Electricity

The global impacts of power reforms

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Dozens of governments have embarked on the pathway to electricity deregulation and privatisation since the mid-1990s. It has become the accepted wisdom amongst governments and opinion leaders despite the consequent price rises and disasters that have followed in its wake: the series of blackouts that have been experienced from Buenos Aires to Auckland; the government bailouts of electricity companies that have been necessary in California and Britain; the need for electricity rationing in Brazil; and the fact that it has become too expensive for millions of people from India to South Africa.

Electricity deregulation and privatisation is referred to as 'liberalisation' by its advocates, who use the term to disguise what is in essence a massive shift of ownership and control of electricity from public to private hands. 'Liberalisation' has seen the goal of an affordable, accessible and reliable service replaced by the market ideal of competition, the myth of consumer choice, and the priority of economic efficiency, as measured by profits or rate of return on investment.

The privatisation of electricity is not something that citizens have demanded or wanted. In general, there has been very little public participation in electricity reform decisions and as the consequences are observed, there have been many bitter protests against electricity privatisation (see Hall et al. in this volume). Popular uprisings have occurred in Argentina, India, Indonesia and Ghana. Protests have halted privatisation proposals in Peru, Ecuador and Paraguay. In the Dominican Republic several people were killed during protests against blackouts imposed by privatised companies. In South Africa thousands marched during a two-day general strike to protest privatisation, which they labelled 'born-again apartheid'. In Papua New Guinea students were killed when thousands rallied against the planned privatisation of government services including Elcom, the electricity authority. Even in China, workers protested the sale of a power plant in Henan province to a private company and threatened to *"block the state highway and lie on the railroad while the trains run over us"* (O'Neill, 2001:3).

The beneficiaries of privatisation have been the consultants and the banks, building societies, insurance companies, pension funds and other industrial and commercial companies that were able to invest in the newly privatised services and/or provide loans to those who do. They have advised on privatisation schemes and helped draw up deregulation legislation around the world. They have collected fees from brokering the purchase of independent power producers world wide and have been involved in energy trading themselves.

Price manipulation

Electricity restructuring and privatisation is supposed to introduce competition into electricity provision and expose the newly privatised electricity firms to the disciplines of the market so that they become more efficient and electricity prices are reduced. In reality, electricity prices have risen or at the very least become exceedingly

volatile as a result of privatisation and restructuring. The supposed disciplines of the market have been eclipsed by price manipulation by electricity companies seeking to boost the price of electricity and maximise profits.

In California the cost of electricity to residents and businesses increased by USD 11 billion in one year and billions of dollars were moved from the pockets of Californian consumers and utilities to energy companies and electricity brokers, many of them in other states. Mines, sawmills and aluminium factories were shut down and workers were laid off (Beder, 2003). A study by deregulation advocates Paul Joskow, a professor of Economics and Management at the Massachusetts Institute of Technology (MIT), and Edward Kahn, of Analysis Group/Economics in San Francisco, demonstrated that the price hikes could not be explained by market conditions such as rising natural gas prices, increased electricity demand, insufficient supply or even increase in pollution trading credits. They found that the wholesale electricity prices were far beyond what they should have been in a truly competitive market (Joskow and Kahn, 2000).

What happened was that the power suppliers had started exercising their market-power and manipulating the price. The main way they were doing this was by withholding some of their supply to create an artificial shortage to drive prices up. Generators were simultaneously shutting down generating capacity for maintenance just when the supply was most needed (Beder, 2003). Generators and marketers sold electricity out of the state, and when prices soared in California because of the shortages they sold it back to California at much higher prices than they otherwise would have received. In fact, more electricity was exported from California in 2000 during the supposed shortages than had been exported the previous year, and there was no regulation to stop generators doing this because that would interfere with the free market (Berry and Riccardi, 2001:A-1).

It was not until Enron went bankrupt that documents came to light which proved that power companies had been manipulating Californian electricity prices and deceptively making money off utilities and consumers. For example, Enron artificially created the impression that power lines were congested, by overstating the power it was planning to deliver over them, so it would be paid to relieve congestion that was not really going to be there. Congestion payments could be as high as USD 750 per MWh (Oppel, 2002; Oppel and Gerth, 2002).

