This paper examines the relationship between economic reform and government restructuring in China by examining the reform in the power industry in general and the conversion of the Ministry of Electric Power to the State Power Corporation of China in particular. It shows two distinct features of this relationship. One is that political and economic reforms must proceed in tandem. That is, economic reform requires ideological shifts by the Party and changes in government policies, which in turn propel changes both in government structures and in the economic structure of industries. The other is the combination of top-led and bottom-driven reform. Changes in government policies and ideological guidelines encourage and promote economic reforms in power plants in provinces and regions. Reforms adopted and confirmed from the bottom-up demand and drive political restructuring in the central government.

In March 1998, the State Council announced a long-anticipated restructuring of Chinese government, reducing the number of ministries and commissions from 40 to 29 and halving the government workforce in the following three years. One of the ministries eliminated in this round of government restructuring was the Ministry of Electric Power (MEP). While its economic functions were inherited by the newly created State Power Corporation of China (SPCC), its government and regulatory functions were granted to the State Economic and Trade Commission (SETC). The conversion of the MEP to the SPCC signifies a change from direct government ownership to a government-owned corporation which would be in charge of managing most power infrastructure construction, power generation, transmission, dispatching and distribution, and power research and development in China. This paper studies the interaction between political and economic pressures for change in the process of converting a government agency to a public corporation.

Traditionally there have been two types of explanation for the relationship between political and economic reform in China. One is that, since China historically has been governed through hierarchical bureaucratic control, changes in political leadership lead to changes in policies; the power struggle among political
leaders therefore is the fundamental driving force behind political and economic changes (Lieberthal and Oksenberg 1988; Chen 1999). The other explanation emphasises the role of popular pressures in leading to political and economic changes; the single most pervasive phenomenon in socialist countries has been a shortage of goods, these shortages eventually threatening the legitimacy of the regime and forcing the political elite to make changes in economic policies (Naughton 1996).¹ This paper suggests that both of these interpretations miss an important part of the explanation. This is the interaction between bottom and top, between economic and political changes, that often drives the reform.

The electric power industry is a good example of this process of interaction. The central government gave the green light to reforming the economy in general at the end of the 1970s and the power industry in the mid-1980s with the adoption of a series of modifications of the existing programs. While the modifications were designed initially to maintain the basic rules of the game, they induced different behaviour and expectations from organisations and individual enterprises, whose responses have both intentional and unintentional, and both positive and negative, effects on the progress of the original reform. These effects, especially the negative ones, and newly developed expectations demanded responses from the government and exerted new pressures for further reforms.

The top-led and bottom-up approach allows one to examine the interaction between economic development and government responses and changes. The problems of an industry as essential to the economy and the welfare of the people as electricity demand political responses from the government, even in a command economy. When the command is relaxed, the imperatives are all the greater because the nature of the industry often sets the framework for deciding what can be done: electricity is not a simple commodity and operation of the power industry ‘follows the law of physics, not the laws of financial contracting’ (Joskow 1996, 349).

The power industry is chosen as an example for this study also because these unique features of the industry—long-term, high-risk, intensive, sunk investments; spontaneous co-ordination between production and consumption (supply and demand); and the essential importance of power to the modern economy and life—require an active and centralised role for the government in facilitating development and competition in this industry.² It is hard to imagine that the ‘invisible hand’ will play the primary role in guiding investment to expand the capacities of the industry to meet consumer demands reliably. While an active and centralised role for the government is essential, competition also needs to be

¹ A variation of the second type of explanation for the changes in China focuses on the sequential relationship between political and economic changes. A move from the command to market economy granted individuals and enterprises certain freedom in market activities, which involved the diminution of the role of central planning, eventually undermined the total control of the Party and generated political pressures for reform. See the discussion provided by Solinger (1993), Goldman (1994) and Fewsmith (1995).

² ‘A natural monopoly is an industry in which the economies of scale—that is, the tendency for average costs to decrease the larger the producing form—are continuous up to the point that one company supplies the entire demand’ (Kahn 1971, 123–4). Products of a natural monopoly industry tend (1) to be capital-intensive (having significant fixed costs or scale economies); (2) to be viewed as necessities (or essential to the community); (3) to be nonstorable (yet subject to fluctuating demands); (4) to be produced in particularly favored locations (yielding rents); and (5) to involve direct connections with customers. (Berg and Tschirhart 1988, 3) Power, rail and other public utilities are examples.
introduced to the segment of the industry which is not a natural monopoly, in particular power generation. The seemingly contradictory roles of government in the power industry make for an interesting case study.

