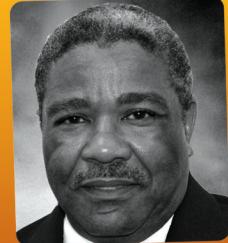




ENERGY

PROSPECTS FOR COMPETITION IN THE ELECTRICITY SECTOR



The recent ruling by Supreme Court Justice Bryan Sykes rejecting the exclusivity of the JPS licence may very well prove to be a catalyst for terminating the endless debate and inciting genuine transformation in the electricity sector.

Evan Duggan

Uncharacteristically in a country where disagreement is the norm, there is almost perfect national accord that the escalating cost of electricity is inimical to the interest of industry, commerce, and consumers alike and a deterrent to national growth and development; further, it exacerbates Jamaica's relative global competitiveness deficits with the potential to frustrate our national vision of developed country status by 2030. Unfortunately, our capacity for interminable debate continues to delay treatment of what is fast becoming a national emergency.

The World Bank Report of 2011 entitled "Jamaica: Unlocking Growth," identified Jamaica's high crime rate, low skill level of its workers, and the cost of electricity as the major impediments to growth, serving to constrain the productive capacity, retard economic and social development and reduce the competitiveness of Jamaican firms in the regional and international marketplace. International evidence also suggests that there is significant, negative correlation between electricity prices and real GDP, exports, competitiveness, and innovation.

The electricity sector is capital intensive, requiring investments that are typically recoverable over extended timeframes. There has been, for some time, almost global fixation on reform with the overriding objective of providing incentives for encouraging investment in capacity and technology to maximize efficiency and secure infrastructural integrity, control costs, reduce prices, and generally shift the cost of operational inefficiencies away from consumers and towards suppliers.

It would not be unreasonable to conclude that during the extended period of state control of the generation, transmission, and distribution of electricity, the level of investment in the infrastructure was not sufficient to guarantee reasonable long-term thresholds of quality, reliability, and security. The pervasive perception is that the attempt to correct this situation, which involved transforming the state-owned utility into a regulated privatized entity, in 2001, has not produced the goods either. Jamaican consumers generally believe that the latter is largely so because monopoly strategies are shaped by profit-maximizing objectives, and in our case, abetted by an inadequate regulatory regime. Hence,

almost 20 years after the first considerations of the reform of the industry emerged from the Coopers and Lybrand 1993 study, the electricity sector in Jamaica continues to wobble uncertainly while consumers bear the burden of high prices, the country reels from its deleterious impacts and embattled Jamaicans are left with no meaningful recourse but to further debate the merits of unbundling and the introduction of competition.

The traditional view of electricity provision as a naturally monopolistic operation was predicated mostly on notions of economies of scale and scope. The vertically integrated services include generation (creating electricity from other forms of energy), transmission (transporting it over high voltage lines) distribution (conveying electricity from the transmission network to the consumer), and retailing (the commercial dimensions of supplying to consumers). As technological innovations helped to (1) reduce the limits on the optimal size of power plants which encouraged the generation of smaller units of production and altered cost structures and (2) facilitate easy integration of generated units into transmission networks, there was an inevitable revision of the primacy of economies of scale as a dominant consideration for viability. Several new models of industry restructuring emerged, which gave rise to notions of unbundling the hitherto vertically integrated processes of the value chain of the industry into contiguous segments (e.g. generation, transmission, distribution, marketing and retail supply) with greater accommodation for competition in appropriate service segments.

There are several competitive (unbundling) models; however, in the classical arrangement, generation, distribution, and retail services function under competitive market structures with supporting regulations to promote efficient access to the transmission network by wholesale buyers and sellers. Transmission infrastructure and network operations seem naturally monopolistic, as they accommodate common carriage – open access to and common use of the transmission grid – which is typically managed by an independent system operator who has the responsibility to schedule generation dispatch on merit, and maintain the physical integrity of the power network. The effectiveness of competition in the other segments is very sensitive to the regulatory regime that governs such a transmission system.

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THE LONG FLIRTATION WITH COMPETITION

In Jamaica we have only flirted with competition. First, under the instigation of the IMF and World Bank, the GOJ and JPS considered and soon abandoned the idea of unbundling generation from transmission and distribution, as a pre-condition for privatization. Then the existing electricity license (2001) made provision for private companies, Independent Power Producers (IPPs), under the supervision of the OUR, to compete for the right to increase generation capacity. However, this is competition for the market (instead of in the market), or more precisely, competition for which IPP should be the monopoly provider of the next capacity increment. The winner then negotiates a power purchase agreement (PPA), a long term contract with a 20-year price arrangement, with the JPS, which will soon own ►►

75% of generation capacity and the entire distribution network, and also control dispatch. JPS may also participate in these competitive bids and was the sole bidder and the awardee of the license to add the next 360MW of generation capacity.

Proponents of competition in our local market assert the superiority of competition over a regulated monopoly and disparage the latter as a flawed contrivance for providing incentives for efficiency. They often recite a potpourri of benefits sought or obtained elsewhere, including increased economic efficiency, better investment decisions, downward pressure on the profit margins of generators and suppliers, higher labour productivity, reduction in consumer-borne costs, more efficient use of resources, greater incentive to reduce costs, and, eventually, lower prices. The million dollar question is whether our small-scale operations and market will allow us to realize the ultimate and hitherto elusive benefit of price reduction if we introduce competition.

That is why, in Jamaica, there is some ambivalence about the merits of competition. The objectors assert that while the rhetoric of competition is powerful, the benefits are certainly not assured.