Enron was certainly not the only company to employ such price manipulation strategies. A former energy trader from Goldman Sachs told the *New York Times*: *"The whole reason for the existence of traders is to make as much money as possible, consistent with what's legal (…) I lived through this: if you didn't manipulate the market and manipulation was accessible to you, that's when you were yelled at"* (Kahn, 2002). Such price manipulations enabled private electricity suppliers to drive the wholesale price from USD 30 per MWh before deregulation to peaks of thousands of dollars per MWh.

California may be the most publicised example of price manipulation but there are many others in the US. Since federal deregulation of wholesale electricity prices in 1996, price spikes of many times the cost of production have occurred in many states. Between 1997 and 1999 average wholesale prices in Chicago, the Upper Midwest, New York and New England more than doubled whilst they tripled in other parts of the country, particularly the South, and quadrupled in Texas. Even industrial customers, who are best able to shop around for the best price in the new deregulated markets, have not benefited from price reductions in deregulated states of the US (Apt, 2005).

States in the US that have not deregulated their electricity have not experienced the same large increases in rates, as publicly owned utilities have kept rates 10 to 40 percent below neighbouring privately owned utilities. For example, cities in California where electricity was publicly owned, such as Los Angeles, were unaffected by price rises or blackouts because citizens and industries were not at the mercy of private suppliers. Nationwide, the residential rates charged by publicly owned utilities are still some 10 percent less on average than those charged by private utilities and the commercial rates are 7 percent less (Goozner, 2001; APPA, 2005).

Price manipulation has also been a feature of the Australian electricity market. Generators supplying the National Electricity Market (NEM) are able to withhold capacity on hot days until the price peaks and then they can rebid their capacity at inflated prices. This means that prices can vary from AUD 30 to AUD 10,000 per MWh. Generators admit that the reason for rebidding is 'financial optimisation' – i.e. making money. Until 2001 electricity prices to households did not suffer much 'mainly through tight government controls'. These were progressively removed after that date as retail markets were opened to competition and the pain of skyrocketing

rates began to be felt (Sexton, 2001; *Business Review Weekly*, 2001; James, 2001; Wilson, 2001). A study by the Australian Bureau of Agricultural and Resource Economics (ABARE), a supporter of deregulation and competition in electricity markets, has confirmed this price manipulation. Such uncompetitive bidding has cost the Australian economy hundreds of millions of dollars (ABARE, 2002).

Prices were initially manipulated by withholding actual generating capacity, then generators moved to economic withholding in 2000, bidding large chunks of their capacity at very high prices. This practice began in Victoria and spread to more companies and other states in 2001. Consulting firm Bardak Ventures conducted a study that concluded that, *"the major factor contributing to the price spike is the bidding and rebidding practices of the generators"* (ACCC, 2002:77-78). It is no accident that South Australia and Victoria, the only states to have fully privatised their electricity supplies, have the highest residential prices of all the eastern states. Because of continued state ownership, average electricity prices in New South Wales have fallen over the last ten years in contrast to rising prices in Victoria and South Australia. Business prices have decreased by 22 percent and household prices by 11 percent. The South Australia regulator claimed that more than 20 percent of the electricity price to consumers in the state resulted from privatisation (Plane, 2003).

A similar trend could be observed in South America. During the nineties Brazil's electricity system was purchased by a complicated web of foreign private investors. The retail and distribution sections of the system were privatised first. Light Serviços de Electricidade (Light) was auctioned in 1996 and purchased by a consortium comprised of EdF of France, AES of the US and CSN of Brazil. The terms of the contract meant that Light would buy hydroelectric electricity from the state at USD 23 per MWh and sell it to consumers for USD 120, compared with USD 75 that EdF charged the more affluent French electricity consumers. Consumers experienced massive price rises while the foreign owners repatriated profits and avoided investing in new generating capacity (McKee, 1996; Benjamin, 2001; Costa, 2001).

