"Screening" for Market Power in Electricity Markets

by Dr. Darren Bush

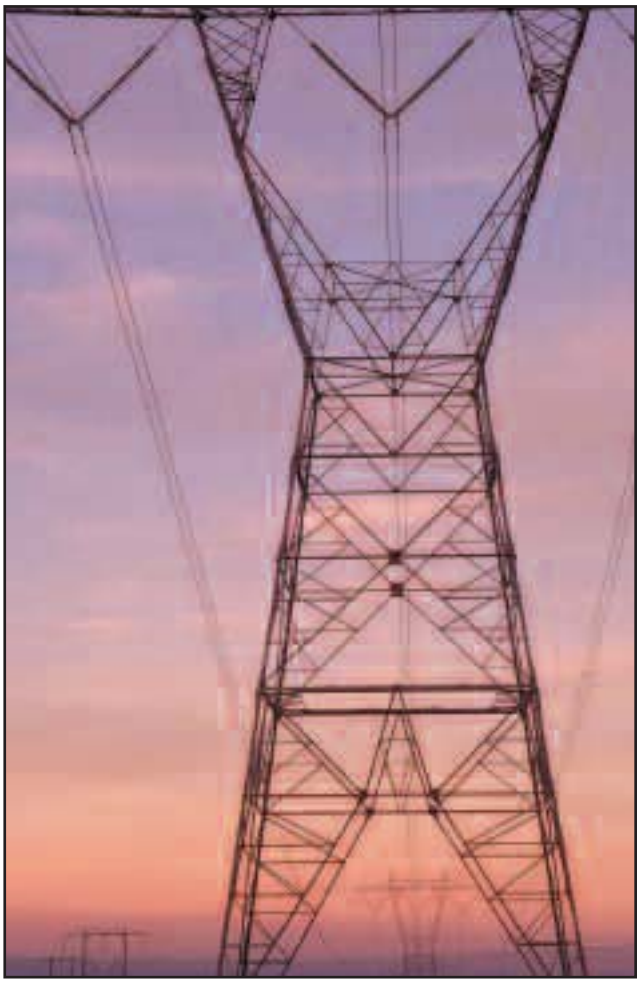
Much has been made regarding the use of market power screens to detect market power that might arise from existing generation asset portfolios or utility acquisition of new generation assets. The quest is to find the Holy Grail. In this case, the Grail being sought is a market power detection mechanism that minimizes the costs to all parties involved while finding the majority of market power exercises.

The expenditures are not trivial. Production of data that might be needed to satisfy an extensive inquiry could be quite costly in terms of time and money. And the Federal Energy Regulatory Commission (FERC) could also spend a great deal of time conducting an extensive investigation—time that might be spent examining other industries or other aspects of the electricity industry.

However, the "costs" of such investigation must be balanced against the costs arising from exercises of market power. As the California experience demonstrated, such market power exercises are costly. For example, interruptions of service in California were costly to businesses and not entirely remedied by FERC's requirement that some players disgorge ill-gotten gains. Thus, while ex post determinations of such exercises can partially remedy the ill-gotten gains from such market power exertion, they cannot completely undo the harm caused to the electricity market.

Because I believe the costs arising from the exercise of market power

exceed the costs that might be incurred in the investigation of such market power, I contend that screens are not the Holy Grail. Instead, screens should be utilized with caution. Screens meet the criteria of minimizing enforcement costs, but are unable to detect many types of market power exercises that a generation company might undertake. And, absent any probability of detection, a generation company may have an incentive and ability to exercise market power, particularly given the typical penalties received when such exercises are detected and punished.



In the pages that follow, I detail my concerns. I begin by discussing the polestar for all screens advocated in the electricity industry—the Department of Justice/Federal Trade Commission Horizontal Merger Guidelines (Guidelines)—and its limitations. I then discuss the flaws that application of screens might create in the detection of market power, using "contestable load" analysis as an example. I conclude by noting that many types of market power exercises are undetectable with market power screens, and that approaches ought to be taken that increase the probability of detection, given the low level of penalty current imposed upon those that wield market power.

