

8 Detecting Corruption Risk in Wholesale Market Operations

A number of developing countries have reformed their electricity markets to introduce competition in the generation of electricity. The objectives of electricity market reforms are generally to obtain benefits from competition—improved efficiency and reduced electricity costs—as well as to strengthen governance in the sector.¹⁹ Sectors with competitive wholesale electricity markets give rise to additional or different corruption “hot spots”.²⁰

This section:

- Provides a brief overview of the elements of competitive electricity markets
- Identifies areas in which corruption risk arises.

This section focuses on corruption risk in electricity markets that have been restructured to introduce elements of competition. It does not consider the process of power sector reform (and the implications of corruption for that process, see Box 8.1). “Single-buyer” models are considered first, followed by fully competitive wholesale markets.

Box 8.1: Corruption as One Barrier to Electricity Market Liberalization

Corruption and poor governance in emerging economies can hinder the introduction of private investment and competition in electricity markets. For example in a number of transition economies uncertain property rights, and country reputations for poor governance and corruption, have made the private sector reluctant to invest. This has forced governments to rethink extensive programs to privatize state-owned power utilities. For example Holburn and Spiller note that

Legal uncertainties about the status of contracts and private property in the Ukraine, as well as strong concerns over bureaucratic corruption, have undermined the incentives for entrants to invest in new, more efficient generation capacity, to write long-term contracts and to engage in the market.

Source: Holburn and Spiller, P (2002) “Institutional or structural: Lessons from international electricity sector reforms” in “The Economics of Contracts: Theories and Applications” Brosseau and Glachant (eds), Cambridge University Press, 2002

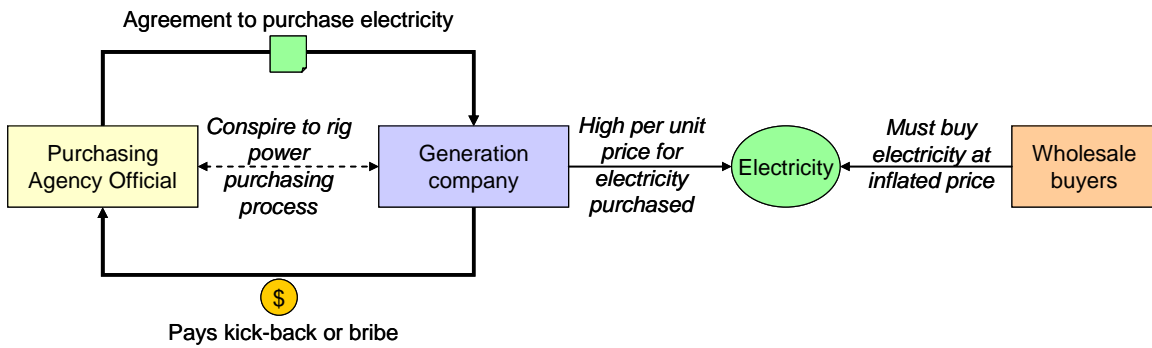
8.1 Single Buyers

In the single-buyer model, a single entity or “purchasing agency” is mandated to purchase electricity from competing generators and resell this to distribution utilities. The single buyer may be the national generation company, the transmission company, or some other independent entity. Single buyers enter power purchase agreements with independent power providers, so the corruption risks will generally be those discussed in Section 7. The impact of this on the power market is as illustrated in Figure 8.1.

¹⁹ Besant-Jones, John “Reforming power markets in developing countries: What have we learned?”, Energy and Mining Sector Board Discussion Paper, Paper No. 19, World Bank, September 2006 (page 60).

²⁰ While wholesale electricity markets are not the norm in developing countries, many countries do have these in operation. For instance, in Besant Jones (2006) paper, of power market reforms analyzed in developing countries, 9 out of 20 had developed wholesale electricity markets.

Figure 8.1: Corruption in a Single-Buyer Market Model



Alternatively, purchasing agency officials could do similar deals with purchasers of electricity, by agreeing to sell blocks of electricity at below cost prices, in return for kickback payments.²¹ In this scenario, the cost of the corrupt deal falls to the publicly owned purchasing agency, which is left out of pocket.