When India was being pressured to privatise its electricity by the IMF and the World Bank in the early 1990s, Enron used its political influence with US embassies and the CIA to win a USD 3 billion contract to build the Dabhol Power Plant south of Bombay. This was the largest foreign investment in India. The Power Purchase Agreement committed the electricity board to pay for electricity at a set rate without committing Enron to provide that electricity. Additionally 90 percent of the plant's generating capacity was to be paid for, night and day, whether or not it was needed or cheaper supplies were available. Despite the high prices, the risks were all borne by the Indian central and state governments rather than the investors. The agreement required the power to be paid for in US dollars, highly unusual in India, so that the risk of a currency devaluation was borne totally by the state. The price of electricity was also tied to the world price of oil, which escalated after 1999. The less electricity that the state bought, the higher the unit price. Locals protested the environmental and social impacts of the project, whose electricity was both unreliable and heavily polluting. Although the power supplied by the plant was supposed to help regional economic growth, the cost of the power threatened to become a severe burden on the very industries it was supposed to help. It was even more of a burden on poor consumers and farmers who had become accustomed to cheap, subsidised electricity. By the end of 2000, the electricity board was buying power from Dabhol at 8 rupees per unit and selling it to consumers at 2 rupees. (For further details on the Dabhol project see the chapter by Prayas Energy Group on power reforms in India later in this volume.)

Even World Bank analysts admit that Independent Power Producers (IPPs) like Enron have often inflated supply prices for utilities around the world. In the Philippines, for example, the price of power from the IPPs, even before the Asian crisis in 1996, was USD 76 per MWh compared with USD 57 for state-owned Napocor's power (Albouy and Bousba, 1998). Electricity prices for consumers in the Philippines are now the highest in the ASEAN Region.

In most countries around the world where electricity has been privatised or deregulated, retail electricity prices have increased, often dramatically for households and small businesses. In the rare case where wholesale prices declined, it was usually as a result of external cost reductions, particularly in the cost of fuel, as in the United Kingdom during the nineties. Had the government-owned system remained in place in the UK consumers and/or taxpayers would have reaped the benefits. However in an unregulated private system, savings from lower fuel costs were mostly retained by the private electricity companies. Most recently, electricity prices have

been rising dramatically in Britain (OFGEM, 2005).

Price volatility and manipulation are an inevitable function of electricity markets, whatever their design. In a market, there is no central planner choosing which plants to call on according to logic and marginal costs. Instead *"the central planner is replaced by price signals"* (Quiggin, 2001:7). The owners of a plant that is sitting idle most of the day require the price they get at peak time to compensate for the periods of idle time. So even in a competitive market prices go up and down. This price fluctuation is exacerbated by the ease with which private companies can use their market power, or create artificial shortages of electricity, to force the price up to very high levels, even in times of lower demand. Electricity markets bring a disjuncture between price and the cost of production.

Investment in infrastructure

Privatisation of electricity services is supposed to raise revenue for governments, provide new sources of investment capital for expensive electricity infrastructure and reduce the role of government in the economy.

Planning and long-term forecasting of demand, as well as the upgrading of worn-out infrastructure, used to be an essential part of providing a reliable public electricity service. The need for long-term planning and coordination were major reasons why governments took control of electricity in many countries around the world in the first half of the nineteenth century. But in the eighties the need for planning and maintenance began to take second place to the desire to commercialise electricity services. And in the nineties, when electricity was liberalised, privatised and deregulated around the world, the planning function of government bureaucracies was abandoned altogether and surrendered to market forces.

In replacing government planning, market forces are supposed to ensure there is enough supply because the market is assumed to have the ability to balance supply and demand through competition. In practice, the market has turned out to be a rather poor mechanism for ensuring adequate supply and reliable service. In the market, shortages are supposed to lead to high prices which, in theory, provide an incentive to build new plants. But in fact, as we saw in the previous section, there is more financial reward in creating shortages and so most companies prefer to avoid risky investments that will only lower the price by increasing supply.

