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TLG on

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Getting There From Here: Enhancing Economic Regulation In Asia

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TLG on is The Lantau Group's in-house journal addressing current energy issues, and their policy and economic implications, facing the Asia Pacific region.

Editors: Leo Lester and Mike Thomas

Please contact Leo (llester@lantaugroup.com) for more information on the series, or if you would like to submit an abstract or manuscript for consideration.

Most energy sector regulatory bodies in Asia are little more than a decade old.[1] Whereas that may seem like a long time, formal economic regulatory methodologies have taken time to develop and implement, and the institutional experience in the region pales in comparison to that of similar bodies in some other countries. As a practical and commercial matter, economic regulation in Asia is still in its early days.

In this edition of *TLG On*, we consider some of the persistent challenges facing regulators in Asia together with some relevant emerging regulatory trends and opportunities from experience around the world.

Key Points

- Regulators in Asia may draw on the experiences – both good and bad – of countries with a longer history of economic regulation. However, not all regulatory innovations travel well. Some are tied to specific features, conditions, or experiences that are difficult to replicate. When adopting insights from other markets, local context matters.
- The principle of Financial Capital Maintenance (FCM) - the idea that investors require a reasonable opportunity to recover their invested costs plus an appropriate return - lays the essential foundation of an effective system of economic regulation that provides incentives for efficiency, performance improvement, and investment. Without FCM, there is little discipline in regulation to tie together decisions about what is required, who makes the associated investment, and how the costs are recovered. Many big issues facing energy regulators in the region, such as phasing out subsidies and enhancing price signals, as well as dealing with changing consumer and policy preferences for fuels and technologies, should be considered in this context.
- Some of the innovations from elsewhere that may be fruitful to explore further include: more flexible adjustment mechanisms for price controls; a greater focus on output regulation; and improving transparency and customer engagement in regulatory decisions.

1 An exception is the Philippines, which has had a utility regulator since 1936 in the form, initially, of the Public Services Commission, and subsequently the Board of Power and Waterworks (1972-77), the Board of Energy (1977-87), and the Energy Regulatory Board (1987-2001).

Getting the Foundations Right

Financial Capital Maintenance rests on the idea that investors expect to recover costs plus profit.

A foundational principle for economic regulation of regulated utilities is that of expected Financial Capital Maintenance (FCM): the idea that investors in a regulated or market investment must ***expect*** to recover their invested costs plus an appropriate return or they will not (or should not) invest.[2] FCM applies most clearly in the case of commercial investors, but it has implications for regulation of government-owned utilities as well. Failure of a regulator to heed the principle of FCM in the setting of tariffs of government-owned entities ultimately implies a hidden subsidy from taxpayers. In Asia, however, not all regulators are empowered or able to give FCM the consistent, rigorous focus it requires. Final tariff approvals often do not come from the economic regulator, but from a more politically sensitive ministry, introducing risk that can undermine the effectiveness of regulation over time.

In countries where the utility sector started as a government department, advanced regulatory regimes globally have evolved to be independent in no small part so as to allow politicians to step back from bearing direct responsibility for utility tariffs and other related decisions. In countries where the utility sector has always been investor-supported, regulatory regimes have had to embrace FCM from the beginning or risk insufficient investment. And some countries seek both to reduce the cost to government of hidden industry subsidies and also continue to invite increased private sector participation in the industry. A brief outline of the emergence of electricity regulators in Southeast Asia is shown in Table 1.

