Contrasting pathways to reform : Japan and Taiwan

Photo: Bloomberg

While considerable attention has been paid to electric sector liberalization reforms in developing countries, a simultaneous evolution has occurred in the Asian Pacific region among developed economies. In particular, two that have embraced ongoing sector reforms – albeit in a different fashion and pace – are Japan and Taiwan. Both islands are largely dependent upon imported fuel resources. **Robert Gee**, President of the Gee Strategies Group, examines the different tacks toward sector reform.

As liberalization proceeds throughout the rest of Asia, the European Union, and the United States, the structural changes made to date in Japan and Taiwan, and those being contemplated, merit scrutiny and provide a good example of the pitfalls of awaiting policy makers as they struggle to lay the foundation for tomorrow's energy needs. Sector liberalization cannot be adopted hastily. However, because of the length of time expended to develop and enact reform measures, there is a real danger that evolving market forces will eclipse the political decision-making process, rendering proposed reforms obsolete, ineffective, or untimely. In addition, reforms must be undertaken with a complete understanding of how a competitive market meets the objectives of enhancing energy security, affordable pricing to customers, and certainty for investors.

Electric Market Reforms In Japan

Japan's dependence on fossil fuel imports for primary energy stood at more than 80 percent as of 2002. Oil provided Japan with 49.7 percent of its total energy needs, coal 18.9 percent, nuclear power 13.7 percent, natural gas 12.7 percent, hydroelectric power 3.7 percent, and renewable sources 1.1 percent.

A signatory of the Kyoto Protocol, Japan intends to reduce its carbon dioxide emissions by increasing its reliance on nuclear generated electricity. Under its current ten-year energy plan, it intends to expand nuclear generation through the construction of between nine to twelve new nuclear power plants, representing 17.5GW of new nuclear generating capacity. By 2011, it intends to have nuclear represent 41 percent of the country's electric power generation capacity.

Japan's electric sector consists of five types of companies:

(1) ten vertically integrated general electric companies, each with a specific geographic service zone,

(2) two wholesale electric companies (the state-owned Electric Power Development Company or J Power, and the Japan Atomic Power Company),

(3) over fifty wholesale suppliers (which include hydroelectric generation facilities run by prefectures and other independent power generating companies)

(4) two special electric utilities, and

(5) numerous autonomous generators, comprised largely of industrial and manufacturing concerns.

The ten vertically integrated utilities continue to hold the dominant share (around 69.4 percent) of generation capacity. In addition, as of 2003, wholesale suppliers generated 14.6 percent of Japan's electricity, and the autonomous generators supplied 15.9 percent. Generally, wholesale supplies are committed under long-term contracts (minimum 10 years) executed with the vertically integrated electric utilities following a tender and bidding process.

Japan has had some of the highest electric prices of any country within the Organization for Economic Cooperation and Development (OECD). This fact has been the driving force behind market liberalization reforms.

Japan amended its Electric Utilities Industry Law three times to introduce competition for the purpose of reducing electricity prices. In 1995, it amended its electricity law to permit independent power producers to bid into the generation sector. The law was again amended in 2000 to provide for partial liberalization of retail electricity markets. Specifically, it permitted high-voltage customers (20kV or higher), with at least 2MW of connected load, to choose their supplier, representing about 30 percent of the total retail electricity market.

The vertically integrated electric power companies continue to serve as a provider of last resort for customers who do not sign a supply contract. In addition, third-party access to transmission networks was open to all suppliers by using "wheeling tariffs" established by the transmission network owners pursuant to guidelines of the Ministry of Economy, Trade and Industry (METI). Unbundling of services by vertically integrated utilities providing transmission was not required. Rather, the government deemed it sufficient for the electric companies to voluntarily account balances attributable to the various services.