The first section of this paper provides the background to the electric power industry in China, focusing on its rapid expansion of installed generation capacity since the mid-1980s and the challenges the industry is facing in the process of reform. The second section examines the politics of restructuring the government, which has affected the power industry. The last section explains the driving forces behind ownership conversion and ongoing reforms of the structure of the power industry. This paper argues that the conversion of a government agency (the MEP) to a public corporation (the SPCC) is both politically and economically necessary in a transition economy if the state is to ensure and protect its monopolised position in the power industry while encouraging competition whenever it is possible. Changing from direct government ownership to a public corporation and changing the structure of the power industry by unbundling power generation from transmission and distribution requires the government through the MEP/SPCC to centralise its control first, especially control of transmission and distribution networks, in order to introduce competition into power generation.

The Electric Power Industry in China

The development of China’s power industry has been intimately related to political changes in the country (Smil 1976; Carin 1969; Chow, 1997). Ever since the mid-1980s, like most sectors of the economy, the power industry has been experiencing rapid growth of installed generation capacity and power generation while facing multiple changes in the process of moving from a command economy to a market-oriented one. In the past 15 years, China has become the second largest power producer in the world after the United States. The belief that ‘communism equals Soviet power plus electrification’ ensured a steady increase in investment in the power industry after 1949 (Smil 1976). The central planning and centrally controlled allocation of investment allowed the power industry to develop faster than the average of all industries. The average annual elasticity of electric production from 1949 to 1979 was 1.6; its 15% re-investment rate was about 38% higher than the average in all industries. Despite a 13% average annual growth rate of installed capacity from 1949 to 1979, the manifestations of electricity shortages caused by inadequate generating capacity were widespread, ‘ranging from severe restrictions on the size of a single bulb allowed per room and reduced street lighting in large cities to exhortations for frugality and savings in industrial production and shutdowns of large factories in rotation to avoid the overloading of power systems’ (Smil 1976, 49).

The problem of power shortages worsened with the adoption of economic reforms in China in 1979 as rapid economic growth in other sectors increased their demand for power. An average annual growth rate in gross domestic product

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3 Elasticity of electricity production is an indicator of the relationship between the growth rate of electricity production and the growth rate of the national economy, which is often related to the growth rate of gross national product (GNP). Generally speaking, the growth rate of electricity production should be higher than that of the national economy. The re-investment rate in this case is the percentage of the total profits used in re-investment. See SPCC (2000b).
Table 1. Power generation, China 1979–98

<table>
<thead>
<tr>
<th>Year</th>
<th>Total installed capacity (GW)</th>
<th>Total generation (TWh)</th>
<th>Growth rate (previous year = 100)</th>
<th>GDP growth (previous year = 100)</th>
<th>Elasticity of power consumption to GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1979</td>
<td>63.02</td>
<td>282.0</td>
<td>107.6</td>
<td>0.99</td>
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</tr>
<tr>
<td>1980</td>
<td>65.87</td>
<td>300.6</td>
<td>107.8</td>
<td>0.98</td>
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<tr>
<td>1981</td>
<td>69.13</td>
<td>309.3</td>
<td>105.2</td>
<td>0.97</td>
<td></td>
</tr>
<tr>
<td>1982</td>
<td>72.36</td>
<td>327.7</td>
<td>109.1</td>
<td>0.97</td>
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</tr>
<tr>
<td>1983</td>
<td>76.44</td>
<td>351.4</td>
<td>110.9</td>
<td>0.97</td>
<td></td>
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<tr>
<td>1984</td>
<td>80.12</td>
<td>337.0</td>
<td>115.2</td>
<td>0.83</td>
<td></td>
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<tr>
<td>1985</td>
<td>87.05</td>
<td>410.7</td>
<td>113.5</td>
<td>1.07</td>
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<tr>
<td>1986</td>
<td>93.82</td>
<td>449.6</td>
<td>108.8</td>
<td>1.01</td>
<td></td>
</tr>
<tr>
<td>1987</td>
<td>102.90</td>
<td>497.3</td>
<td>111.6</td>
<td>0.99</td>
<td></td>
</tr>
<tr>
<td>1988</td>
<td>115.50</td>
<td>545.1</td>
<td>111.3</td>
<td>0.98</td>
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<tr>
<td>1989</td>
<td>126.64</td>
<td>584.7</td>
<td>104.1</td>
<td>1.03</td>
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<tr>
<td>1990</td>
<td>137.89</td>
<td>621.3</td>
<td>103.8</td>
<td>1.02</td>
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<tr>
<td>1991</td>
<td>151.47</td>
<td>677.5</td>
<td>109.2</td>
<td>1.00</td>
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<tr>
<td>1992</td>
<td>166.53</td>
<td>754.2</td>
<td>114.2</td>
<td>0.97</td>
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<td>1993</td>
<td>182.91</td>
<td>836.4</td>
<td>113.5</td>
<td>0.98</td>
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</tr>
<tr>
<td>1994</td>
<td>199.90</td>
<td>927.9</td>
<td>112.6</td>
<td>0.99</td>
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</tr>
<tr>
<td>1995</td>
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<td>1006.9</td>
<td>110.5</td>
<td>0.98</td>
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<tr>
<td>1996</td>
<td>236.54</td>
<td>1079.4</td>
<td>109.6</td>
<td>0.98</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>254.24</td>
<td>1134.2</td>
<td>108.8</td>
<td>0.97</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>277.29</td>
<td>1157.7</td>
<td>102.07</td>
<td></td>
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</tr>
</tbody>
</table>