Table 1: The Emergence of Electricity Regulators in Southeast Asia

Country	Emergence of Electricity Regulator
The Philippines	The ADB-sponsored restructuring of the electricity sector following the Asian Financial Crisis led to the passage of the Electric Power Industry Reform Act (EPIRA) of 2001, which in turn led to the creation of the present-day Energy Regulatory Commission (ERC) and the Philippine Wholesale Electricity Spot Market (WESM).
Singapore	The Public Utilities Board, which formerly served, among other things, as the government-owned electricity provider, was completely restructured in 2001 with the formation of Singapore Power. This was then followed by the formation of the Energy Market Authority (EMA) as a separate statutory regulatory body in preparation for even further liberalisation and formation of the country's sophisticated electricity wholesale and retail markets.
Malaysia	Energy Commission established in 2001. The Energy Commission (Suruhanjaya Tenaga) of Malaysia has jurisdiction over Peninsula Malaysia and the state of Sabah. In the state of Sarawak, electricity regulation remains within the state's Ministry of Public Utilities.
Cambodia	Electricity Authority established in 2001 as a separate, specialist regulatory body.
Vietnam	Electricity Regulatory Authority of Vietnam (ERAV) established in 2005.
Thailand	Energy Regulatory Commission (ERC) established in 2007.

Source: TLG Analysis

2 Expectations must be reasonable, but not necessarily without risk. An investor in a highly competitive business may do so under the expectation that the investment is rational but on the understanding that there remains the risk of losing money. FCM does not mean "risk free", but rather that the associated risks are properly reflected and accepted. The colloquial working definition of FCM is the "NPV=0" rule. The net present value (NPV) of revenues expected to be received as a result of a capital investment should equal zero, indicating that the present value (PV) of the revenues received (taking into account the appropriate financing costs of debt and equity) should exactly equal the PV of any costs. In short, under the NPV=0 rule, the expected value of revenue (including profit) to be received equals the expected value of costs to be incurred.

FCM enables enhanced regulation because costs and risks become clearer. Regulators can then allow reasonably efficient operators to earn reasonable returns.

The simplicity of FCM lies in the fact that, ultimately, costs have to be recovered from somewhere. FCM, as part of sound, independently-administered regulation, enables cost-related risks to be seen more clearly, so that they can best be measured, allocated, and managed.

When evaluating the performance of new or evolving regulatory regimes in Asia, a key starting point is whether, and to what extent, the FCM principle underpins regulatory practice. Regulators are normally given a duty to ensure that a reasonably efficient operator can earn a "reasonable" return, usually taken to mean its cost of capital. Once FCM is accepted as the foundation, the interesting work to sharpen and shape incentives, allocate risk, and promote credibility can begin.

In the following sections, we touch on some of the most vexing regulatory challenges in Asia, as well as providing a glimpse at a few relatively new concepts in applied regulation that will likely receive increasing attention in the coming years.

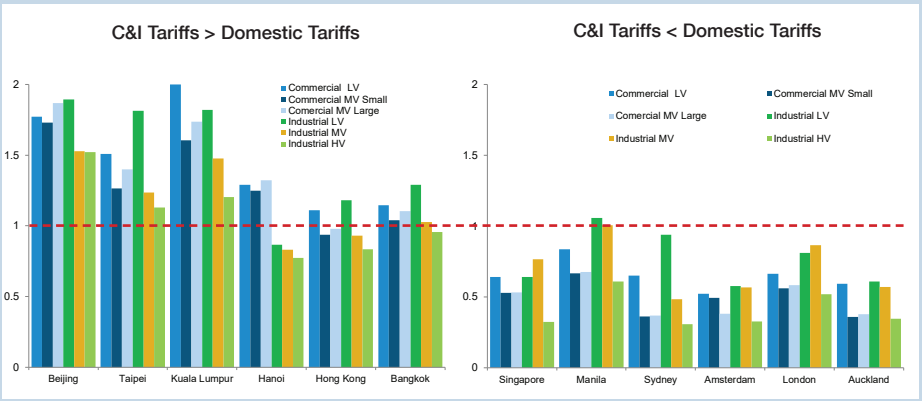
Reducing Cross Subsidies

One of the most challenging aspects of regulation in Asia concerns how to move from where things are to where things could be – at least from an economic regulatory and FCM perspective. The electricity sector in most Asian countries started as government departments or government-owned entities with relatively little formal economic regulation. The result has been a mixed bag of subsidies, cross-subsidies, and ad hoc practices governing planning, tariff approvals, and development of incentives or other more specialised regulatory mechanisms.