The Guidelines Methodology

The Guidelines describe a fairly sound economic methodology for dealing with mergers. First, the Guidelines require a determination of the product and geographic markets in which the merging parties operate. The foundation for the product and geographic market determination is the SSNIP test ("small but significant and nontransitory increase in price"). Starting with the smallest product market possible, the SSNIP test asks whether a hypothetical monopolist could profitably raise price by a small but significant and nontransitory amount. If the question is answered in the negative, then a broader market must be at issue, as consumers flee to available substitutes. The query is then repeated using the next smallest market, until a relevant market is found in which a monopolist could exercise market power. The query is identical for geographic market limitations. Market definitions under the Guidelines are driven by the buyer's reaction to market conditions in the first instance, not an "add 'em up" approach to calculating the share of capacity a particular gen-

eration owner may possess.

Once product and geographic markets are determined, market shares are calculated for each firm in that market. The Guidelines calculate market shares using "HHIs" (the Herfindahl-Hirschman index), which sums the squared shares of all market participants. The HHI methodology recognizes that disparities in firm size are important considerations in the market share calculation because larger firms have relatively greater "importance in competitive interactions." For example, other firms may merely follow the behavior of the firm with the greatest market share. Moreover, the Guidelines caution that changing market conditions or markets where substitute products outside the market are not close substitutes may lead to market share calculations inaccurately portraying the competitive conditions that exist within that market.

The Guidelines approach to market share calculation has as its purpose the determination of whether a market is concentrated and whether the transaction in question would likely have adverse competitive consequences in that market. In other words, the purpose of the calculation of market share is to determine whether the firms under antitrust scrutiny might exercise market power. Under the Guidelines approach, if the market is concentrated, then issues such as entry and other factors that mitigate market power are analyzed. If the market is not concentrated, that information allows us to rule out some—though in most electricity markets not all—competitive harm theories.

A Guidelines approach to market power in industries such as the electric utility industry is really not a market power screen. In light of the HHI calculation, the Guidelines look to both procompetitive and anticompetitive effects arising from a transaction. Moreover, the Guidelines caution against their slavish application, in part because transactions are complex and diverse. Applying the Guidelines in some circumstances may create misleading answers.

The "Failure" of the Guidelines

I should point out a Guidelines analysis may

not detect all exercises of market power in electricity markets. If the Guidelines cannot detect these harms, then rudimentary market power screens will likewise fail. For example, one difficulty that might arise in the acquisition of generation assets is the "fuel curve" problem. The fuel curve theory posits that the acquisition of marginal assets, in conjunction with ownership of inframarginal units, provides the incentive and ability to raise prices. While diversity of generation assets may increase efficiencies, it may also create market power. A straight-up counting of capacity may not detect market power arising from a fuel curve problem, and more analysis would be necessary to determine the need to prevent and restrain such conduct.

Moreover, vertical market power exercises do not lend themselves well to Guidelines analysis. For example, monopoly power over gas pipeline capacity could give rise to an increase in wholesale energy prices, benefitting the pipeline's affiliate-owned inframarginal generation units. It is not necessary for the pipeline to affect any supplier other than the marginal unit in order to bring about a price increase. Thus, the pipeline may or may not have market power in any sense except in the provision of gas to the marginal unit. A market share calculation cannot be the end of the analysis here, either, and more investigation would be necessary to make any determination as to the effect such market power might have on competition.