(GDP) of almost 15% in the first decade of the reform (1979–89) brought about a tremendous surge in demand for all forms of commercial energy, especially electricity. Elasticity of power consumption to GDP was a mere 0.94 for this period. Increased demand led to changes in government policies regarding investment in power generation, which led to a doubling of the installed power generating capacity, from 63 GW in 1979 to 126.64 GW in 1989 to 277 GW in 1998, for an average annual growth rate of 8.2%. The total power generation grew from 268.36 kilowatt-hours (kWh) to 1157.7 kWh during the same period, an annual growth rate of 7.8% during the period (see Table 1) (Yang and Yu 1996, 736).

Despite the rapid increase in installed capacity and power generation, about 60 million people in remote areas in China still do not have access to electricity and many areas in China still experience peak-hour power curtailments; per capita consumption of electricity in China remains less than one-tenth of that in the United States and per capita annual generation is only 900 kWh, about one-third of the world average, about one-sixth to one-tenth of that in developed countries and ranking more than 80th in the world (Gao 1999, 2–5). The construction of transmission and distribution networks and facilities has long lagged behind that of power generation; fragmentation of transmission and distribution networks only exacerbated the bottleneck problem of power distribution and consumption. According to some experts, in the mid-1990s chronic power shortages, of about 5.8 billion kWh, fell short of demand by about 20%, holding back industrial production by 20–40% (George 1998, 22–9; Sender 1996, 63; Li and Dorian 1995, 619–26). In addition, there has been the problem of uneven distribution of energy supply, with some rural areas unelectrified, the coastal cities achieving an energy balance,
and certain provinces with excess power capacity. Heavy reliance on coal, acute uneven geographic distribution of coal and hydro reserves, uneven demands for power and generating capacity, poor-quality lines, poorly integrated transmission systems, and inefficient energy utilisation are only some of the main factors contributing to power shortages in some areas.

Thermal power accounts for about 75% of China’s electricity. Most thermal power is coal generated; neither oil nor natural gas is extensively used for generating electricity, a situation likely to persist into the near future. The high-level use of coal in China’s electricity industry reflects the country’s ample coal reserves. China accounts for nearly one-third of all world coal production and has about 11% of the world’s coal reserves. At the moment, 40% of coal production in China is used to generate electricity. However, the country must deal with a number of problems associated with coal’s massive use. One is the uneven distribution of coal reserves. Most of China’s easily accessible coal is located in the interior in Shanxi Province and Inner Mongolia. Development of coal resources will continue to be concentrated in these north-western provinces because coal from mines in southern provinces tends to be higher in sulphur and ash, and therefore unsuitable for many applications. Meanwhile, high economic growth has been concentrated in the south east coastal regions where there is a shortage of coal deposits and hydropower resources. As a result, coal must be transported from the interior to the coastal regions on the severely congested railways, and indeed coal has always occupied at least 40% of the railway cargo capacity, more than any other commodity in China.4