Often the hardest part is not recognising existing problems, but rather sorting out how exactly to fix them. Figure 1 highlights some of the embedded cross-subsidies that exist in tariff structures in Asia. The vertical axis of the graph shows the ratio of commercial and industrial (C&I) tariffs to domestic (or residential) tariffs. A ratio of 1 – shown as the dashed red line – indicates that the stated commercial tariff exactly matches the corresponding residential tariff. Generally, the cost-to-serve per kWh is lower for larger customers compared to smaller customers – for a variety of reasons – but tariffs in Asia often reflect the opposite, collecting more revenue per kWh sold to larger customers than from smaller ones.

In contrast to underlying economics, Asia has many regulatory regimes where cross-subsidies raise the price per kWh for large consumers to discount residential customers.

Figure 1: Cross-Subsidy Examples



Source: TLG Analysis

The starting point for electricity tariffs in many Asian countries embodies significant overall subsidies and substantial cross subsidies that make it difficult to establish a viable platform for economic regulation without some sort of "big bang" approach to pricing or broader regulatory reform. Thus far, Asian countries have taken a more incrementalist, if not ad hoc, approach to reform.

Enhancing Price Signals

With growth rates still amongst the highest in the world, a major thrust of electricity sector oversight in Asia in the past has been the challenge of keeping up with demand growth. Many countries solved this challenge by introducing Independent Power Producers (IPPs) and opening up opportunities for more stakeholders to participate in the development of power generation capacity. Fewer Asian countries face financially-based chronic or systemic electricity supply shortages any more, though planning and approvals can still be massively delayed leading to unmet demand in countries like Vietnam and Indonesia.

High growth rates have made keeping up with demand the key challenge, with active management of electricity use proving hard to incentivise efficiently.

The availability of new technologies for metering and providing information to customers about usage – together with increased awareness of energy efficiency and sustainability objectives – has led to an explosion of work in relation to how utilities and electricity suppliers should interact with their customers. Active management of electricity usage has proven difficult to incentivise cost-effectively because the value proposition – large when aggregated across millions of customers – is small for most typical customers. With the rising cost of meeting future sustainability objectives, and the greater promise of technology and information systems, interest in energy efficiency and more effective demand response has increased. At the same time, advanced metering infrastructure costs money.

Similar issues arise for virtually all technology-forward policy objectives. Implement now? Implement widely? Wait until costs fall or features increase further? Deploy selectively? Run pilots? How should they be designed? Are the benefits worth the cost? Who should pay? Globally, one of the arguably more disappointing insights emerging out of broader regulatory and competitive market reforms in electricity has been just how difficult it is to achieve successful retail competition for all customers. Efforts, resources, and outcomes for domestic customers have often been misaligned, with costs greater than benefits, significant additional efforts required to compel switching or generate competition, and increases in customer complaints and confusion. Customers may want choice, but not necessarily the type of choice competitive retail electricity markets have provided. Sorting out the insights from the more insidious complications and frustrations remains an ongoing challenge.

The Rise of More Flexible Adjustment Mechanisms

Regulators in Asia, building on best practice globally, have tended to set forward-looking price/revenue caps, in which companies get fixed opex and capex budgets and are incentivised to under-spend against these allowances, subject to still delivering prescribed service quality standards. When setting such controls, there is a question about how just how “fixed” allowances should be. The direction of regulatory thinking is more and more that when factors that are beyond the scope of the utility’s control change, price/revenue caps need perhaps some flexibility if regulators are to be able to adhere to the principle of FCM.

In addition to scheduled reviews, flexible automatic adjustment mechanisms may be needed to prevent factors becoming seriously misaligned with regulatory objectives.

Some types of changes, such as changes in fuel costs, are commonly handled outside the review cycle through automatic adjustment mechanisms. Such adjustments can be applied monthly, quarterly, half-yearly, or anytime that a fuel index movement exceeds some triggering threshold. In Asia, countries such as Singapore, Japan, and the Philippines have regular fuel cost adjustments, but others rely on less frequent, more ad hoc, or less certain processes. Some, such as Malaysia, have only recently adopted regularised fuel cost adjustments, and the challenge at present is to demonstrate the commitment of policymakers to allowing the regulatory regime to work as designed.

