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The England and Wales Electricity Model— Option or Warning for Developing Countries?

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In the late 1980s and early 1990s, the England and Wales power supply industry underwent the most radical transformation ever experienced by such an industry. It went from being a state-owned, state-controlled, integrated structure to being a privately owned, autonomously regulated, unbundled structure. This change happened too recently to allow unequivocal judgments about the suitability of the England and Wales electricity model (the E&W model) for developing countries. But experience with the model has generated some useful options and warnings for power sector reform in developing countries, even though the characteristics of their power markets differ substantially from those of the England and Wales power market.¹ Some of the lessons arise from innovations in the E&W model. But the demonstration that such a radical model can be introduced is also setting a challenging example for other countries.

Innovative features and demonstration value

Many of the features of the E&W model typically viewed as innovative were first introduced in other countries. The misperception probably arose from the combined impact of the many radical changes that occurred in the reform of the England and Wales power market.

The three truly innovative features of the E&W model are price-based competition in the bulk supply market, price-based regulation for franchised services through caps on average revenues, and a structure giving ownership and operation of the transmission network to an entity that is separate from generators and distributors in order to ensure open access to the network.

Important features of the E&W model that other countries pioneered include the following:

- Unbundled supply systems, with many wholesalers and retailers serving a power market (Finland, the Netherlands, Norway).
- Competition in the wholesale market (Chile, but cost-based rather than price based).
- Competition through periodic bidding for long-term contracts to supply distribution companies and large power users through independent power projects developed with limited recourse financing (the United States, following passage in 1978 of the Public Utility Regulatory Policies Act).
- Formal sector regulation (the United States, but regulation of profits by multisectoral public utility commissions that control prices; the E&W model uses price caps set by a single regulator for the sector).
- Private ownership of power suppliers (Finland, the Netherlands, Norway, the Philippines, the United States, Venezuela).

The E&W model is important for countries contemplating power sector reform because it demonstrates that a package of radical reforms to stimulate competition is a plausible alternative to the traditional European state-owned, integrated structure and to the rate-of-return-based, investor-owned utility model developed in the United States. It is also an alternative to the Chilean model for countries that want to move toward competition in their power markets.

The demonstration effect of a successful model is easily underestimated. In the 1940s and 1950s, developing countries generally modeled their power sectors on that of their main partner among industrial countries (Britain, France, the United States). In the 1980s and 1990s, the





Chilean model has been sweeping Latin America (Argentina, Bolivia, Colombia, Peru). Also in the 1990s, the independent power projects approach to attracting private investment has been spreading across Asia (China, India, Indonesia, the Lao People's Democratic Republic, Malaysia, Nepal, Pakistan, the Philippines, Thailand, and, recently, Vietnam) and Central America and the Caribbean (Guatemala, Honduras, Jamaica, Panama), although with less competition than in the United States. Using models pioneered in France, Francophone Africa (Côte d'Ivoire, Guinea, Senegal) has been experimenting with privatizing utility management under contract.

Now the United Kingdom has entered this competition of models with one that is more radical than the others. The model was made politically possible by the market liberalization in the United Kingdom during the 1980s, and technically feasible by the explosive growth in computing power and the dramatic decline in computing costs. This model offers the most sustainable long-term benefits because it gives the strongest efficiency incentives to suppliers. But it is also risky, especially for developing countries, because the strong incentives have to be regulated firmly, impartially, and transparently to ensure that they remain consistent with the interests of consumers and society. This high-risk but high-reward option has already attracted serious interest in such countries as India (Orissa State), Pakistan, Poland, and Ukraine, though it will require some adaptation to local situations, notably in the dispatch and pool trading arrangements.

Key lessons

Experience with implementing and operating the E&W model yields six general lessons for power sector reform. First, it shows that radical unbundling is feasible—that generation, transmission, and distribution can be separated from one another even in power sectors that did not adopt this structure from an early stage of development. Several countries have recently unbundled their power sectors, starting with

England and Wales and including Argentina, Bolivia, Hungary, Peru, Poland, and Ukraine. Thus, there is a sufficient track record to provide assurance that unbundling is possible while still ensuring coordination among power system components and maintaining security of supply to users. But it is also very important that competition be introduced in the power market by structural reforms at the start of a reform process, rather than by relying later on regulatory interventions to reduce the market power of the largest generating companies, as occurred in England and Wales.

Second, private financing of power investments in a competitive market is feasible in a sound business environment. The key is to ensure that private developers carry the risks that they can manage, and that government guarantees are limited as much as possible to sovereign risks.

Third, power sector reform can yield huge productivity gains, particularly through dynamic efficiency gains under competitive pressures. These gains have therefore appeared earliest in the England and Wales wholesale power market, where competitive entry has been easiest. But regulators have difficulty making producers pass on some of their productivity gains to franchised electricity consumers through lower prices without creating undue uncertainty for investors (similar issues are arising in Argentina and Chile). Those who lose from productivity gains and other consequences of reform, such as displaced workers and subsidized power consumers and primary energy suppliers, have to be dissuaded from undermining the reform process (for example, by compensating workers and helping power consumers and energy suppliers adapt to the new market conditions).

