

PROMISES, PROMISES:
COMPETITION AND EFFICIENCY
IN THE RESTRUCTURED ELECTRICITY SECTOR

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The theme of this year's Energy Roundtable is competition in the electric power sector.

This focus on competition and its promises is well-chosen. After all,

- It was the promise of competition that motivated deregulation of electricity in the first place
- It was the promise of competition among generators that required vertical deintegration.
- It was the promise of competition that prompted the creation of ISOs, RTOs, and power exchanges.
- It was the promise of competition that led to retail unbundling.
- It was the promise of competition that produced reform of residual regulation.

So many promises, but now so much uncertainty, so much unease, about the outcome.

That unease is heightened by three factors:

(1) Experience in other deregulated industries, such as airlines and telecom. While competition has taken hold in those industries, the nature of competition has had its surprises, the benefits have been uneven, and competition itself has proven to be fragile. Deregulation turns out not to be a “do-it-and-walk-away” proposition.

(2) Disappointment with the results of electricity deregulation thus far. It has always been clear that electricity deregulation would be more difficult than for other industries, but the current state of affairs is unsettling. No matter what part of the industry one looks at, there is a substantial gap between expectations and realization, and considerable unease about the future.

(2) The repeal of PUHCA, which for 70 years limited the geographic reach of energy mergers and prevented non-utility acquisitions and diversification. While it is easy to exaggerate the effect of repeal, no one should doubt that it will accelerate restructuring and consolidation of

electricity assets. Whether that is likely to be a good thing or a bad thing is the real question.

It is also my question today. Here we need not settle for mere speculation or predisposition, nor for generalizations from other industries and times. Here we have the benefit of experience and analysis. Here we can gain insight into the effects of future restructuring by carefully examining the effects of past consolidations. I say “gain insight” rather than “predict” because the future may differ from the past. But absent some convincing reason to think differently, we are almost surely closer to the mark by relying on the past, rather than by denying its relevance.

Of course, generalizations from past experience never capture literally each and every past case. But the possibility of past exceptional cases should not be transformed into the proposition that most future cases will be what previously were the exceptions.

So to begin, we should acknowledge that many mergers produce efficiencies that benefit consumers and shareholders alike. This is true in the economy as a whole as well as for mergers among utilities. We also recognize that increased size, whether from merger or growth, often more fully realizes economies of scale. Up to some point, larger generators and distribution companies do precisely that. And we understand that vertical deintegration of traditional structures may well result in net gains from competition. Separating generation from distribution may be a win-win situation.

With that in mind, we can nonetheless evaluate competition and efficiency in the electricity sector based on the evidence and the facts.. Let me take each of these three propositions—concerning mergers, scale, and integration—in reverse order, and see what the evidence tells us.

First, we should recall why electric utilities were vertically deintegrated. It was not because we believed that combining generation with distribution was a bad thing, somehow resulting in higher costs. Rather, generation was split off in order to create standalone entities which were supposed to compete in a merchant market for the business of distribution utilities. In that context, the possibility of costs from deintegration should not have been a complete surprise. After all, economics and engineering have long taught that integrated operation in some cases may be better able to achieve coordination, communication, quick response, and unambiguous responsibility for outcomes—better than the market process.

Electricity seemed like a plausible candidate for such efficiencies from integration. Factors such as the need for real-time electrical balance, loop flow externalities, fixed capacity constraints, and extremely low demand elasticity combine to make market-mediated transactions between generators and distributors problematic. Under these circumstances, a purely market transaction might not work well, or at least be more costly than the alternative of vertical integration between upstream sellers and downstream buyers.

There are now several economic studies of integration of electric utilities that show this to be the case. My own study looked at utilities prior to restructuring, when some were not integrated at all—that is, they were pure distribution utilities—while others were partially or fully integrated. By comparing their total costs for the same final output, and controlling for many other factors, I tested whether and how integration affects costs. The evidence was startlingly clear: Integrated utilities had considerably lower costs for the same output. The deintegration policy on which restructuring is based sacrifices some economies of coordination between generation and distribution, causing higher final costs of production and distribution of

electricity. This finding is now corroborated in a number of other studies.

There are several noteworthy implications of this finding:

(1) Since deintegration has costs, the gains from generation competition would have to be quite large in order to offset those costs and produce net benefits. It is not clear that is the case.

