

**FORESIGHT, HINDSIGHT, AND MARKET POWER  
IN THE RESTRUCTURED ELECTRICITY SECTOR**

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## INTRODUCTION

Over the past 25 years in the US, we have deregulated or restructured more than a dozen major industries, beginning with airlines in 1978 and now confronting electricity. The effect of this movement has been to reduce substantially the percent of GNP subject to significant regulation. Not all of these have involved full deregulation. Not all of these experiences have been successes by any measure. Not all consumers have benefitted in each case. But I would claim that all have one characteristic in common: All have created or enhanced the potential for the exercise of market power.

The basis for my claim is very simple, and flows from the very essence of economic regulation and deregulation. Under regulation the major decisions of the company or industry are constrained by oversight, accounting, and benchmarks. Investments must be prudent. Prices must be reasonable. Return on capital should resemble market returns.

Operating under such strictures leaves little opportunity to gain profit through anticompetitive mergers or strategies. But the essence of deregulation is to free companies to make ordinary business decisions. They can now set and change prices. They can earn more than normal profits—and risk earning less. And so forth. But with the discretion to make these decisions comes discretion to engage in practices that under regulation were prohibited or pointless. Hence mergers that confer market power may now be undertaken. Strategic behavior against rivals and entrants might occur. With deregulation such actions produce benefits to the companies, and predictably they engage in it.

So, for example, the regulated airline industry had a very stagnant market structure. The same carriers flew the same routes connecting in the same ways for very long periods of time.

Deregulation, however, produced an eruption of activity raising competitive concerns. In the decade after 1978, there were more than 25 airline mergers. A number of them raised concerns about the creation of market power on routes and at hubs. Business practices sprang up that triggered allegations of predatory conduct, price signalling, and abuse of dominant positions as with CRSs.

In the 1980s the telecom industry was restructured (a process that continued into the 1990s). Since that time telecom companies have embarked on a series of acquisitions and mergers—first involving the long distance side of the business, and since 1996 the local exchange companies. Allegations of cross subsidization, raising rivals costs, and vertical foreclosure are commonplace.

But these are just two examples. In cable TV, railroads, trucking, pipelines, and all the other industries, I would claim that deregulation has resulted in heightened antitrust concerns. And ironically, this is probably a sign that deregulation has worked, that companies are free to make a far wider range of business decisions, free as well to run afoul of the law—just like all other businesses.

This pattern—significant antitrust issues right after deregulation—has two important implications. First, the logic of it suggests that as industries are moved from the column labeled “regulated” to the column of “free market” or unregulated, antitrust needs to be concerned with a wider swath of the economy, and should therefore have added resources to perform its necessary function. In some sense, resources devoted to regulation and to antitrust should move in opposite directions.

A few years ago I conducted a study to see if this was true, that is, whether antitrust

resources (measured by DOJ and FTC budgets) in fact moved counter to the magnitude of the regulated sector.<sup>1</sup> Perhaps not surprisingly, that is not the case. Instead, antitrust and regulatory budgets tend to move in tandem. This may reflect the view that these are somehow analogous, so that supporters of one policy also support the other, while other people are opposed to both. It might also simply reflect the importance of overall budgetary stringency in determining all agency budgets from year to year. Whatever the reason, policy does not respond to deregulation with the necessary enhanced antitrust enforcement.

Airlines and telecom underscore a second important point: The initial years after deregulation are especially important from a policy point of view. Deregulation represents something like a starting gun going off, after which companies joust for new positions in the industry, seek out new partners and organizations, and engage in practices that are new at least to them. Unchecked, all this can lead to dramatic consolidation of the industry, as in airlines during the 1980s.

I think a case can be made that the permissive competition policies of the 1980s resulted in an enormous prolongation of the entrenched position of the major airlines, postponing until the past 5 years the advent of service and cost competition—and making the ultimate transformation by the major airlines all the more difficult. It is therefore of paramount importance that antitrust policy be prepared for industries in transition, since they invariably engage in lots of questionable practices in the years immediately following their deregulatory grant of discretion, and those initial policy decisions are crucial to the evolution of the industry for many years thereafter.

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<sup>1</sup> J. Kwoka, “Commitment to Competition: An Assessment of Antitrust Enforcement Budgets,” *Review of Industrial Organization*, 1999.

## ELECTRICITY AND MARKET POWER

What does any of this have to do with electric power? The answer is: everything.

Prior to the mid-1990s there were few significant mergers in the electric sector. Since then there have been upwards of 50 mergers between electricity companies or between gas and electrics. Since that time as well, there has been a dramatic consolidation of generation assets in state after state, so that now a handful of companies own most of the available merchant capacity nationwide. And in the many states that have freed up their electricity markets, allegations of market power and market manipulation abound.

To many the appearance of market power has come as a surprise. They claim that this could not have been foreseen. They point out that market power is inconsistent with the premises of deregulation in electricity—namely, competition among generators. I would assert, however, that the history of deregulation and restructuring gives ample warning. One does not need perfect foresight to anticipate market power. All that is required is good hindsight—but even that seems to have been lacking. Policy was unprepared and ill-equipped, with huge consequences at various times for consumers in New York, New England, the Midwest, and most especially, California.