8.2 Competitive Wholesale Markets

In a competitive wholesale market, multiple generation companies compete to generate and sell power, to multiple buyers (distributors or large end users). In these situations, the sector needs institutions to co-ordinate functions such as network operation, real time load balancing and dispatch of generation load to meet demand, and keeping the frequency of delivered electricity within acceptable limits.²² Competitive electricity markets usually have:

- A market operator, which is responsible for the co-ordination functions described in the above paragraph, and for dispatch of generation capacity to meet demand, and
- A wholesale electricity spot market institution to facilitate market transactions, generally through some form of competitive bidding process, and support the market operator (for example by providing least-cost generation schedules, to determine the order in which plant will be despatched).

In practice the above institutions may be combined as a single entity.

If market participants—generators bidding into the market, the market operator, and distribution companies buying from the market—are all privately owned and unsubsidized then, by definition, we will not find any corruption.²³ In practice this “fully privatized” scenario is uncommon. The greater the public sector’s role in the wholesale electricity market, the greater the possibilities for corruption. This section considers the potential corruption risks in the following areas:

²¹ In this context “below cost” means a lower than the price the purchasing agency pays for power.

²² In a vertically integrated sector structure, these functions are all undertaken internally by the vertically integrated power utility.

²³ See the definition of corruption used in this Sourcebook, at Section 2.1. While we may not find corruption, we may still find collusion to the detriment of the consumers.

- Failure of the market to work as planned
- Market operations
- Permitting of private generation plants
- The market for longer term “hedge” contracts.

8.2.1 Failure of the market to work as planned

Wholesale markets are highly complex. When they are introduced in inappropriate circumstances they may fail. The resulting chaos is a breeding ground for corruption. This happened in the Ukraine, as Box 8.2 describes.

Box 8.2: Cash Flow Problems in Ukraine’s Wholesale Electricity Market

In Ukraine during the late 1990s, the collapse of funds administration in the wholesale electricity market was the main indicator of distress in the market. These funds were supposed to be allocated to generators and service providers in proportion to their revenues due from the selling price and volume of units of electricity sold. In practice, these providers were not paid in full—and in fact they often received a very low proportion of their due amounts, because the revenues collected from users fell far short of their bills.

An algorithm was therefore developed for allocating the available cash in proportion to relative sales by providers. In practice, however, the Ministry of Fuel and Energy (Minenergo) intervened by directing scarce funds to particular providers according to short-term expediency in substantially different ways than the algorithm. It claimed a number of technical reasons for its actions, such as emergencies and the need to pay coal miners, which led to numerous changes to the algorithm.

According to the market rules, distributors that have not fully paid for the electricity purchased from the wholesale market should have been cut off from future electricity deliveries. But Minenergo insisted that delinquent distributors continue to receive wholesale power, and it tried to address the problem by reaching agreements with central and local governments on customers that could be disconnected without political repercussions. Consequently, some of the distributors took advantage of the non-enforcement of payment obligations and withheld from the market the cash collected from their customers.

The proliferation of barter and other noncash payment modes (mutual cancellation of payment obligations, promissory notes, and tax write-offs) further compromised the application of the market rules. Non-cash transactions offered significant tax advantages because cash received in an enterprise’s bank account was often confiscated by the tax service. Because non-cash payments had limited fungibility, the market operator could only allocate cash payments.

Total collections soon fell to below 80 percent, of which the share of non-cash transactions in the power industry surpassed 80 percent (the economy wide average was about 40 percent) and cash payments dropped to below 10 percent (non-payments accounted for the balance). In essence, only the general population paid cash for electricity. Generators and their fuel suppliers received little cash, and even the cash allocated to the distributors under the algorithm and Minenergo’s interventions did not cover the costs of their distribution networks and customer services.

Note: Box 13.2 on page 202 describes Ukraine’s electricity sector reform.

Source: Besant-Jones (2006) “*Reforming Power Markets in Developing Countries: What Have We Learned?*” Energy and Mining Sector Board Discussion Paper No. 19, Washington, DC: The World Bank

California power crisis is another example of a wholesale market that generated chaos by failing to work as planned, although whether this led to corruption is debatable, as Box 8.4 in the next section describes.

8.2.2 Corruption Risks in Wholesale Electricity Market Operations

In wholesale electricity markets large amounts of money change hands, potentially creating significant opportunities for corrupt deals. Where a wholesale electricity market exists, we need to consider whether the market itself creates a “hot spot” for corruption.