(2) Some alternative to vertical integration is required for coordination and transaction purposes. Power exchanges, ISOs, and RTOs have all been tried, with decidedly mixed success, and at considerably higher cost.

(3) Deintegration seems to have contributed to decreased reliability of supply.

Generators have periodically failed to meet their obligations knowing that the consequences to them are limited by contractual penalties rather than by administrative controls and a regulatory compact.

In short, vertical deintegration is a two-edged sword, one that has not been handled with sufficient care.

Second, with respect to scale and costs, economies in generation and in distribution have long been studied in economics. The evidence with respect to economies in generation is clear and well-established: Such economies, while important at low volumes, are fully realized at outputs far less than the size of most markets in the US. Generation sizes larger than that must therefore be motivated by something other than cost savings.

Indeed, generation firms well beyond that scale are now common. As a result of rapid consolidation, the fraction of nationwide generation capacity held by the 10 largest IOUs grew by 50% between 1992 and 2000, and has continued to increase. Four or five utilities now account for the majority of merchant generation capacity in a number of regional markets.

And that concentration carries with it some real risks to competition. Apart from conventional concerns about coordinated behavior among fewer sellers, there are novel dangers from even more modest degrees of concentration in electric power generation. Because of transmission constraints, generation markets are often quite small and temporarily served by very few sellers. California is only one experience illustrating the ability of single sellers to unilaterally withhold output with enormous effects on price. The preconditions for such exercise of market power are all too frequently met, implying this will be a continuing threat.

At the distribution level, the evidence consistently shows economies occur up to some moderate scale defined by output, customer numbers, and network length. Data that I have analyzed on hundreds of utilities show only modest cost differences over a wide range of outputs. This finding implies that ever-larger distribution companies are not justified by further cost savings. Cost savings are likely to be especially elusive for non-contiguous distribution utilities, but even for those involving adjacent service territories, simply aggregating two networks may not yield any cost benefits.

Third, mergers have become common in the electricity industry, as they are in the economy as a whole. Views about the effects of mergers vary widely. A standard economic proposition claims that well-managed firms seek out underperforming firms, acquire them, and improve their performance. This implies that buyers should have above-average performance prior to a merger or acquisition, while sellers should be below average beforehand but improve thereafter. This theory of the “market for corporate control” serves as a useful and testable version of the argument that mergers are efficiency- and value-enhancing.

Counter-arguments abound. Mergers are said to be motivated by market power, by risks

and opportunities facing the parties, and by idiosyncratic, perhaps even personal, reasons.

Mergers are sometimes viewed as driven by the stock market valuations and fluctuations, or seen essentially as lotteries with highly uncertain, but potentially large, rewards.

Evidence on actual mergers has been extensively studied, but without yielding a consensus view. Stock market studies often draw favorable conclusions. Andrade et al (2001), for example, first note that earlier studies

conclude that mergers create value for stockholders of the combined firms, with the majority of the gains accruing to the stockholders of the target... Our analysis...concurs with those prior views.

Studies of actual operating results of mergers, however, are generally much less favorable. Ravenscraft and Scherer's detailed study (1987) concludes that mergers in the 1970s and 1980s resulted in "widespread failure, considerable mediocrity, and occasional successes."

Hartman (1996) goes farther:

Most ex ante analyses of expected merger efficiencies are inaccurate... Ex post analysis of merger performance indicates that the majority of ex ante studies developed to assess merger-induced efficiencies are usually overly optimistic...Almost all mergers are undertaken with the ex ante prediction that benefits and efficiencies will occur. However, ex post, the vast majority (60%-80%) of mergers can be characterized as unsuccessful.

With respect to electric utility mergers in particular, Anderson (1999) reviews a considerable number of recent experiences and concludes that "only 15 percent of mergers and acquisitions (M&A) have achieved the financial objectives that were expected prior to the deal."

He recounts the various ways that efficiencies might be realized, but notes that firm integration and savings extraction--the challenges presented by merger--are tasks quite different from the usual focus of management. As a result, he reports, "only 20 percent of acquiring companies plan the integration of their companies prior to signing on the dotted line."