Building on this experience, regulators in a number of countries have recently begun to recognise that adjustment mechanisms can be applied to a whole range of other exogenous cost factors. An especially interesting emerging example in this area is the "adjustable" cost of capital now being adopted by some regulators. Getting the profit level right for a regulated company is never an easy task, but the job has been more difficult than ever since the 2008 global financial crisis given greater appreciation of financial market volatility. Given core agreement as to the structure and nature of the components that comprise the cost of capital, a flexible approach to exogenous factors can be more compatible with FCM over time – particularly if it is seen as desirable to lengthen the time period between formal regulatory reviews to reduce regulatory burden or strengthen other efficiency incentives.

By way of an illustration, regulators in the UK and Australia have discussed building adjustment mechanisms into price caps, which would allow, for example, revenues to adjust when market interest rates move higher or lower. The rate of return guidelines issued by the Australian Energy Regulator (AER) in 2013 state that the regulator, after an initial transitional period, will set the allowed cost of debt as the ten year trailing average of a published index of the secondary market yields on BBB+ rated debt with a term to maturity of ten years. The average is based on an equal weighting for each daily reading in the ten year period, and is updated on an annual basis. The revised cost of debt is then used in the revenue calculations of the regulated networks.

We are yet to see such thinking really take root in Asia. But the approach could arguably help avoid situations in which returns would otherwise be manifestly too high or too low and yet the next scheduled regulatory review is several years away (if scheduled at all).

Focus on Outputs and Aggregates Rather than Inputs and Line Items

Recognising that regulation is meant to mimic competition, some regulators have started to focus more on maximising the value of the outputs that companies deliver. In competitive markets, consumers are mainly concerned about the prices which they pay and the quality of the service or product which they receive. In regulated sectors, this shift from inputs to outputs involves a commensurate shift in regulatory philosophy and a recognition that utilities can take many actions that cannot be prescriptively established by reviewing cost inputs but which influence value to other stakeholders.

Financial incentives can be used for a range of service metrics to better mimic a competitive market.

As part of this shift in focus, it is noticeable how willing some regulators are nowadays to put financial incentives around a range of service metrics, through which companies earn financial rewards if they achieve more for customers or suffer financial penalties if they perform badly. Incentive schemes of this type act, in effect, as a more flexible, real-time funding mechanism for service improvement. Rather than (have to) mandate a defined set of projects/activities at each price review, a regulator can attach financial value to a 'unit' of service improvement, and encourage the regulated company to take any action that it can think of to collect on these rewards.

For example, the UK energy regulator, Ofgem, has adopted an approach to price control regulation for monopoly electricity and gas networks known as "RIIO" ("Regulation = Incentives + Innovation + Outputs"). This provides significant financial rewards (or penalties) based on performance against a wide range of service quality metrics, including interruptions, complaints, customer satisfaction, connection times, and stakeholder engagement.

Relatedly, a focus by UK regulators on "totex" (total expenditure) reflects the idea that there is a trade-off between capital expenditures and operating expenditures over time and that regulators should challenge, benchmark and place incentives around a firm's

Incorporating a more holistic approach to allowed expenditures and environmental targets can help to raise efficiencies.

total expenditure, rather than compartmentalise costs into separate opex and capex silos. Another focus area is whether specific projects can be defined and packaged in ways that allow them to be tendered competitively as discrete offerings. For example, Ofgem has proposed in the UK that large investment projects (with a value of £100m or more) should be opened up to competition. Also, constructive use of tendering processes for defined projects may enhance credibility of regulation by helping to establish that approved costs are reasonable. Tenders are a not inconsequential activity: increasingly regulators must be able to design, critique, monitor, review, and administer tender processes.