In Australia, it has become clear that the electricity market provides no incentive for generators to invest in new capacity because undersupply keeps pool prices very high and the standby plant necessary to ensure system reliability *"erodes generator profit (…) Generator profit is inversely proportional to the levels of reserve plant with no incentive for system reliability"* (Searle, 2001:24). Also, existing generators can drop prices when potential competitors are seeking finance for generation facilities. It would take a brave company indeed to risk investing in generating infrastructure that may be needed in three or four years time, but that is how long it takes to get a plant up and operating. There is now a call for more generating capacity. The Electricity Supply Association of Australia estimates that at least AUD 20 billion needs to be invested in fuel supply and generation to meet forecast demand. The problem is, who will make that investment? Rather than investing in new infrastructure some of the private generators are selling up (Thomson, 2002).

In poorer nations, a major argument for privatisation was to provide foreign capital for much-needed electricity infrastructure. In these countries a lack of capital combined with subsidised electricity for the very poor ensured that government owned electricity authorities were debt laden. The new flood of foreign investment, however, has often not provided the much needed capital for extra generating capacity. Foreign companies have bought up existing government facilities at bargain basement prices, put up prices, and then sent their profits home rather than invest in new generating facilities.

Brazil's debt has continued to climb along with its dependence on foreign capital. Foreign investors, who were happy enough to buy existing plants that had no remaining debt so that they could make quick returns on their money, were less interested in investing in new generation capacity, despite the price incentives provided by the high electricity rates. They demanded that 70 percent of any new project be financed by the Brazilian Development Bank; that the price for gas, which they favoured as a source of electricity, be guaranteed far into the future with long-term contracts; and that the Brazilian government take any losses resulting from a fall in the value of the Brazilian currency against the US dollar (Benjamin, 2001). The remaining state-owned electricity companies had sufficient financial reserves to undertake the necessary investment, but were not authorised to do so as it would have been contrary to the World Bank imposed privatisation programme. Other cheaper

measures such as improving transmission efficiency and energy conservation were not taken either. The Brazilian electricity system, which had worked reliably for decades before privatisation and had been admired and envied for its plenitude of cheap hydro-electricity, broke down and Brazil faced such a shortage of electricity that rationing had to be implemented, causing economic and social disruption. (For further analysis of recent developments in the power sector in Brazil see Azzi and Berrón's chapter in this volume.)

Whilst investment in Latin America has tended to be a result of full privatisation and mostly involved foreign acquisitions of government enterprises, investment in East and South Asia has *"focused on introducing independent power producers in markets dominated by vertically integrated, state-owned enterprises"* (Izaguirre, 2000:5). IPPs are now a large market in Asia, particularly in China, Indonesia, the Philippines, India, Pakistan, Malaysia and Thailand. In Asia, IPPs generally sell their electricity to a single state-owned utility according to a contract called a Power Purchase Agreement (PPA). The rationale for this is that private investment will provide the capital and expertise needed to increase generating capacity quickly. However, the amount of money invested is often small compared with the amount of money paid back by state-owned local utilities, often in foreign currency, money that then leaves the country. For many IPP projects, foreign investors only put up, on average, 24 percent of their own money. The rest is obtained through loans, mostly from foreign banks and agencies. PPAs have ended up costing governments far more foreign capital than that originally invested in the electricity projects (see the chapter by Prayas Energy Group on India in this volume). IPPs expand capacity at a very high cost that in fact increases government spending and foreign debt, inhibits competition, blunts technological innovation and increases consumer costs. They have also forced governments to bear most of the burden of risk associated with electricity projects and so *"undermined the very reason for introducing private power in the first place – to cap public debt and force private power producers to take the financial risks instead of governments"* (Ryder, 2000).

The main political rationale for privatisation in many developed countries has also been government debt reduction. The benefits that were supposed to follow from reduced government budget deficits as the result of selling electricity systems have turned out to be a mirage in most cases. For example the Electricity Trust of South Australia (ETSA) contributed some AUD 2 billion dollars to state revenue over the decade before it was privatised (Kelton and Wheatley, 2001). Economist Richard Blandy later confirmed in 2002 that

> *Revenues earned by ETSA for the South Australian government before it was privatised would match, if not exceed, the interest on South Australian debt retired as a result of ETSA's sale. Hence, South Australians now face historically high electricity prices compared with the rest of Australia for no net benefit to the state government finances (Blandy, 2002:11).*

Private companies, freed from social obligations, are able to undertake profitable activities whilst the government continues to pay for unprofitable aspects of electricity supply like environmental protection and equitable access. Previously governments were able to subsidise the unprofitable activities with the profitable ones. The inability to spread costs across a whole service means more expense to taxpayers and savings to industry.