Box 8.3 describes the Chinese experience with competition in the wholesale power market. The Chinese experiment is probably not indicative of actual corruption (since there was no financial settlement) but indicates how corruption *could* enter a competitive power market if a government body was able to bend the rules in favor of some market participants and against others.

In most developing country markets generators themselves are powerful and well-resourced, and the generators disadvantaged by corrupt behaviour would generally be able to stop it quickly, through their influence or threat of legal action.

Box 8.3: China’s Experiment with Competition in the Wholesale Power Market

Competition in the electricity industry first started in 1999 on a limited experimental basis in provinces where supply outstripped demand. Six Chinese provinces were chosen for this experiment. The market followed the old England and Wales power pool model. Each province selected its 12 largest independent power producers to compete for a part of the provincial demand. The bulk of the power demand continued to be met by allocated dispatch according to central plans. Producers were free to decide each day whether to compete or not. Simulation of the competition began in July 2000, with no actual financial settlement.

The experiment was short-lived in all six provinces for two main reasons. The first reason was the absorption of surplus generating supply when power demand picked up in 2001 because of unanticipated economic growth. The second reason was the central government’s influence on who could compete in favor of incumbent integrated power utilities.

Source: Zhang, 2003 in Besant-Jones, J. (2006) “*Reforming Power Markets in Developing Countries: What Have We Learned?*”, Energy and Mining Sector Board Discussion Paper No 19, Washington DC: The World Bank

A second entryway for corruption is that market participants buying electricity through the wholesale market might be corruptly influenced in how they buy power. For example a distributor wishing to purchase power to meet the demands of its customers might purchase power from someone other than the least cost generator.

In practice, this second form of corruption is unlikely to arise in electricity spot markets. When purchasing power through the spot market, buyers are not able to identify which

specific generator they are buying power from, which makes it difficult to enter into corrupt deals. In addition, the spot price is generally set by the market operator through a competitive bidding process, allowing little scope to inflate the price paid to enable corrupt payments.

Electricity spot markets do create a range of opportunities for market participants to abuse their market power, or “game” the system to increase their profits. These types of behaviours can give rise to significant costs, and in extreme cases can undermine security of electricity supply. For example Box 8.4 describes how highly sophisticated gaming strategies by sellers played a key role in the California Power Crisis. However, while such gaming is a public policy problem, it falls outside this Sourcebook’s definition of corruption.

Box 8.4: California Power Crisis—Corporate Fraud and Regulatory Failure?

To develop a competitive electricity market, and to respond to energy problems in 1995, California initiated restructuring of its electricity industry. The aim was to convert California’s investor-owned, regulated utilities into a deregulated market in which the price of electricity would be established by competition, and consumers could select their electrical power suppliers. Under the new structure, over 80 percent of the transactions were being made in the spot market (CalPX), and energy sellers quickly realized that the spot market could be manipulated by withholding power from the market to create scarcity and demanding high prices to meet the created scarcity.

On June 19, 2001, the Federal Energy Regulatory Commission (FERC) reaffirmed that the electric market structure and the rules for wholesale sales of electric energy in California were seriously flawed, imposed price caps on all spot market sales from June 20, 2001, through September 30, 2002, and took steps to prevent power generators from withholding supply. The prospective price mitigation plan applied to all sellers that voluntarily sold power into the Cal-ISO and other designated spot markets or that voluntarily used Cal-ISO’s or other interstate transmission facilities subject to FERC jurisdiction. These moves brought the rolling blackouts, catastrophically high prices, and near-continuous power emergencies under control.

The California power crisis of 2000–01 is a powerful example of market manipulation and possible fraud in a highly developed economy with sophisticated sector governance. While the causes of that crisis are complex, a good part of the blame is likely to fall on prominent players in the power sector that indulged in market manipulation in violation of the relevant laws and that deliberately caused shortages so as to benefit from the sale of power at very high market prices.

Source: Gulati, Mohinder and M.Y. Rao. “Corruption in the Electricity Sector: A Pervasive Scourge” in *The Many Faces of Corruption*, Annex 4B

8.2.3 Corruption in permitting of private power plants

Once the generation market is liberalized, private investors may enter and invest in new generation capacity. In this scenario, a private company builds generation to sell into a competitive power market. In general the private company will have strong incentives, and the ability, to prevent corruption in the award and implementation of the construction contract. While this eliminates corruption concerns in one area, other potential corruption hot spots arise.