Fourth, an extended transition period is needed after radical reforms are introduced, during which the government and the regulator must expect to face unanticipated challenges. In England and Wales, the unexpectedly large profits made by the privatized distributors under the new price cap regulation have provoked

unscheduled price cap reviews by the regulator and created political pressure for a tax on these so-called windfall profits.

Fifth, the sequencing of reforms is critical. The legal and regulatory apparatus should be in place before restructuring and privatization, and major restructuring should precede the creation of private ownership rights to avoid problems with stranded assets. The timing of reforms is also critical, particularly the timing of the privatization of electricity suppliers and any supporting increase in electricity tariffs relative to the electoral cycle. The success of a privatization program often depends on divesting all or most of the state's ownership before the government faces the next election, and this can force a compromise with long-term efficiency objectives. In England and Wales, for example, an upcoming general election led reformers to accept a virtual duopoly in a supposedly competitive wholesale power market.

Finally, the government's full and sustained commitment is vital to the success of its reform program. This requirement was evident for the England and Wales power market reforms during the difficulties of designing, restructuring, and privatization, and it continues after the reforms, as the government must resist tendencies by some power entities to revert to the pre-reform structure.

Relevance of the E&W model to developing countries

Because the power markets of developing countries have development priorities that differ from those of the England and Wales power market, it is important to identify the features of the E&W model that are relevant to these countries. The main development priorities for power sectors in developing countries are to meet rapidly increasing industrial and commercial needs and to expand the population's access to electricity under severe public financing constraints and with weak institutional endowments. Power reform in developing countries tends to be driven by failure to meet one of these priorities, as in

Argentina (macroeconomic financing pressures), India and the Philippines (extreme, long-term power shortages), and Brazil, Colombia, and most countries attracting independent power projects (long-term financing concerns).

In view of these priorities, there are five main features of the E&W model that have relevance to developing countries:

- The pricing of electricity supply as a commercial service, rather than as a public obligation or a means of supporting low incomes. This policy not only gives users the correct

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price signals to use electricity efficiently; it also relieves hard-pressed government budgets of the burden of subsidizing the wealthy. But some help to enable low-income households to obtain connections to the electricity network can substantially raise their real incomes without blunting incentives for efficient supply and use of electricity.

- The explicit separation of the state's regulatory functions from its ownership and policy responsibilities, to allow state-owned utilities the necessary autonomy and accountability and to provide fairness in regulation for all suppliers, both state owned and private.
- The vesting of regulatory duties in a sector-specific regulator as an alternative to the lengthier and costlier U.S.-style judicial process.
- The establishment of an independent transmission company with nondiscriminatory ac-



cess for suppliers to prevent the incumbent supplier from frustrating attempts to facilitate competition.

- The market-based approach to planning expansion of the system with due consideration of investment risks—because investors, not
- taxpayers, must bear the consequences of uncertainty in construction costs and schedules, plant availability, and fuel prices.

In two important respects, establishing competition in the market—such as through a price-based pool—and the functioning of autonomous regulatory agencies, the E&W model may have only limited or long-term relevance for many developing countries, because of the following concerns:

- The small size of the power market in most developing countries would result in transaction costs that exceed the efficiency gains from vertical unbundling.²
- The power markets in many developing countries also are too small to allow enough suppliers for effective price-based competition without serious loss of scale economies under horizontal unbundling (about 100 developing countries have power markets of less than 1,000 megawatts).
- Operating a competitive pool based on spot pricing is too complex for all but the most advanced developing countries. There are simpler approaches to managing the wholesale power market structured around a well-designed set of market rules based on production costs. By allowing competition for market share, these approaches can give producers incentives to reduce costs. Such markets are operating in Argentina, Bolivia, Chile, Peru, and Poland.
- For developing countries that are fast growing, financially constrained, or both, the persistence of large supply shortages rules out the possibility of competitive power pools: for competition to develop, adequate supply capacity must be available to meet all load segments (base, peak, and so on).
- The substantial discretion given to the regulator in the E&W model over such matters as setting pricing rules would deter foreign in-

vestors in most developing countries because of the lack of institutional checks and balances. Protection against regulatory uncertainty must be offered instead through licenses (to distributors) and contracts (for independent power projects).

- The poor credit ratings of many developing countries greatly complicate the contractual process for mobilizing the large amounts of commercial finance needed for power investments, and thus require extensive performance guarantees by governments.
- Domestic capital markets are too underdeveloped to replace foreign finance or to provide a market assessment of performance by suppliers and regulators; thus, developing countries must avoid giving perceptions of excessive risk to foreign investors in the global competition for finance to develop their power sectors.

Conclusion

There can be no doubt that the E&W model provides an ultimate target for reform programs in developing countries moving toward competition and private participation. The question is whether a developing country should embrace the model entirely, or even largely, without allowing a long period of adaptation. Some advanced middle-income countries could consider this approach. For most developing countries, however, a policy of selecting only the features that can be adapted to local conditions is advisable. The key is to find the reform path that best suits a country's circumstances.

¹ See Robert Bacon, "Lessons from Power Sector Reform in England and Wales" (Note 61, October 1995).

² See Robert Bacon, "Restructuring the Power Sector—The Case of Small Systems" (Note 10, June 1994).

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