Competition, they say, in this environment is not guaranteed to produce reduced electricity price, which is our equivalent of the Promised Land. This contention derives from concerns related to the substantial investment required to support requisite power infrastructure and service, the fact that effectiveness in this sector is influenced more by cost structure than by market structure, the hidden costs of competition, and potential loss of economies of scale.

Disbelievers insist that competition in the transmission and distribution sector (in the short to medium term) will not produce the desired price results, primarily because fuel accounts for approximately 65% of the cost of electricity and generation another 15%. On the fuel side (at least with oil) the market presently favours short-term contracts with no hedging, which increases vulnerability to price volatility. On the other hand, investment in generation capacity requires the capability to secure capital through long term contracts that are typically amortizable over long periods of time (up to 20 years), and are therefore predicated on an off-take agreement

(normally secured by the future output of the facility). It is therefore unlikely for competition to attract capital in this manner.

Other opponents of unbundling also point to the absence of rigorous economic analysis to determine whether a small system such as ours with peak demand of just over 600 MWs can support a competitive market, particularly where IPPs own approximately 200 MWs under long term contracts and a JPS relative is positioned to own another 360 MWs (similarly under long-term contract). Hence Jamaica's demand would have to grow substantially to accommodate competitive generation. Even so, investments required to construct a moderately sized plant (say 120 MW, approximately \$500M) exceed the FDI flowing into Jamaica for a typical year, making it difficult to project uptake for this kind of investment in competitive markets particularly without the certainty of supply.

Opponents of competition in transmission and distribution assert that for all these reasons, a regulated monopoly (which is not allowed to exert undue influence on price setting or output, as a normal monopoly does) provides the best opportunity for economic pricing where market size is very small. But many of these opponents of competition support some degree of liberalization such as Power Wheeling, Net Billing and possibly, the introduction of an Economic Development Tariff.

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COURT RULING COULD SPUR NEEDED ACTION

Whatever the state of the debate, however, the recent ruling by Supreme Court Justice Bryan Sykes rejecting the exclusivity of the JPS licence, may very well prove to be a catalyst for terminating the endless debate and inciting genuine transformation in the sector. Justice Sykes ruled that the licence issued to the Jamaica Public Service Company (JPS) by the Minister of Mining and Energy in 2001 to provide electricity, "whether generation, distribution and retailing for the whole island" is not invalid, but the Minister does not have the authority to grant the exclusive right to transmit electricity. I am not sure whether the Justice was being exquisitely precise, but it was transmission exclusivity that he objected to. But recall from my earlier parenthetic definition of these four elements of the value chain mentioned in his judgement that transmission is the segment that many believe is least amenable to competition.

My own suspicion is that the legal wrangling in this case, which has already begun with an appeal and a counter appeal, will rage on for several years and if our fate depends on its final resolution, whenever that is, we are going "straight to hell." Our only salvation lies in purposeful, sensible, and respectful negotiations between the GOJ and the JPS that accommodate the peculiar but eminently rational interests of both; the JPS, on the one hand, as the holder of massive debt assumed as the sole off-taker and the GOJ, with the enormous responsibility to stimulate economic recovery and hope. ►►

If good sense prevails, Justice Sykes' ruling presents an opportunity for several competitive market configurations that could radically change the Jamaican electricity industry. There are two very appealing possibilities that have competitive implications: One possibility, based on research by my colleagues of the UWI Energy Think Tank involves promoting Combined Heat and Power (CHP) or Cogeneration Systems. CHP systems employ technology to trap the waste heat from conventional electrical power generation processes and convert it into useful thermal energy such as steam for manufacturing processes or air conditioning for commercial applications. These systems can have superior fuel efficiency ratios (75%-90%) compared to conventional generation technologies.

Second, CHP systems can also become the catalyst for the creation of Industrial zones, another innovation that is immediately within Jamaica's reach and represents an opportunity for implementing competitive power distribution. Industrial zones are areas in which, unrelated manufacturing and other commercial entities that usually operate separately are co-located within the same geographic area, or zone, thereby utilizing energy in efficient ways, e.g. CHP systems may be used to provide electricity, steam, hot water, and air conditioning for co-located entities and possibly recycle industrial waste produced within the Industrial Zone. This arrangement typically lowers operating cost for each organization, and may contribute to significant improvements in environmental management.

Let me be unequivocal about an overwhelming sentiment that I merely alluded to earlier. By far the most important objective facing Jamaica in this industry, immediately, is the reduction of electricity price. If we could formulate a giant electricity optimization problem, the objective function would have to be "minimize electricity price...subject to...;" all other issues in the debate would have to be incorporated as constraints. Certainly there are several concerns that we must contend with, including but not limited to:

- Increased competition in the electricity sector
- Fuel diversity and energy security
- Greater operational and extractive efficiencies

- Increasing the share of renewables and accommodating environmental objectives
- Improved regulatory diligence
- Greater domestic private sector investment/participation in the electricity sector
- Greater emphasis and awareness of energy conservation and demand-side management

But let me be true to the theme and focus of this lecture - increased competition in the sector. If we establish the most effective competitive configuration we possibly can, supported by all the famously articulated facilities such as net billing, net metering, feed in tariff, power wheeling, but fail to reduce prices to levels that can stimulate economic activity, we have done nothing but engage in wanton sub-optimization. ■

Evan Duggan is Dean of the Faculty of Social Sciences, UWI, Mona

**The article is adapted from the 2012 Shirley Playfair Memorial Lecture delivered by Professor Duggan*

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