When bankruptcies are threatened, governments have to be prepared to step in and bail out private companies so as to secure the electricity supply. Taxpayers had to bail out retail electricity companies when wholesale prices went up, as in California, and bail out generating companies when wholesale prices went down, as in the UK. The British government was unable to stand by and watch British Energy go bankrupt leaving its eight nuclear power plants sprinkled around the country-side, sitting idle with no-one to decommission them. The government therefore ended up committing some GBP 4 billion in 2004 to rescue it.

Taxpayers clearly get the worst of both worlds. They no longer reap dividends from electricity production when it is profitable, but they still have to pick up the bill when it is not. The reason for this is simple to understand: electricity is not a commodity that consumers can choose to take or leave depending on price and supply; it is an *essential* service that is central to the maintenance of modern lifestyles.

Service and Reliability

And whilst the market is poor at ensuring reserve generating capacity it is even worse at ensuring a modern reli-

able transmission system. The separation of transmission and generation and distribution into separate companies means that the companies making huge profits from generating the electricity don't have to invest in the infrastructure needed to transmit that electricity to their customers.

Service and reliability have also declined in privatised electricity systems because the service obligations of government-owned electricity companies are replaced by the short-term commercial goals of private companies. In the public service it was not uncommon for employees to have a strong public service ethos, particularly in the utilities where they *"traditionally took pride in their safety record, in the quality and impartiality of advice offered to consumers, and in a number of socially responsible activities such as free servicing of old age pensioners' appliances"* (O'Connell Davidson, 1994:173). This public spiritedness was lost as employees were forced to take a more commercial view of their work.

Since deregulation in the US has removed the service obligations from private companies they are able to increase their profits by cutting maintenance schedules and staff and neglecting the upgrading of infrastructure. This is particularly the case for privately-owned transmission companies because it can be cheaper, in the short-term, to replace equipment after it fails than pre-empting that failure with a timely replacement. If such failures result in blackouts then others bear most of the costs. It might even prompt a government to pay millions of dollars in subsidies. The lack of investment in transmission infrastructure contributed to the widespread electricity blackouts in the north-eastern states of the US and Canada in 2003.

Deregulation has shifted responsibility for investment that would prevent such failures of the market. But market players are more interested in profitability than providing a reliable service. In the case of electricity transmission the link between profitability and reliable service provision is so tenuous that the deregulation process has been more of an act of faith than one grounded in commonsense. The supposed efficiency gains to be made by private, competitive companies, have been made through short term cost savings, which include cutting the quality or level of service rather than offering the same level of service for less money. Sometimes return on investment has been increased by charging more for the service. Often cost savings have been made by lowering rates of pay and conditions for workers and making thousands of public sector workers redundant. Full-time permanent employment has been increasingly replaced by part-time and temporary work. In this way private enterprises may seem to be more efficient but the gains to shareholders are at the expense of workers and consumers, who suffer a decline in service levels.

Another easy way to cut costs, although short-sighted, is to cut safety, maintenance, training and research budgets. Old equipment is not regularly serviced nor replaced in advance of likely failure. As a result, accidents and equipment-related blackouts increase as do blackouts related to network congestion because planning and responsibility for network maintenance and development is not a market priority.

In Australia alone, employment in the electricity sector fell from about 83,000 in the mid-1990s to 33,000 workers in 2003 (Wilson, 2003). In the US deregulation has led to a massive reduction of the utility workforce with 150,000 people losing their jobs, including those who were responsible for safety and reliability of electricity supplies, as private deregulated utilities shed staff so as to cut costs. It is estimated by the Utility Workers Union of America (UWUA) and the US Department of Energy's Energy Information Administration (DOE EIA) that utilities now employ less than two-thirds of the workers they did in the early 1990s. The UWUA claims that cost-cutting has led to fewer inspections, deferral of repairs, and less worker training, all of which threaten worker and public safety as well as system reliability (Higley, 2000; Oppenheim, 2001).