As rates of growth of electricity demand slow down throughout Asia, we see the focus of regulation and utility investment in Asia shifting from "how to keep the lights on" to "how to manage costs" and, even, "how to incorporate new environmental objectives?" These shifts introduce new challenges. European and US utilities face virtually no electricity demand growth. Decisions largely revolve around upgrading older assets (and thus how to make more nuanced decisions about when and to what extent to replace or upgrade older facilities), how to manage compliance with environmental standards (upgrading, retrofitting, shutting down), and how best to meet more sophisticated customer needs. In contrast, price cap regulation in most Asian countries comes with far fewer complicating or sophisticated 'bells and whistles' with the associated concern that perhaps regulation in Asia does not quite go far enough. What is needed is not duplication of other regulatory models per se, but appropriate evolution and clear understanding of the costs, risks, and implications of alternative approaches.

Transparency and Customer Engagement

Transparent negotiations build trust in the regulator; information disclosure can enhance credibility and aid broader participation.

Perhaps the stand-out feature of economic regulation in most countries in Asia is how little of the regulatory debate is conducted in the public domain. Regulators in the UK, Australia, New Zealand and the United States are punctilious about publishing their work, and their websites act as an important repository of information. In comparison, it can be difficult for an outsider to understand how companies in Asia are regulated, or to know what the current topics of conversation between the regulator and the regulated company are.

There is always some short-term advantage to privacy in decision-making. It is far easier to conduct and conclude a bilateral dialogue with a regulated company away from the public gaze. Yet, over time, trust may either be eroded or may fail to become well established. A newly formed regulatory body may have few ways to demonstrate how it makes decisions if it pursues a less consultative mode of operation. On the other hand, consultative processes can be more expensive and lengthy. They also tend to be more difficult and less forgiving given the many voices of stakeholders with something of value at stake.

A key question that will gain importance over time concerns what level of regulatory disclosure, information on performance, and rationale for decisions will be made available given the importance of consistency, precedent, and credibility to a regulatory regime that robustly achieves FCM. Information disclosure on the order of what is available in many developed markets differs substantialy from common practice in Asia. From an investor perspective, information disclosure can be crucial to evaluating opportunities and measuring risk. From a managerial perspective, information disclosure and publication of detailed support for regulatory decisions can inform how best to participate in the regulatory process and how to prepare for future regulatory hearings. Experience in Asia is highly diverse, with varying degrees of attention to publishing reports, soliciting and publishing comments, holding hearings, setting deadlines, collecting data, or even utilising third-party expertise.

A related topic gaining prominence in economic regulation in places like the UK and Australia in the last few years concerns the appropriate extent and nature of customer engagement. Stephen Littlechild, the former UK Treasury economist and energy regulator has written that "…the conventional approach to setting price controls is a painful and costly process that does not necessarily lead to the best outcomes for customers or companies – or for regulators. There is a growing feeling that there must be another and better way, involving more customer engagement with the prospect of some form of negotiated agreement that can be proposed to the regulator."[3]

FCM on its own will not deliver legitimacy; customer engagement is important in promoting customer interests.

This is not so much about FCM per se, but about acknowledging that there are other regulatory objectives that sit as importantly alongside FCM; perhaps chief among them, the importance of maintaining streamlined and credible processes that give legitimacy to regulatory outcomes in the eyes of stakeholders.

There are two main layers of thinking. The first is that utility providers shouldn't think that they are in a position to impose top down product specifications, service quality and investments. Instead, they should be responding much more to identified customer requirements, just like other firms in the wider marketplace that are supplying competitive services. This necessarily requires engagement with end users.

The second is that regulatory outcomes may be seen as more 'legitimate' if customers have been involved throughout key aspects of the decision-making process. In this way of looking at the world, regulators are only capable of promoting customers' interests if they are properly informed about what those interests are by customers themselves – ideally as obtained through a process of company-led engagement, as above. UK regulator, Ofgem, even offers a specific "Stakeholder Engagement Incentive" within the performance incentive scheme for regulated businesses, with financial bonuses for those companies judged to be effective in engaging customers and other stakeholders.

Conclusion

If one need not worry about recovering the cost of investments made, then regulation can be as arbitrary as dictating tariffs by fiat, paying for investments using taxpayer funds, or running a utility without particular concern about maximising efficiency. It is the fundamental constraint imposed by the FCM principle that that ties everything together. Regulation cannot evolve materially unless the basic FCM framework is robustly in place.