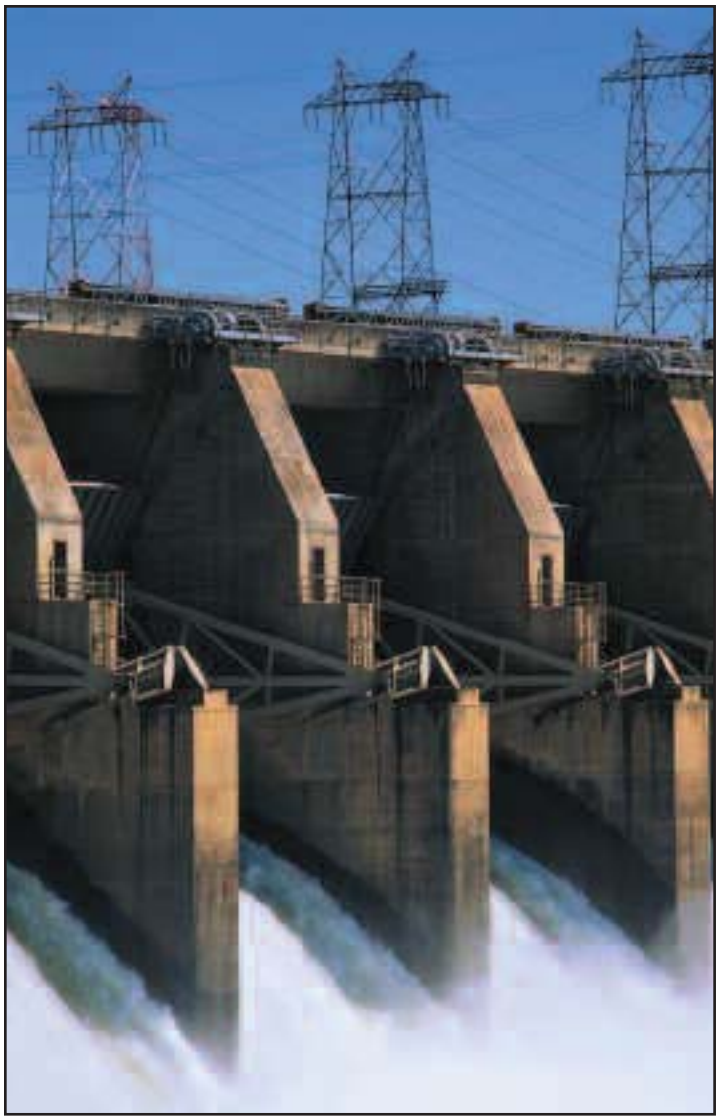
In sum, market share screens have the potential for "false negatives." While corrections for any "false positives" brought about by market share calculations exist in the Guidelines in the form of entry and other analysis, there is no such corrective mechanism for "false negatives." Thus, other methodologies must be employed to detect market power potential such as those described above.

Would Screens Detect Market Power?

As with the Guidelines, market power

screens would be unable to detect all market power exercises. A screen is at best a strainer—it catches the more obvious cases while allowing the less obvious particles to escape. The larger the holes in the strainer (the less sophisticated the screen) the more conduct slips through the screen.

For example, let us consider the "historical contestable load analysis" advocated by Louis Jahn at the Edison Electric Institute (EEI). While the analysis requires multiple steps, the key one involves limiting the competitive assessment of the market to a comparison of loads shopping for an electricity product to the number of megawatts available to supply the product. The EEI approach would require applicants, using the most recently available historical data, to (1) identify relevant geographic markets; (2) identify relevant product markets; (3) identify all "contestable loads" (i.e., loads subject to competition) by product for "the historical test period;" (4) identify all potential competitive generation suppliers in the designated markets; (5) determine the total uncommitted wholesale capacity that would have been available during these historical periods to compete for load; (6) determine whether suppliers from outside the market could have provided capacity; and (7) calculate the ratio of competitive generation to contestable load by product and season during the "historical period." If the "total generation resources were at least twice the total contestable load, the applicant will be deemed to have passed the Historical Contestable Load Analysis for the specified product and seasons."



One limitation of the contestable load analysis is that it ignores differences among potential suppliers of products desired by buyers. In particular, buyers may seek to purchase multiple products from what are typically not homogenous suppliers. Such products include capacity, energy, load-following service, and the like. It is possible that some generation assets are unable to provide all of these products. In such a situation, it cannot be said that merely because a generator owns

an asset that could provide some of the buyer's needs (e.g., energy) that it necessarily is a competitor to a generation owner that is able to supply all of these products (e.g., load following service). Rather, it is the combination of products that the buyer may seek. The buyer, in seeking to purchase these products, will take offers from firms that can provide them. Thus, buyers could only turn to a subset of the firms that would be included in the EEI contestable market analysis for supply.

A second limitation of the analysis is that it ignores demand substitution factors, a key to the Guidelines' market definition analysis. Antitrust enforcers typically ask the consumer to whom it might turn for supplies of these multiple products, not the supplier. As the Guidelines point out, "Supply substitution factors—i.e., possible production responses—are considered elsewhere in the Guidelines." However, contestable load analysis appears to get it backwards. The EEI analysis requires identification of "all loads within the relevant market that were actually subject to competition (contestable loads)," but only after relevant markets have been identified from the perspective of a supplier looking at which market it can sell its product and who else is selling it. Under the EEI analysis, it would be difficult for an antitrust investigator to unearth whether buyers were subject to market power by a small number of firms offering the full range of products the buyer seeks.

