ELECTRIC INDUSTRY RESTRUCTURING: A TABLA RASA APPROACH

A free electricity market, with no single firm controlling the entire process from generation to distribution, is an attractive possibility, but can only work with the right market regulations in place. Good news for any country just privatising its power infrastructure.

MARKET REGULATIONS

Developing countries are currently attempting to privatise their electric utility industries. As they do so, they have a 'once in a lifetime' opportunity to approach the complex issues associated with restructuring a key sector of their economies with a clean slate before political pressures get in the way. More importantly, developing countries can learn from industrial countries' mistakes and actually get the process right.

While reasonable minds can certainly differ on the specifics of restructuring, one point is absolute — the end goal of any restructuring effort must be to maximise the consumer's (and not any one individual competitor's) welfare. That is to say, public policies should seek to promote good market performance. 'Good' market performance is usually characterised by the presence of static economic efficiencies (declining prices), dynamic economic efficiencies (innovation in new services or technologies), or both. If a market is performing well, then consumers will enjoy other societal benefits such as full employment and the long-term growth of real income per person. More important, however, is that if a market is performing well, then the need for stringent government intervention should be unnecessary.

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Thus, if we are truly serious about promoting deregulation and competition, then we need to formulate policy paradigms designed to establish, to the greatest extent practicable, a structural framework conducive to competitive rivalry, under

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which firms will be unable to engage in strategic, anti-competitive conduct, even if they try.

The concept of transaction cost economics

Transaction cost economics attempts to determine the optimal (that is, the most efficient) institutional organisational arrangements that minimise transaction costs under different sets of circumstances. Transaction cost economics is based on the cognitive assumption of 'bounded rationality' — that is to say, economic actors are assumed to be *intendedly* rational, but only limitedly so. Thus, for example, a vertically integrated utility has the incentive to engage in strategic anti-competitive conduct by foreclosing rivals' access to transmission to protect its sunk generation investments. In contrast, a firm that is in the exclusive business of selling transmission has the incentive to sell as much transmission as possible because as more firms use its grid, the more profitable its business becomes.

Transaction cost economics also submits that corporate internal governance (a 'firm') and markets are alternative methods of resource allocation and, therefore, depending on given factual circumstances, the most efficient organisation of a business would be either to enter the market and contract with other businesses for goods and services on a transaction-specific basis or, alternatively, to bring transactions 'out of the

market' and 'into a firm' (in effect, either produce these goods and services on a vertically integrated, in-house basis or, to a lesser extent, enter into long-term supply contracts that effectively achieve the same goal). To make this determination, every transaction can be viewed in respect of three criteria:

- Frequency of transaction — how often is it to be carried out? If the transaction is to be carried out with great frequency, then perhaps it is better to bring the transaction into the firm (for example, the need for a reliable and inexpensive source of bulk power). On the other hand, if the transaction is infrequent (for example, new plant construction), then the most efficient allocation of resources would be to go into the market and complete the transaction by contract.
- Asset specificity — how unique is the asset in facilitating a particular transaction? Again, the more specific the asset (for example, sunk generation facilities, bulk power lines), the more sense it makes to bring the asset out of the market and into the firm. Conversely, the less asset specificity is required (for example, emergency power), then it is more efficient for a firm to conduct the transaction in the open market.
- Degree of uncertainty — how big is the risk? Intuitively, if the risk is large, then vertical integration into a firm is the more efficient organisation of the business. If the product is fungible and easily replicated, however, then the more efficient organisation of the business is to conduct the transaction in the open market. Thus, given the severe repercussions of failing to meet stringent 'obligation to serve' mandates, it is more efficient for utilities to ensure reliable power either via integration or by long-term contract, rather than by purchasing the majority of their base-load power on an hourly or daily basis. Conversely, if a utility has conducted its load forecasts accurately, then the risk that it will have insufficient power to meet demand will be small, and therefore it will be more efficient for the utility to purchase emergency power on an individual, case-by-case basis.

Given these transaction cost economic criteria, no one should be shocked by how and why the structure of many electric utility industries emerged over the last century. Quite frankly, given the huge sunk costs inherent in the electric industry, coupled with the long-standing societal goal of ensuring reliable service at just and reasonable rates, the historical structure that emerged — vertically integrated monopolies — was, *ceteris paribus*, simply the most efficient way to allocate resources and operate a significant portion of the grid.