This last observation is strikingly the case. While some utility mergers are justified by extensive analysis and concrete promises of cost savings, others are characterized by the crudest of guesses or even the failure to anticipate savings at all. FirstEnergy's acquisition of GPU in 2001 was claimed to "result in overall aggregate cost savings opportunities that are currently estimated to be about \$150 million per year." The President of FirstEnergy, however, went on to explain that this estimate

is based upon an assumed five percent (5%) reduction in operating and maintenance costs. This estimated savings amount is typical of calculations developed in other mergers and is not based on a detailed evaluation of savings.

In short, no analysis was undertaken. Rather, someone else's guesses were employed without checking for their realization or relevance.

In AES's 1999 acquisition of CILCORP, the parent of Central Illinois Light, for example, the parties went further, asserting to FERC that

[a]ny savings that CILCORP may experience as a result of the proposed reorganization will not be material in amount... No...operational synergies or efficiencies will occur as a result of the mergers...and none are intended. The proposed mergers are strategic in nature.

Put differently, no promises at all were made.

But most utilities seeking to merge or acquire do indeed make efficiency claims to state and federal regulators. Those claims are subject to ex post evaluation. On-going work by Michael Pollitt of Cambridge University and myself compares the pre-merger and post-merger performance of electric utilities during the substantial merger wave in the US electricity sector between 1994 and 2003. During this time more than 75 mergers occurred, accounting for \$300 billion in assets. These mergers and acquisitions involved distribution, generation, and

convergence (gas-electric) motives.

Our focus is on the distribution sector, where we examine the performance of 45 merging units, both acquirers and the target companies, together with 28 non-merging utilities as a baseline. Collectively, these 73 units account for more than half of total customers and sales in the US during this period. We measure the technical efficiency of each operating unit, where technical efficiency is the amount of inputs required for a particular amount of output. Each operating unit is scored against the most efficient (least-input-for-given output) unit in each year.

Since this period of time captures dozens of mergers, we can track the performance of individual operating units before and after its structural realignment. We test whether better performing units acquire poor performers, as the market for corporate control implies. We can test whether efficiencies are transferred to the acquired units. In short, we can test for the validity of promises made about efficiencies.

What do we find? Our evidence demonstrates the following key results:

- Prior to merger, sellers' efficiency scores are systematically higher than the scores of buyers or of baseline utilities.
- Prior to merger, buyers' scores are essentially the same as baseline firms.
- After merger, sellers' efficiency scores tend to decline to the point where they are essentially the same as baseline utilities.
- Buyers, sellers, and non-merging firms are all quite similar post-merger.

These effects are almost exactly the opposite of the predictions of the advocates of mergers as a mechanism for enhancing efficiency. Buyers are not especially efficient prior to the merger or acquisition. Whatever their motives may be, they are not in a position to transfer

efficiencies to acquired units. Target electric utilities are not poor performers, as many merger proponents would claim, but rather superior performers. And after merger, their performance levels did not rise, but actually declined, often dramatically.

These effects are shown in Figure 1, which tracks efficiency score differences between buyers and non-merging firms, and also between sellers and non-merging firms. We ignore the scores for the year of merger since both operations and accounting are distorted by the merger itself. The same is often true for the years just before and after the merger. Examining the efficiency scores for years 2, 3, and 4 prior to and after the merger illustrates our conclusions: Rather than the promise of good firms acquiring underperforming ones, it is the better performers that are being acquired. Rather than the promise of efficiency transfers, the efficiency of the acquired units appears to decline. Rather than the promise of net efficiency gains from merger, there appear to be no gains at all.

Promises, promises.

Let me summarize by noting that economics has much to teach about vertical integration, about scale economies, and about mergers in electricity. But one has to pay attention to the evidence, rather than to predisposition. Much of that evidence serves as a caution to current practice, which tends to view restructuring and consolidation in a favorable light and focus on the size and division of gains. Deintegration, size, and mergers are not such easy paths to more efficient and competitive performance. Their promise has been exaggerated, and in some ways illusory.

None of this is to argue that restructuring should not be, or should not have been, pursued. Rather, it cautions that the approaches taken have not been adequately informed by the

evidence, have run unreasonable and unnecessary risks, and have left us in a position made harder by mistakes of the past. I would urge greater attention to the evidence as we move ahead, hopefully more cautiously, from our current position to a viable and competitive market for electricity in this country.

Figure 1
Efficiency Score Differences vs.
Non-Merging Utilities