Finally, in May 2003 Japan again enacted amendments to its electricity law. Among other things, these amendments provided for:

- unbundling to prevent cross subsidization of services
- creation of a "neutral organization" to oversee transmission and distribution facility development, system access, system operation and information disclosure
- abolition of "pancaking" of transmission charges
- opening of retail market access by April 2004 for high-voltage customers whose connected load is at least 0.5MW, thereby increasing retail choice to 40% of existing customers and
- full market access consideration starting on April 2007 for all remaining customers (i.e., residential) contingent upon the success of the retail program for larger customers and experiences in other countries. Nuclear deregulation will also be considered.

Since April 2005, additional reform institutions ave been created. Specifically, the Japan Electric

Power Exchange, a private, voluntary organization has been created to operate the wholesale electric power market. Surplus electricity from the vertically integrated electric power companies is traded under a forward and day-ahead spot market. The Electric Power System Council of Japan serves as the rule maker and supervisor for the transmission network, becoming the "neutral organization" required by law. Its membership includes the integrated electric utilities, the wholesale electric utilities, independent power producers and suppliers, and academic experts.

To date, the national electricity market share of the new market entrants (Power Producers and Suppliers or PPS) has amounted to only to 7.2 billion kWh as of fiscal year 2004, or less than 1 percent of Japan's total electric energy demand (1,019 billion kWh). For the deregulated market, the PPS's share is approximately 2.3 percent as of February 2005.

Electric Market Reforms In Taiwan

In contrast to Japan, Taiwan's electric sector appears more simplified. However, this simplification belies the political complexity that thus far has thwarted significant progress toward liberalization.

Taiwan has only one vertically integrated electric utility: the state-owned Taiwan Power Company (Taipower). Although it enjoys a service franchise monopoly throughout the entire island, its generation monopoly ended in 1994 when the government initially authorized independent power producers (IPP's) to provide up to 20 percent of the islands electricity. IPP's currently have been permitted to provide 30 percent of the country's generation. All IPP's are required to execute power purchase agreements with Taipower, which distributes the power to the customers. At the end of 2002, Taipower controlled a total installed capacity of 31,915 MW, of which 69 percent was thermal, 16 percent was nuclear, and 14 percent was hydropower, according to Taipower's published figures. Like Japan, the island is devoid of indigenous natural fuel resources and is increasingly concerned about energy security.

Over the last 50 years, Taiwan has experienced strong demand growth for electricity, averaging over 10 percent per year. Taipower's inability to build sufficient capacity to keep pace with demand has driven consideration of market liberalization. At times, its reserve margins have varied from 9 to 14 percent. A new electricity law has been under consideration in Taiwan's parliament for a number of years, but has stalled. Under the basic framework, Taipower would retain a monopoly on transmission and distribution, but generation assets would be broken into several companies. The government envisions half of these generation assets to be privatized. There are no current plans to liberalize the retail electricity markets.

The move towards market liberalization and privatization of Taipower, which was to have occurred in 2001, has slowed for a variety of reasons. The enabling legislation has been reworked by the governing party (Democratic Progressive Party or DPP) which was re-elected to power in 2004. In addition, the DPP is pressing to increase the liquefied natural gas share of Taiwan's power generation to one-third by the year 2010, and has opposed efforts to complete a fourth nuclear generating unit (this opposition was rebuffed by the courts). In addition, the DPP and the opposition party (the Kuomintang or KMT) have disagreed over whether liberalization should extend to electric transmission and distribution networks.

Most observers believe no significant progress will occur until the 2006 – 2008 timeframe.

In the meantime, because Taipower has not raised rates since 1983, it continues to sell electricity at a loss, largely because of surging coal prices. For the first five months of this year, Taipower lost NT$4.18 billion (US$131 million) in pre-tax income, compared with a deficit of NT$1.37 billion a year ago. The company, which saw NT$6.9 billion in revenue last year, is expected to report a loss of NT$4.7 billion this year. Taipower not only has not raised prices, it has reduced them. Specifically, in the past 23 years, Taiwan's electricity rates have been cut by 26 percent, in 11 downward adjustments. If consumer prices are also considered, current electricity rates are 50 percent lower than they were 23 years ago.