An efficient versus an inefficient structure

In the case of the USA, the Federal Energy Regulatory Commission or (FERC) wants to create a market structure where all transactions are out of the firm and purchased in the market. This is because FERC erroneously believes that — contrary to the economic literature — all vertical integration per se is unlawful. As such, FERC is attempting to turn electricity into a commodity such that firms will find it ostensibly more efficient to contract for power on the open market rather than on a vertically integrated basis. To accomplish this goal, FERC mandates that utilities, among other things, must: provide 'open-access' on a network service basis; file homogeneous pro forma tariffs (that is, post their prices); price transmission on a short-run marginal cost basis and thus make any entry into transmission totally unprofitable; and join a regional transmission organisation to co-ordinate sales.

There are two fatal flaws in FERC's paradigm, however. First, FERC erroneously believes that firms will never be able to produce efficiently on an integrated basis. Second, and as a consequence of the first, FERC believes regulation can intervene and create efficient input markets, both *sua sponte* and s*ui generis*, by unbundling transmission from bulk power sales. However, because USA regulators have not resolved the underlying tension between having a firm be both a competitor yet also the primary supplier of its rivals' key input of production (in this case, transmission), vertical integration is still the most efficient way to organise many segments of the industry. As such, the USA market is demonstrating dangerously poor economic performance. Indeed, over the last few years, there has been a near 50 per cent drop in investment for new bulk transmission facilities, a

demonstrable trend in industry reconcentration, no new tangible facilities-based entry (firms or capacity) and attempts by some firms to go so far as to foreclose key inputs of production from would-be rivals (gas/electric hybrid mergers).

One of the primary faults with the USA approach is that it has incorrectly analysed the market. In FERC's view, there are only two segments: transmission/distribution and generation/marketing. The USA approach demands rethinking, because it is, quite simply, an inefficient way to organise the market. Instead, if you truly want to have all transactions be brought out of the firm and into the market, then the market needs to be divided into three structurally separate sectors: generation, transmission and marketing.