Let us focus more closely on the issue of market power. While market power has been a problem in electricity reforms, market power has taken a form not seen so commonly elsewhere—namely, unilateral market power. To be clear what we mean, unilateral market power in this context is a single company's ability to raise market price, without collusion or cooperation from other companies. In many markets this is not possible, and so antitrust focuses on the likelihood of collusion. Over the past 10 years the Merger Guidelines also discuss what is termed unilateral market power, but the core issue there is a scenario in which a seller of a differentiated

product merges with a seller of a very close substitute and thereby acquires the power to profitably raise price by itself.

Those are not the concerns that I want to address in electric power markets. Perhaps there is collusion, perhaps not. As for differentiated products, that does not seem to be a useful way to think about such markets. In the context of restructured electricity markets, unilateral market power is best illustrated by strategic withholding of capacity by a single generator. I would like to talk about this problem and discuss some current and prospective policies toward it.

To see where unilateral market power comes from, we will first describe a stylized market for wholesale electric power without such power. Consistent with what we know about such markets, I assume short-run demand elasticity is very low. Figure 1 illustrates the extreme case of zero elasticity. Also consistent with what we know, per-unit supply costs are more or less constant until capacity is approached. Key to the equilibrium shown is that demand intersects supply on the horizontal portion of the supply curve.

I maintain that the design of electric power reforms in virtually all states and countries has presumed this relative positioning of supply and demand. If this presumption is correct, deregulation can work. But if the presumption does not hold, all bets are off. To see why, consider what happens if the demand curve happens to lie on the upward sloping portion of the supply curve. Now price is higher—potentially much higher, since supply elasticity rises sharply.

Next we will show how unilateral market power might be exercised. We make the following simplifying assumptions:

- Supply originates with a number of separate generating plants
- All plants are of the same size

- Each plant either runs fully or not at all
- Capacity is no more than d to the right of demand
- Firm A has two such plants

Now Firm A has the choice of running both its plants and earning some baseline level of profit, or running only one and thereby raising price. It is easy to show how it may gain more on single plant at high price, rather than two at lower price. In Figure 2, Firm A loses profit shown by area A by shutting one plant down. But at the same time it gains—in this case more--on the unit that remains in operation. The trade-off depends on the initial markup and on supply elasticity, but the necessary conditions are not hard to satisfy.<sup>2</sup> And there is abundant evidence of such behavior in California, most recently and convincingly in the form of documentary evidence disclosed by FERC of companies engaged in precisely such actions in California. Companies are known to have prolonged scheduled maintenance or undertake maintenance not strictly necessary or at strategically determined times.

I maintain that electricity reforms were never anywhere designed with this circumstance and these strategies in mind. The rules and methods in place in all states and countries were really designed for a market like that in Figure 1, which has surplus capacity. It seems to me a fundamental failure of design to devise a system that works so differently and so poorly, and is so vulnerably to exploitation, under circumstances that are likely, even certain, to occur.

I say these circumstances are likely, even certain, to occur since most electricity markets at some point in time operating near capacity. In fact, always to be operating far enough from

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<sup>2</sup> J.Kwoka, “Unilateral Withholding: Market Power and California’s Electricity Crisis,” GWU Center for Economic Research Discussion Paper 01-01, May 2001.

capacity to prevent this probably implies carrying excess capacity, and especially in a deregulated generation market no producer will have any reason to do that. And so even under ordinary circumstances occasions will arise when the overall supply-demand balance looks like that in Figure 2. In addition because of transmission constraints, periodically there will be transient load pockets cut off from outside sources of supply and operating in a congestion environment. Such pockets also will remain vulnerable to exploitation.

While I have emphasized strategic withholding of capacity as the method of exercising unilateral market power, there are other ways of exploiting the market situation described in Figure 2. A particularly well-documented case rests on the fact that transmission constraints often fragment the market into isolated load pockets with quite different market clearing prices. We now know that Enron deliberately overcrowded small transmission lines, essentially creating shortage situations by shifting the apparent demand curve to the right and elevating price. Then it proceeded to “find” and offer power to supply the supposed added demand, all the while reaping the profits from the higher prices that had been created. Thus, demand shifts as well as supply shifts can be concocted, with similar adverse effects on electricity markets.

Enron’s role raises many points beyond the scope of my talk, but one is worth mentioning because of its relevance. While the problem in California might be termed a failure of design, some would go farther. It has been asserted that some of the those who exploited the system played important roles in its initial design. One does not have to be complete paranoid to view with concern Enron’s place at the table when California’s reforms were being formulated, or EDS’s role first in assisting that state in some design issues and then consulting for those who exploited the very provisions it had advocated.