The contestable load analysis also misses the point of calculating HHIs. Recall that HHI calculations function in part to determine whether there are dominant firms that might yield disparities in power between firms in a particular market. As EEI proposes it, the dominant firm drops out of the picture altogether. A calculation of market shares that does not accurately attribute market share to the dominant firm yields no fruitful results. In other words, as EEI calculates market shares, it is neither the end of the analysis nor even the beginning of the analysis. Moreover, such a market share screen is even less likely to detect what the Guidelines cannot, such as the fuel curve theory of harm or vertical market power issues.

Market power detection is a crucial first step in preventing and restraining market power.

While the purported goal of the contestable load analysis is to avoid "false positives" in the detection of market power, it is clear that the pendulum has swung around completely. Contestable load analysis, through use of flawed screens, would cause FERC to be awash in "false negatives," as firms file under a rudimentary contestable load screen—a screen that ignores the complexity of the market analysis necessary in budding energy markets.

An Ounce of Detection is Worth….

Market power detection is a crucial first step in preventing and restraining market power. A rational market participant would likely exercise market power if the benefits of engaging in the conduct exceed the expected costs. If FERC, using rudimentary screens, is unable to identify many instances of market power, then a generation company may benefit from its exercise without fear of detection and punishment. The costs to the consumers of unrestrained market power go beyond the higher costs imposed by the firm exercising market power and the costs of heightened administrative scrutiny. They include potentially the relocation of businesses and other ripple effects stemming from higher electricity prices.

However, it is a necessary but insufficient condition for market power to be detected.

There must be some penalty involved that exceeds the benefit to the company of engaging in market power exercise. An analogy is appropriate here: A child stealing from the cookie jar who knows his parents are not alert to his thievery is highly unlikely to stop stealing, particularly if the child's only punishment is to put the cookie back into the jar. Similarly, disgorgement of profit by a firm wielding market power is insufficient as a deterrence, even if FERC engages in more sophisticated analysis of market power than a contestable load screen. The analogy is only partly correct: There is no permanent damage done when a child is caught and puts the cookie back, but there may be injury to competition and consumers from exercises of market power uncured by firm disgorgement of ill-gotten gains.

Conclusion

The detection of market power is not for the faint-hearted. It requires rigorous analysis, large amounts of information, and serious thinking about the boundaries of the market (including consumer preferences, available supply, transmission constraints, the multitude of electricity products offered, etc.). It also requires an examination of entry, potential entry, potential exercises in conduct, and the like.

A market power screen, if properly applied, may determine in some instances the boundaries of the market and market shares within that market. However, it will not capture certain types of conduct, particularly if the screen is slavishly applied such that facts indicating different market analysis ought to be undertaken are ignored.

And it is not necessarily the case that a single agency will get it right, even if it has all the information referenced above. In antitrust law, there is a tripartite of enforcement. Direct purchasers, competitors, state attorneys general, and the two federal enforcement agencies can bring antitrust actions. This heightens the probability of misconduct being detected. And treble damage provisions provide a key deterrent to those who might steal from the cookie jar.

In sum, screens are not the Holy Grail of market power detection. The beacon of market power screens is only Grail-shaped. The screens fail to heed the caution implicit in the Guidelines that markets are complex and that rigid application of the Guidelines may not lead to the right answer. The Guidelines' caution rings particularly true in electricity markets, and FERC should be wary of using screens that will be unable to detect many instances of exercises of market power.

Professor Bush writes and lectures on antitrust, electricity markets, and regulated and deregulating industries.

Professor Bush received his Ph.D. from the University of Utah, where he received a Teaching Fellowship, the Graduate Research Fellowship, and an award for outstanding teaching. While completing his J.D. at Utah, he consulted on issues regarding state deregulation of electric utilities, interned at the U.S. Department of Justice's Antitrust Division, taught various economics courses, and received a Marriner S. Eccles Fellowship in Political Economy.

After receiving his J.D., Professor Bush served as an Attorney General's Honor Program Trial Attorney at the Antitrust Division's Transportation, Energy, & Agriculture Section, where his primary focus was the investigation of mergers and anticompetitive conduct in wholesale and retail energy markets. In 2001 Professor Bush returned to Utah as a Visiting Associate Professor. He joined the University of Houston Law Center as an Assistant Professor in 2003.