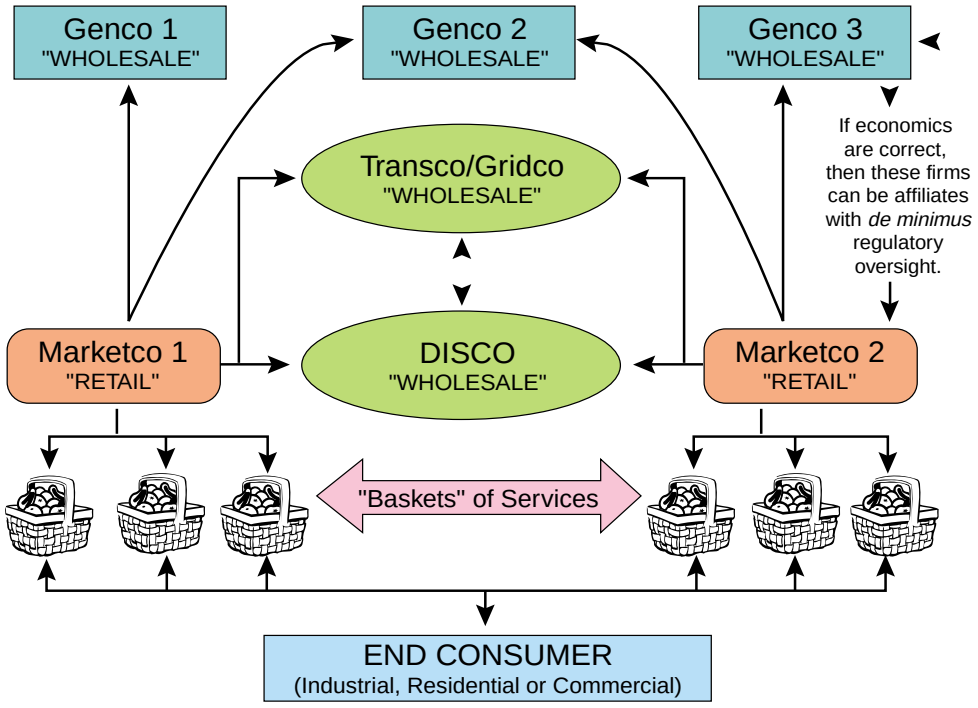
Generation

A structurally separate generation company (genco) should, by definition, be in the exclusive business of generating bulk electricity. It would neither own any transmission facilities nor be able to sell power directly to the retail mass market, from households to individual, high-volume customers (those customers that, because of their large scale and scope, consume such substantial quantities that they can eliminate the 'middleman' and negotiate directly for volume discounts). Instead, that function should belong to a structurally separate marketing company (marketco). However, because entry into the generation business is relatively easy (especially as technology continues to improve), there is no need to apply either price or conduct regulation to this sector.

Transmission

The transmission segment would probably have to be characterised by firms that exclusively sell either transmission (a transco or gridco) or distribution (a disco) on a full service, wholesale basis from various gencos to end-consumers. Like the genco above, these firms must be prohibited from selling their product directly to the end consumer — again, this function would be performed by a revamped marketco. However, although a firm that is in the business of exclusively selling transmission would want to sell as much as possible, because of the bottleneck characteristics of the transmission segment, owners of these facilities legitimately also should be subject to stringent price and conduct regulation to mitigate against the possibility that it could successfully raise prices or restrict output.

Efficient restructuring of the electricity industry requires a market comprising generation, transmission and marketing.



Marketing

In this segment of the market, we would have firms (marketcos) that are structurally separate from both generators and transmission companies. Their only job would be to sell and market delivered power (a bundle of generation plus transmission/distribution) directly to the end consumer (high-volume customers or the average household). Indeed, even the high-volume consumers mentioned here may want to use a marketco to avoid continual negotiation for the cheapest, most reliable source of generation. This arrangement, therefore, would be an efficient use of vertical integration.

True to their name, these firms would have only paper assets. The marketco would remain separate from gencos and transcos by contracting with them for sufficient inputs to create bundles of delivered power that are demanded by its customers. Burdened with few sunk costs, this segment should be relatively easy to enter or exit. Its market structure should therefore demonstrate a variety of pro-competitive characteristics, such as numerous sellers, low switching costs among marketcos and both price and non-price competition.

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More importantly, marketcos appropriately would bear the obligation to serve in a correctly restructured electric utility industry. If the marketco segment is characterised by numerous players, however, then this obligation to serve should not be a big deal. Consumers should have sufficient alternatives if an inefficient firm goes out of business. Again, the issue is one of contract between customers and marketcos.

Moreover, under a correctly restructured electric utility industry, economic conditions should mitigate most concerns of affiliate self-dealing should a genco elect to have a marketco affiliate. Because the end-user segment will be competitive, a marketco will face a high own-price elasticity of demand, producing the incentive to search for the cheapest, most reliable (firm) source of power. If a marketco finds that the cheapest, most reliable power does not come from its genco affiliate but from elsewhere, then choosing its own affiliate under these conditions would be irrational and inefficient.

Finally, this proposed approach removes the issue of reliability from the policy discussion. Marketcos become the only players in the industry that hold themselves out to end consumers. Accordingly, marketcos bear the *de jure* (and, more accurately, the *de facto*) 'obligation to serve'. As such, the transco/disco companies should have little incentive to unduly discriminate, by price or otherwise. If an outage occurs, then it most likely is not the result of any strategic, anti-competitive conduct on behalf of a transco or disco, but rather the usual type of technical problems associated with running a power grid. In other words, if one company suffers, then all companies suffer.

Conclusion

In sum, if properly structured, the market — and not the government — will dictate when the costs of vertical integration outweigh the benefits. In other words, given the inherent risk of the market, if the generation segment is fluid and transmission concerns are alleviated (transmission essentially being a fixed cost of production), a marketco under this structure would have little incentive to re-integrate (either by ownership or long — term contract). Rather, regulators would create a legitimately efficient mechanism to achieve its goal of forcing all transactions out of the firm and into the market while, at the same time, creating investment incentives for new capacity. Most importantly, however, consumers would benefit from good economic performance with *de minimis* regulatory intervention.

About the Author

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