In particular the private investors must obtain whatever construction permits, environmental consents, or other licenses are required under the laws of the country, before the project can proceed. Public officials with the power to grant the required licenses are in a strong position to demand bribes or other forms of corrupt payment in return.

Alternatively, public officials may accept corrupt payments in return for awarding compliance certificates, even where the plant does not comply. For example this might involve falsifying the results of emissions tests to show that the plant meets applicable environmental standards, even where actual emissions exceed permitted levels.

8.2.4 Longer term electricity contracts

The short term prices generated by spot markets can be highly volatile. To manage this volatility, generators and wholesale power purchasers enter into long term contracts now as hedge contracts. These contracts provide, in essence, that the purchaser will buy a set quantity of power from the generator at an agreed price, over a number of months or years, regardless of the spot price of electricity. Such long term contracts are often referred to as 'hedge contracts' because they provide a 'hedge' against the volatility of prices in the spot market (in the same way that futures contracts on other commodities such as wheat or oil provide a hedge against volatility in short-run prices for those products).

These electricity hedge contracts are usually negotiated bilaterally between generators and large energy purchasers. As a result, there are not standard terms and observable market prices for such contracts. This creates an opportunity for state-owned companies to agree to 'bad deals' with private sector counterparts. For example, a publicly owned distribution company might agree to buy power from a private generator at a price which is higher than it really needs to be. This would allow the private generator to make extra profits, some of which it would kick-back to the public official who agreed to the hedge contract.

As an example, following liberalization of the electricity market in Romania, prices in some bilateral electricity supply contracts were allegedly set below true market value. Corruption was alleged in bilateral contracts entered into by some government-owned generation companies who were thought to have sold power to large private customers at prices that were below what they should have been. In response, the top managers of two companies were dismissed and the government required public sector generators to use the market operator's competitive auction system for bilateral contracts (see Section 12.3.4 of this Sourcebook for further discussion on this).

Detecting corruption in hedge contracts

In many cases, corruption in hedge contracts will be difficult to detect. Hedge contract prices often are not published. The "right" price for a hedge contract is a judgement, and it depends on forecasts of future spot market prices. Thus it is difficult to distinguish between market participants "getting it wrong", and situations in which they deliberately manipulate the hedge price to generate corruption opportunities.

Nevertheless, possible indicators include:

- Hedging strategies by wholesale buyers of electricity that appear to be irrational or clearly inefficient
- Public companies negotiating hedge contracts bilaterally when competitive and transparent markets for such contracts exist

- Indirect indicators, for example signs that managers responsible for negotiating hedge contracts are living beyond their means.

Source List 8.1: Competitive Electricity Markets

Source	Description
<p>Bakovic, T., Tenenbaum, B. and Woolf, F. “Regulation by Contract: A New Way to Privatize Electricity Distribution?” Working Paper No 14, Washington, DC: The World Bank</p>	<p>This paper examines if regulation by contract (or a combination of regulation by contract and regulatory independence) provides a better regulatory framework for developing countries that want to privatize all or some of their distribution system. Specifically, it:</p> <ul style="list-style-type: none"> ▪ Describes how regulation by contract has been carried out in developing countries ▪ Analyzes how these regulatory contracts have been able (or not) to handle specific critical issues ▪ Describes the strengths and weaknesses of various forms of dealing with disputes, and ▪ Compares recent experiences in Latin America and India. <p>Section 5 provides a good discussion of the problems on transparency in long term contracts.</p>
<p>Besant-Jones, J. (2006) “Reforming power markets in developing countries: What have we learned?”, <i>Energy and Mining Sector Board Discussion Paper</i> Paper No. 19, World Bank, September 2006</p>	<p>This report provides a comprehensive review of the experience of electricity sector reform in developing countries. In particular, Section 4 discusses governance issues in the electricity sector, and among other things highlights corruption arising from weak governance arrangements as one of the drivers of reform in some countries.</p>
<p>Jamasb, B. (2006) “Between the state and market: Electricity sector reform in developing countries” <i>Utilities Policy</i> 14, 14–30</p>	<p>This paper examines the experience with electricity sector reform in developing countries, and lessons in these countries. The paper reviews private participation and key steps in sector reform. Of particular interest, section 4.3 of this paper discusses the impact of corruption and opportunism.</p>