstoppable tidal needs to reduce prices ; triggered by both the European Union Electricity Directive and technological innovation, it is now in motion, transforming the industry and the company serving it. The Electricity Directive will fragment the traditional industry structure and provoke a complete reorganization. Competition has been driven into a traditionally monopolistic market, appearing first in the more receptive generation and supply segments. In February 1999, European Communityⁱ member states had to open up a minimum of their market (see Table 1). The Electricity Directive will restructure the industry by forcing EU member countries to increase transparency and "unbundle" their integrated monopolies. It was introduced to reduce electricity prices in Europe, through market liberalization, forcing a shift in economic thinking from a monopolistic to a free market approach (JM. CHEVALIER 1997). The gradual liberalization process in Europe is finally accelerated even if till now the situation is different from one another country. Convergence activity will pick up : most near-term activities are likely to take place in the UK, Spain and Nordic countries whereas other markets are likely to be attractive in the medium term.

²⁰ Full competition began in Texas in January 2002.

Table 1 : Requirements for market opening under the European Electricity Directive.

19/02/1999	Minimum market opening calculated by the share of total electricity consumed by final consumers with annual consumption > 40 GWh (covers roughly 25% of the EU as a whole)
19/02/2000	Threshold lowered to >20 GWh (implied market opening of 28%)
19/02/2003	Threshold lowered to > 9 GWh (implied market opening of 33%)
19/02/2006	Directive will be reviewed, full competition envisaged thereafter (as in the UK, Finland, Sweden and Norway)

Source : Rider G. (1999)

While some comparisons can be drawn with the American federal electricity market, there are more differences than similarities. While 250 potential players are counted in the new liberalized US market, the number of European players is restricted because of the traditional dominance of national monopolies. The reaction of the main European electric utilities to deregulation has been twofold : to protect their home markets and simultaneously to seek specialized opportunities out of their core business. Forming all types of alliances either between themselves or with other companies, power utilities have developed links with gas companies to control the entry into their industry.

Market power abuses are of course feared by European authorities but not in the same way as American authorities for several reasons.

- definition of market power : in Europe we have a problem of definition of the geographic market²¹. Should we consider one region, one country, several countries or the European Union as a whole ?
- concept of market power in the European laws : the possession of market power is not forbidden contrary to the exercise of market power. This difference explains that not a lot of antitrust inquiries have been launched in the European countries. We only launch inquiry when there is suspicion of abusing of a dominant position. When a firm in a dominant position does not use its power, the European Commission will not inquire.
- Deregulation process in Europe : maybe the most important difference with the US is the speed and the route toward deregulation. In Europe, the move toward deregulation is slower than in the USA. It is not really possible for a firm to use a market power. We can observe the creation of big groups that operate in partial open markets.

In Europe, we have to wait for seeing firms using their market power because they can not really use it nowadays. In most European countries, deregulation process has begun in generation activity. Retail activities are not yet open. Even if in some European countries²², the degree of opening to competition is more important than in other, the European Commission has not yet launch inquiries like in the United States. In some regions, the national authorities are against the formation of big groups (like in Spain) contrary to some other governments which allows the formation of big energy groups (like in Germany). The question is how the situation will evolve with the “nation champion firms”.

CONCLUSION

In the process of restructuring the electric industry, authorities must ensure that a structure is not created where a supplier possesses sufficient market power to essentially become an unregulated monopoly. There must be a market structure established to provide fair competition : competition among electric suppliers and buyers must be fair, non-discriminatory, and consistent, competitors should be subject to legal and regulatory treatment which will ensure a level playing field for competitors and consumers.

The restructuring of the electricity industry was motivated largely by a belief that markets and competition are superior to command-and-control directives. However, the possible exercise of market power by generators, with the perception of huge wealth transfers from consumers to power

²¹ IN Europe we have also the same question about the relevant product market like in the United States.

²² We do not consider the case of Great Britain where some firms have been accused of using market power that is why a reform was engaged. We do not yet know the results of the reforms.

companies, has been quite controversial, especially in California. As Costello (2001) notes : “Electricity markets are truly unlike other markets... lack of storage forces real time balancing of supply and demand. At the same time, Demand and Supply show extremely low prices elasticities in the short run. All this market prices volatile and markets prone to possible manipulation”.

As a consequence, the antitrust of electric power generation, has become increasingly important in law, economics and engineering. Market power, tacit collusion, and related antitrust issues are now key policy concerns in many restructured power markets. Policy makers need to estimate the ability of firms to sustain prices above competitive levels. In the past, because of the proprietary nature of cost information in most industries, such estimates have relied on concentration measures. Concentration measures, however, suffer from a number of weaknesses, which are exacerbated when applied to restructured electricity markets. In the United States, the federal authorities are changing their way to estimate market power. Even if their new method is not accepted by all the energy experts, it is a first step toward a better method.

Complete elimination of market power seems to be unreachable. The possession of market power will continue to be a fact in the electric industry simply because of transmission constraints and the necessity to run units in certain areas to maintain reliability. The possession of market power is not the problem. The problem is **the exercise of market power** to raise prices beyond what they would otherwise be in a competitive market. Market power, its existence, extent, and mitigation, have to be determined based on the specific facts and circumstances of the market.

The year 2001 was rich of events in the electricity sector in the United States. More and more allegations of manipulation of prices were realized towards generators in several areas. Authorities are still inquiring for the responsibility of generators in the California crisis.. In the next months, analysts are expecting more and more antitrust inquiries and new ruling from the FERC. The generators seem to be afraid according to the new wave of mergers-acquisitions in past weeks. With the move toward deregulation, analysis of market power is coming to Europe more slowly than in the United States. We can wonder which lessons of the American experience can be helpful for the current European market evolution.

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ⁱ The term European Community derives from the Treaty of Rome 1957, as amended by the Treaty on European Unity in 1992. The fifteen countries are members to the European Community which in turn forms part of the European Union, which was created by the 1992 Treaty.