Once FCM is firmly established as a regulatory principle, the next step is to focus on allocating risk appropriately and identifying ways to create appropriate incentives. Many regulatory design insights from other countries can then be tapped. Without FCM, however, such additional regulatory innovations become a bit like shipping ice cream without ice. To go through all the motions, but fail to attend to an essential regulatory requirement cannot be expected to achieve a satisfactory result.

Not all innovations travel well. Asia may not benefit from blind copying; a better approach may be to consider the objectives and design appropriate mechanisms.

When adopting insights from other markets, local context matters. Not all regulatory innovations travel well. Some are tied to specific features, conditions, or experiences that are difficult to replicate. Often the best way forward is to carefully consider what is desired to be achieved, and why it is believed it can be achieved, and then design a corresponding mechanism or arrangement. Most regulatory design combines careful attention to four things:

- Incentive design;
- Availability of relevant information to assess outcomes;

3 Utilities Policy, Volume 31, December 2014, pages 152-161.

- Development of an appropriate process and mechanism; and
- What review or challenge or exception is possible in the event that the situation changes materially or in the event that one or another party is aggrieved.

The typical regulatory regimes found in Asia are still at an early stage in most of these areas. That said, highly refined/innovative regulation does not necessarily achieve materially more than basic regulatory mechanisms and approaches. The case for more innovation in regulation is built on the ability to incrementally improve upon an existing arrangement. Often such incremental improvements are situation-specific. It can be much better to start with basic regulatory approaches, ensure the associated processes are administered effectively, confirm that the principle of FCM remains robust, and then and only then, begin to introduce further refinements.

Amongst the most interesting refinements are those related to identifying automatic ways to adjust parameters that naturally should adjust as market conditions change – relieving regulatory burden and enhancing regulatory effectiveness. Fuel cost adjustment mechanisms fall into this category, but so too might mechanisms that adjust the cost of capital to reflect changing market conditions over which neither the regulator nor the regulated utility have control, and most regulatory regimes require some form of cost imbalance tracking and pass-through arrangements.

Other important questions concern the level of stakeholder engagement and the amount of information about regulatory decisisions and industry performance that are made available. Trends in all of these areas tend to favour increasing transparency to support greater participation and engagement, which will help to ensure that outcomes are soundly-based and have wide acceptance among all stakeholders.

About the Authors

Mike Thomas
Partner
mthomas@lantaugroup.com
+852 9226 2513

Mike Thomas has advised energy sector stakeholders on sensitive regulatory, commercial, and strategic matters for over 25 years. He is an expert in the rigorous analysis of energy sector decisions including: how or whether to regulate; how and when to rely on market forces; and what value to place on opportunities and risks. Prior to co-founding The Lantau Group in 2010, he headed the Asia Pacific Energy & Environment practice of a global consulting firm. Mike has an MPP from Harvard Kennedy School and a BA in economics from Carleton College.

John Earwaker
Director, First Economics
john_earwaker@first-economics.com
+65 8382 5684

John Earwaker is Director of First Economics and a Special Advisor with The Lantau Group. He has worked for more than 20 years on the economic regulation of utilities and infrastructure, primarily in the UK and in Singapore and Malaysia. John takes a particular interest in incentive-based, price cap regulation and is currently involved in a number of ongoing periodic price reviews. He holds an MA in Economics from Cambridge University and an MSc in Economics from the London School of Economics.

Mark Clifton
Principal
mclifton@lantaugroup.com
+852 9868 0696

Mark Clifton has more than 20 years of experience in the economic regulation of utilities. Prior to joining TLG, Mark worked in the Philippines as an independent consultant where he undertook an assignment for the Asian Development Bank that included studies of electricity regulation in several countries across ASEAN and the Pacific. He was previously Director of Economic Regulation, Regulation and Supervision Bureau, for the Water and Electricity Sector, Abu Dhabi, UAE. Mark holds a BA from Oxford University, UK, and an MA from Yale University, USA.