## POLICY OPTIONS

Whatever the origin of a system vulnerable to strategic withholding, let us turn to the matter of policy that might address it. Note, first, that such action does not require cooperation or collusion, and so would not appear subject to Section 1 of the Sherman Act. Indeed, it is not clear whether this violates the antitrust statutes at all, since a private, unregulated company is not obviously required to utilize all capacity. As some have noted, this practice may be construed as an unfair method of competition, but I leave it to others to make that determination.

This problem, of course, is precisely the sort that conventionally has been addressed by regulation. The necessary regulation targeted at this practice would be a FERC rule requiring plants to be in operation except for bone fide outages. This rule, however, would entail substantial administrative costs, since it would require investigating validity of each claim of a forced outage. An investigator must visit the premises, review the alleged problem, and determine if the action taken is appropriate. Even at the end of that process differing opinions about the necessity are entirely possible.

And apart from that, the rule might be avoided by the simple expedient of offering the plant at a price known to be unacceptable. That in turn might be prevented by application of a bid cap, or a regulatory determination of the cost at which the facility could be brought online. The disadvantage of such approaches is that regulation has again become a major governing force in the firm's operation.

Alternatively, one might attack the problem at its structural root. The graphical analysis suggests that the following actions would be helpful:

- Increase the responsiveness of demand. If demand elasticity were greater, then any

output reduction would result in a correspondingly smaller price increase benefitting the remaining plants. Measures to increase demand elasticity might include such measures as time of day pricing. My own view is that while this would be helpful, elasticity is likely to remain sufficiently low as to provide continuing incentive for strategic withholding.

•Forward contracting. The ability of distribution companies and other load-serving entities to engage in forward contracting would prevent the full force of current period price spikes from impacting consumers. If the contracts were of the same length as the necessary time to install new capacity, this should help restrain current period prices to long-run average cost. While this would help protect consumers from short-term volatility, that is achieved at some cost, namely, the shifting of risk elsewhere through hedging. The underlying markets might remain unstable since the incentives for any single firm to raise price unilaterally is not eliminated.

As a result, I am concerned that unilateral market power may be the Achilles heel of electricity reforms. It is difficult to identify. It is difficult to prevent, either administratively or legally. And it is quite likely to be a persistent, if intermittent, problem. Until this problem can be resolved, hindsight cautions that restructured electricity markets will remain vulnerable to exploitation.

#### CONCLUDING OBSERVATIONS

Let me conclude with some broader observations about competition, market power, and the theory of electricity restructuring. Economists and policymakers argued that restructuring would produce benefits in three areas. First and foremost, restructuring would unleash competition among generators, competition which was suppressed or at least constrained by vertical integration. Most felt that the benefits would arise less from operating efficiencies than

from capital investment decisions. Retirement of old plants together with decisions about new plant size, technology, and siting would make the capital infrastructure more rational in the medium to longer term.

Apart from generation competition, it was sometimes argued that restructuring would also permit greater consumer choice, to the extent that reforms included retail competition. And some claimed that restructuring would also make more clear the location and magnitude of transmission constraints, thereby permitting better investment decisions in that infrastructure. But most observers looked to competition in generation for the greatest benefit.

Unlike some other industries prior to deregulation, it was never clear how large the gains would be from restructuring the electricity sector. But it is clear that the gains need to be substantial in order for restructuring to produce net benefits. The reason is that the deintegration required to induce competition in generation also has efficiency costs, and these costs are not trivial. My research comparing the costs of more integrated vs. less integrated utilities finds that a deintegrated utility faces per-unit costs that are several percentage points greater than an otherwise-equivalent, but fully integrated utility.<sup>3</sup> By itself that would imply that the “bar” to be cleared by efficiency gains from generation competition is set fairly high: At a first approximation, unless those latter gains are at least of the same magnitude, deintegration fails the cost-benefit test.

I say “at a first approximation” since the cost comparison between a fully integrated and a deintegrated utility does not reflect the fact that with restructuring have come efforts to devise

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<sup>3</sup> J. Kwoka, “Vertical Economies in Electric Power: Evidence on Integration and Its Alternatives,” *International Journal of Industrial Organization*, March 2002.

institutions to perform the coordination functions previously left to integrated utilities. ISOs and now RTOs, among other new and modified institutions, are essentially alternatives to vertical integration. If they work well, they may be able to recover much of the loss in efficiency from deintegration, lowering the bar for the gains necessary from generation competition for restructuring to be on balance beneficial.

The evidence as to the success of RTOs is not yet in, among the reasons is that they have yet to be established and take control in most areas. Their design and mission make clear that they are focused on the right problem, but whether they will achieve their objectives will depend in part on whether they can satisfactorily resolve a number of issues. For example, RTOs have unusual ownership and governance arrangements that raise questions about their ultimate responsibility and their operating priorities. In addition, incomplete membership in RTOs—likely to be a persistent issue—jeopardizes their ability to perform the coordination function.

Such matters raise concerns about the adequacy of alternatives to vertical integration. Other discussion has raised concerns about the emergence of market power in restructured electricity markets. And these concerns arise in the context of restructuring that has yet to prove that it can generate significant efficiencies. Successful restructuring of the electricity sector requires a more satisfactory resolution of all these issues than has been achieved thus far.