China has the greatest potential in hydropower in the world. Yet, less than 15% of the country’s total electricity is derived from hydropower and only 13% of the exploitable potential was developed by the end of 1994. Over 77.7% of the total exploitable potential of hydropower resources in China are located in the south-west, remote from economic development centres, thus resulting in unfavourable exploitation conditions (Zhang 1998, 47–82). The Yangtze River basin alone provides roughly 50% of China’s hydroelectric power, followed by the Tibet Autonomous Region and Yunan Province. The construction of the world’s largest hydroelectric project, the Three Gorges Project, on the middle reach of the Yangtze River, formally began on 14 December 1994; it was intended to supply sufficient power to the east coastal region. It was also intended to reduce the burning of large amounts of coal, thus significantly reducing air pollution in the Yangtze River region. Its 26 hydropower generating units (700 MW each) are expected to provide a total of 18.2 gigawatts (GW) of generating capacity and generate 84.7 billion

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4 China is the largest producer of coal in the world with production amounting to 1.2 billion tons in 1998, roughly one-third of the world total (compared with about 1 billion tons in the United States). China’s estimated total coal resources are second only to the former Soviet Union, although proved reserves rank behind the United States and the former Soviet Union owing mainly to a lack of exploration. In 1997, energy generated in China was 75.7% of thermal electric, 23.5% hydroelectric and 0.8% nuclear (CSB 1998, 290). Coal provided the raw material for most thermal power generation; however, the volume of coal transported could drop significantly if mine-mouth power generation plants are realised. Since the early 1990s, the Chinese government has been encouraging the construction of mine-mouth thermal power plants in Shanxi and other coal-producing regions to supply power to China’s eastern coastal economic development areas by means of a power transmission network. Yet very little success has been achieved (Fridley 1992, 506; CSB 1995, 203; Smil 1998, 935–51; Baldinger 1993, 35; Thomson 1996, 726–50).
kWh of electric power per year upon its completion in 2010. Nevertheless, the location of hydro potential relative to markets, environmental concerns associated with large hydro projects, and high construction costs have limited hydropower’s contribution to China’s power generation.

Inefficient power utilisation is another major problem with which the power industry in China must deal. According to Blackman and Wu (1995, 698), the ‘average thermal efficiency of China’s power plants is 25–29% compared to rates of 35–38% in industrialised countries’. Several factors contribute to low efficiency: small-sized generating units, low transmission networks, high wire loss rate and the segmentation of the grid. While development of large generation units has been emphasised in the past five years, fully 40% of generation capacity is in units smaller than 100 MW and only 29.4% of capacity is in units larger than 300 MW (Blackman and Wu 1995, 696). Efficiency in generation will ultimately depend on adequate transmission and distribution facilities. In 1980, there was no 500 kV transmission line in China. By the end of 1998, 20,093 km of 500 kV transmission lines had been constructed, 17% of them cross-regional among six regional networks. Despite this development, transmission networks remain poor in quality and fragmented; even regional and provincial power networks are not completely integrated. The annual line loss rate from the mid-1980s to the late 1990s remained over 8%.

To achieve the official goal of ‘sending electricity from the west to the east and from the north to the south’ requires rapid construction and integration of high-voltage transmission grids capable of high load transfer over long distance.

In sum, despite the rapid increase in installed generation capacity and power generation, the power industry faces several challenges, such as a large number of inefficient, high-pollutant, small-sized generation units, uneven geographic distribution of power supply and demand, low energy efficiency, and the need to move along the road towards a socialist market system.

Restructuring Government

Restructuring government is often seen as a matter of administrative reform, which not only distinguishes itself from political and economic reforms but is also seen as ‘a prerequisite factor to the other two domains because administrative reform is the core of the government: it is the government in action’ (Fang 1993, 50; Mills and Nagel 1993). In this view, administrative reform is ‘non-political’ because it involves reforming bureaucratic power and the role of professionals. There may be

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5 Concerning the project of the Three Gorges Dam, see Qing and Sullivan (1999, 53–71). There has been wide speculation that power from the Three Gorges hydro project might not be able to find buyers. Two more recent projects initiated by the central government and implemented by the SPCC and other government agencies aim at ensuring the transmitting power from west to east—one is the development of the western regions and the other is construction and improvement of urban and rural transmission and distribution networks. The total bill of the second project is 300 billion yuan from 1998 to 2000. Recent construction of 890 km 500 kV transmission lines from Three Gorges to Changzhou, Jiangsu Province, especially intends to ensure an adequate supply of power to Shanghai, Jiangsu and Zhejiang from the Three Gorges hydro project. For the development, see news on the SPCC’s home page <http://www.cep.gov.cn> and various issues of China Electric Power, published by China Electric Power Publishing.