Acknowledging Taipower's economic plight, its recently appointed chairman, Morgan Hwang, was quoted as admitting that comparatively low electricity fees cause improper use of energy. However, he expressed reluctance to raise rates in the summer since "[it] was not a good time . . . as users already pay more."

More recently, it has been reported that Taipower has drafted a proposal to seek government authorization to adjust prices when fuel costs increase or decrease by 1 percent to 1.5 percent.

An Assessment of the Path Forward

Japan

While Japan and Taiwan share a common feature of dependency upon fuel imports to sustain power generation, their approaches toward liberalization differ markedly.

Between the two, Japan has embarked on a much more elaborate plan to privatize and liberalize its market, embodying many of the features found in other developed countries in the Western Hemisphere to bolster a competitive wholesale power market, such as the creation of an independent grid monitor, a power exchange, and a forward and spot market. What it lacks, however are sufficient market players to create a competitive, robust liquid market to maximize trading opportunities.

New competitive market entrants currently constitute a very small percentage of existing power generation. They are required to secure their electricity from existing power plants, directly from the vertically integrated companies through bilateral contracts, or from the Power Exchange. Building new generation capacity in Japan is time-consuming owing to the difficulty of meeting strict environmental and siting concerns. Although the number of competitive market participants could eventually grow if one were to include existing wholesale suppliers currently contractually committed to the vertically integrated utilities, whether this occurs remains to be determined. Additionally, nothing in existing law would mandate or induce the vertically integrated companies to divest their generation assets.

Also potentially limiting competitive power opportunities will be Japan's stated plan to grow its nuclear generation sector to constitute over

Photo: Bloomberg

40 percent of its entire generation portfolio within the next decade. Although Japan intends to include the potential deregulation of nuclear power in its next scheduled deliberation of market liberalization in 2007, it is highly unlikely that this discussion would spawn a new merchant class of nuclear generation.

Most recently, Japan's nuclear sector has been troubled by a recent scandal regarding falsification of safety practices, and has not adequately resolved the issue of long-term disposal of spent nuclear fuel (as in the U.S.). These uncertainties will likely heighten operational risks and adversely impact the financial competitiveness of this sector. If Japan is determined to proceed with new nuclear capacity, it will be required to resolve how the market will allocate spent fuel costs or have the government underwrite them. If it prefers the market to absorb them, this may require captive or non-market participating customers (such as households) to absorb a higher than reasonable share of costs. If the government assumes this cost, this could undercut the goals of a competitive market since it perpetuates subsidies. Either outcome is problematic.

But not all is necessarily negative in

Japan's new market-oriented future. Since the introduction of limited retail competition, power prices of the vertically integrated utilities have moderated and in some instances have been slightly reduced, demonstrating the strength of downward competitive price pressures. Gas, steel, and oil companies are now poised to enter the power market, heralding a deep-pocketed class of potential new players who could possibly spawn a genuinely competitive market.

Finally, Japan's decision to proceed initially with the liberalization of the non-residential retail market will give it valuable experience prior to deciding whether and when to confer the same opportunity to residential load, giving it ample time to fine-tune its program prior to delving into an area that has proven most vexing to other countries (such as the U.S). This prudence is well justified, and could prove the difference in whether its experiment with a retail residential program ultimately succeeds.

Much will ride on Japan's experience over the next several years to determine whether market liberalization lowers prices while achieving reliability and energy security goals. While its choices thus far have not been easy, a more difficult path may lie ahead.

Taiwan

The most noteworthy of Taiwan's liberalization measures is that it decided a decade ago to authorize the market entry of independent power producers. This sector now constitutes 30 percent of the island's generating capacity. As a consequence, private sector, power production operating norms have had an opportunity to become economic and engineering benchmarks against which to judge the viability of state-owned generation in a competitive market. Unfortunately, this represents the high water mark thus far in Taiwan's quest toward liberalization.