In a report prepared for the European Federation of Public Service Unions, Oppenheim (2001:20) pointed out:

> *The industry infrastructure is aging and in need of continuous maintenance… The problems range from poles that are condemned by workers but not replaced; to load tap changers that are inoperable, affecting proper voltage levels; to uninspected transformers that pose a serious risk of exploding. Field workers across the country observe that cables are tested less frequently; that substation and manhole inspection cycles are longer; and that condemned poles are often not replaced. Key system components will not perform as they were designed to perform due to age, lack of repair, or both.*

A lack of maintenance also contributed to the blackouts in New York City as it did in Chicago, Long Island,

New Jersey, New England, and Texas. For example, a series of fires in electrical transformers caused power blackouts in New York City during the summer of 2002. These were the result of aging equipment unable to keep up with demand because there was no incentive in the deregulated system to upgrade equipment and no-one held responsible when it fails (Blair, 2002).

Fuses and transformers across South Australia also failed and transmission across high-voltage lines was deliberately cut off to avoid potential fires on very hot days. There were 500 outages in January 2001 alone. The network was outdated and neglected and unions claimed that the 900 workers employed to check and repair power lines a decade before had been reduced to about 300, whilst maintenance crews were reduced from 270 to 90 (Blair, 2002; Higley, 2002).

Blackouts also increase as a result of lower reserve levels of generation capacity caused by lack of incentives to invest in reserve generation capacity discussed in the previous section. A study by the Federal Bank of New York found that consumers can expect less reliability of supply: *"Market forces may be inadequate to guarantee that providers can always deliver a sufficient quantity of electricity to maintain the grid's stability during peak-load periods"* (quoted in *Consumer Reports*, 2002:34).

Environmental impacts

Electricity deregulation positively deters investment in conservation and energy efficiency: *"the market competes for lowest up-front price, not lowest price over the lifetime of a product (…) In the old electric system, it cost utilities less to subsidize our more efficient bulbs than to build another dinosaur plant"* (Meadows, 2001). In the deregulated system the incentive is to sell more electricity for premium prices.

Deregulation allows, and in many instances encourages, the maintenance of old polluting coal-fired power plants that contribute smog, mercury and particulate matter to the atmosphere causing thousands of deaths annually. In Australia, deregulation and privatisation have led to the increased use of the most polluting type of coal, brown coal and there has been a 31 percent increase in greenhouse gases as a result of energy deregulation (*Earth Island Journal*, 2001:3). In the US, the Bush administration has used the problems created by deregulation as an excuse to relax air pollution controls on power plants. The Commission for Environmental Cooperation has found that electricity deregulation caused the energy efficiency budgets of North American power companies to be cut by 42 percent between 1995 and 1999 (Melnbardis, 2002).

IPPs *"skew incentives towards new generation and against meeting electricity needs through greater efficiency. In addition, the purchase contracts have forced use of high-cost power over lower-cost power already available"* (Dubash, 2002a:19). There is not much likelihood that electricity suppliers will encourage their customers to use electricity efficiently if they are committed to purchasing more electricity than they need from an IPP. Moreover, the export credit agencies that often fund them usually do not require the environmental measures and protections that governments require. As a result IPPs have tended to favour oversized, outdated, polluting fossil fuel-based power projects.

A study by the World Resources Institute of electricity reforms around the world found that:

> *Financial concerns and donor conditions have driven electricity reform. Managed by closed political processes and dominated by technocrats and donor consultants, environmental considerations play almost no role in a re-envisioned electricity sector. Social concerns are given more importance, but only to the extent that reforms affect politically powerful groups* (Lash, 2002:7).

When the market decides on the fuel source there is no incentive to take account of the environmental costs of that source. As a result, new generating capacity around the world continues to be dominated by fossil fuels. In the US the Energy Information Agency predicts that new power plants will be mainly gas-fired in the shorter term and increasingly coal-fired in the longer term as gas prices increase (EIA, 2005). Similarly Europe's new power plants are likely to be gas-fired for the short-term future. Although cleaner than coal, gas still contributes to global warming and is not renewable. Worldwide, the use of natural gas and coal surged in 2004 (The Worldwatch Institute, 2005).