Aside from liberalization, Taiwan's most urgent problem is simply rationalizing supply with demand. It currently suffers from tight reserve margins because of excess demand, but such demand is fueled by institutionalized, subsidized pricing by Taipower. So long as Taipower continues its practice of charging below-cost prices for delivered power, heightened demand will continue to threaten a demand/supply imbalance. Unless these circumstances can be rectified – whether in a state run or privatized environment – its electric sector will fall deeper into a downward spiral, and its power crisis will intensify.

Moreover, even assuming that Taiwan ultimately is able to achieve a political consensus and adopt a liberalization scheme resulting in economic pricing of delivered electricity services, it will be required to undergo a pricing transition phase to insulate its ratepayers from "price spikes" or "rate shock" that could be highly disruptive to its manufacturing and commercial sectors, in addition to being politically incendiary for its residential customers.

The most immediate action recommended, given the current political impasse in adopting any of Taiwan's planned reforms, is to have Taipower implement, during the interim, a rate transition scheme to have its prices move closer to costs. This would have two immediately impacts. First, it would discourage excess consumption which drives the need for more generation capacity. Second, it could facilitate movement towards market liberalization in a manner that would be least disruptive in the future. In fact, its recently reported intention to seek government authorization to adjust rates, within a band, to reflect increases or decreases in fuel costs moves in that direction. However, until its prices also fully reflect recovery of all fixed costs of service, it will simply postpone that day when its customers could feel a dramatic impact when moving off of subsidized electricity services.

Taiwan is looking to partial privatization of state-owned generation as a potential remedy. But privatization alone – at least of the type contemplated by Taiwan – is no panacea. Specifically, its plans still call for state ownership of distribution. So long as this remains the case, Taiwan runs the risk that "political" (i.e., subsidized) rather than economic pricing of services could occur even with a positive or negative fuel surcharge as currently contemplated. No matter how rational its conduct, Taipower remains a state institution, and thus is susceptible to the political pressures which that status engenders. Strict adherence to, and enforcement of, its own self-implementing cost standards could still be problematic and politically dicey.

Finally, having a state-owned distribution company determine whether and to what degree costs are flowed through to retail customers, could also cloud the revenue outlook for prospective investors seeking to participate in a more widely privatized generation market. Because future investors may be unwilling to trust the state distribution company to assure power sellers of a sufficient cash flow with which to meet purchased power obligations, capital investment could be dampened.

In view of these criticisms, should Taiwan abandon its effort to liberalize its electricity sector? Absolutely not. Rather, it should be lauded for acknowledging that it has a structural problem, and for having the courage to explore sector reform as the only plausible remedy. But it should also recognize the inherent limitations of the proposal currently on the table, and be willing to modify and expand it if it genuinely desires to harness market forces to its long-term advantage.

Conclusion

Although both Japan and Taiwan have embarked on sector liberalization, only Japan has been able to point to significant progress to date. Yet it too has unfinished business, and has much to learn from its market experiment. This is no surprise. Given the criticality that electricity plays in the economic lifeblood of all economies, sector reform cannot be rushed. In the same token, however, momentum can be slowed by sharp disagreements over energy policy, and result in political sclerosis, as in Taiwan.

Any attempts at reform must also recognize the need for cost-based rates, policy certainty and stability, and clear and firm decisions for investors. Rushed, incomplete or patchwork reforms – without consideration of long-term consequences – not only are ineffective, but could result in disastrous economic consequences, a lesson learned after the fact by the State of California. Hopefully, this will be a circumstance avoided by both Japan and Taiwan. In any event, the sector reforms of both deserve continued observation for the next several years, given the importance each plays not only regionally, but to the global economy.

Gee Strategies Group LLC intends to watch these future reforms closely, and provide investors and business participants with strategic advice and tools to judge these evolving market developments.

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