The folly of relying on markets for fostering renewable energy has been debunked and many governments are again resorting to regulations to increase renewable energy use. In California utilities are now required by the government to aim to meet 20 percent of their supply with renewable sources by 2017 and the Californian

Energy Commission is proposing this be accelerated so that 20 percent is met by 2010 and 33 percent by 2020 (CEC, 2004).

Corporate Power

Part of the rhetoric of privatisation had been that it would create new nimble and competitive operators that would give consumers a new deal. However, in most countries where the vertically integrated electricity industry has been unbundled to foster competition, industry consolidation has resulted in a reintegration of the sector:

> *Industry players are racing to create a new group of vertically and horizontally integrated structures (businesses owning generation or gas wells, and retailing in different state markets) in an effort to protect themselves from the wild gyrations of the energy markets and to gain economies of scale* (Myer, 2002:3).

Privatisation of services is not only transferring publicly owned assets into private hands but also into the hands of fewer and fewer companies. The buyers of government assets and services have mainly been large transnational corporations that, over time, have bought up or squeezed out their competition. Such consolidation helps corporations to cut costs and spread expenses but mainly it is done to increase profits, either by acquiring rival companies at home and so increasing their market power or by acquiring overseas corporations that promise high rates of return on investment. This latter prompted US companies to purchase approximately half the available power companies in Britain and Australia as soon as they were privatised (Flowers, 1998).

In Europe today seven electricity transnational corporations dominate. Three of these – Electricité de France (EdF), E.ON and RWE (both based in Germany) – control a majority share of generating capacity and retail sales in most European nations and that share is growing (Hall, 2005). The concentration of ownership in electricity worldwide also continues to grow, with the combined value of electricity and gas cross-border mergers and acquisitions in 2001-2002 alone being US USD 84 billion (ILO, 2003).

In Asia and Australia, transnational corporations have been withdrawing with those likely to stay on being European firms – EdF, Tractebel-Suez, International Power and CDC – an American firm – AES – and a Canadian firm –Transalta. Asian-based transnationals are moving in, including Cheung Kong and China Light (Hong-Kong based), Singapore Power and YTL (Malaysia) (Thomas, 2004). In Latin America, dominant transnationals in the electricity sector include Endesa, Iberdrola, and Union Fenosa (Spain), EdF and Tractebel-Suez (France), EdP (Portugal), and AES (US) (Hall, 2004).

Vertically and horizontally integrated companies that provide full electricity and gas service as well as water and waste services are emerging. Almost half of the largest gas and electricity firms undertook 'convergence-related' acquisitions at the end of the nineties. Oil companies such as BP, Shell and Texaco have been acquiring power companies. The CEO of Edison International has predicted that within a decade there will be only 10 energy conglomerates worldwide.

Such conglomerates will have even more ability to manipulate prices and avoid competition, further negating the supposed benefits of deregulation. Concentration of ownership also undermines the ability of national governments to control foreign owners. Foreign owners can withhold services for political and economic reasons, thereby cutting off an essential part of the economic system without governments being able to do anything about it. For example, US companies shut down the electricity supply in the Dominican Republic to force the government to pay its debt to them. The big energy corporations *"are already exceptionally well placed to operate jointly or to form a cartel to pressure governments, control prices and limit competition*" (Chavez, 2002:11). Walt Patterson (1999:84) observed:

> *Oil multinationals with a wide portfolio of activities in different parts of the world have never hesitated to suggest that they will withdraw from a particular concession or shut down a particular oilfield if government policy appears contrary to their interest. Electricity multinationals with similarly large portfolios will have a much more potent threat at their disposal.*

If privatisation and deregulation are taken to their logical end, which is the aim of advocates, the public will be unable to influence the development of essential services, the terms of their provision, the reliability of their supply, their accessibility or their price. These will all be decisions made by cartels of transnational corporations

whose primary motivation is profit and power. These cartels will be able to exercise power over national, state and local governments.

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