6 In 1998, the line lose rate was 8.13%, just a little improvement from 8.20% in 1997. See CEPIC (1999, 548); Yang and Yu (1996, 749). The recent project of construction and improvement of rural and urban transmission and distribution networks is intended to improve the rate of wire loss.
some grounds for this sort of distinction in democratic developed countries because there is normally a clear distinction between politicians (elected officials) and bureaucrats (career civil servants). In China, however, administrative reform, by its nature, is political reform, and it has been proceeding hand in hand with economic reform. Restructuring government is not only deeply political but it takes place in parallel with economic reform; and the two have been driving each other, with their priorities in tandem.

Ministerial restructuring in China has reflected the transition from a planned to a market-oriented economy, sometimes anticipating future development but more often catching up with the reform process. Restructuring government has been driven both by changes in China’s approach to the marketplace and by the degree of independence that market players have been able to assert. Changing the communist dictum ‘politics in command’ to ‘economics in command’ required changes in both the Party and the government—a deliberate withdrawal of the Party from most non-political areas and bringing reform supporters into the government (Goldman and MacFarquhar 1999, 3–29). ‘Early reforms created pockets of unregulated and lightly taxed activity within the system’ (Naughton 1999, 32) which in turn demanded changes in public policies and in government. There have been three major rounds of restructuring government in China since the end of the 1970s: in 1982, 1988 and 1993. Each was necessitated by changes in the economy and especially the distortions created in the reform process, and was pursued to strengthen and expand economic reform, which was first made possible by changes in government policies and in the ideological orientation of the Chinese Communist Party (CCP) and then facilitated with the government changes.

The first round of administrative reform was launched when the decision on ‘reform and opening up’ was adopted at the Third Plenary of the 11th Congress of the CCP on 18–22 December 1978. ‘New organisations and departments—such as the Ministry of Foreign Trade, the Commission on the Management of Export and Import, and the Commission on the Management of Foreign Investment—were established to deal with rapidly developing external affairs’ (Worthley and Tsao 1999, 574). As a part of the general program of restructuring government, the power industry was split from the Ministry of Water Resources and Electric Power. In the next three years, government agencies (departments, commissions and bureaux) under the State Council exploded to over 100. The 1982 government reform was designed ‘to simplify the government organisational structure and eliminate the lifelong employment system to allow for the promotion of young staff’ (Reinganum and Pixley 1998, 3). The reform eventually reduced the number of government agencies to 61. The power industry was placed under the jurisdiction of the Ministry of Water Resources and Electric Power, which itself was a combination of two ministries—the Ministry of Water Resources and the Ministry of Electric Power—before 1982.

These changes in government organisations in 1979 and 1982 were designed partially to bring in the supporters of reform and to demote or remove the opponents. One mechanism to achieve this goal was the adoption of a massive mandatory retirement program facilitated by a one-time buy-out strategy. By allowing retired government officials to continue enjoying their former political and economic privileges, and to receive extra compensation, such as extra months of wages and extra housing that children and grandchildren were entitled to enjoy after their death, the government was able to get rid of a large number of old
revolutionary veterans. This cleared the way for incoming young, well-educated professionals who ‘were generally more supportive of reforms, more adaptable, more pragmatic, [and] more competent than their predecessors’ (Li, D. D. 1998, 4; Worthley and Tsao 1999, 571–87; Reinganum and Pixley 1998, 36–41). By 1988, 90% of the officials above the county level had been appointed after 1982 and the proportion of government officials with college education had increased from 37% to 52%.

Supplementing the second stage of economic reform that moved from profit retention to the ‘contract responsibility system,’ the second round of government restructuring was initiated by the CCP in October 1987 to streamline the government, separate Party and government functions and grant enterprises greater independence. In 1988, all energy industries were put under the giant Ministry of Energy (MOE), which was in charge of the planning, financing and management of the coal, oil, electric power and nuclear power industries.

Unfortunately, the MOE was little more than a collection of the same vested interests within one umbrella organisation, the same personnel, the same allegiance, and the same entrenched interests. … [T]he MOE was never able to function as a cohesive group. (Chow 1997, 406)

The coal industry was a perennial loss-making industry while the petroleum industry had amassed huge amounts of debt which forced it to face the prospect of insolvency.

The electric power industry was facing a completely different problem: ‘electric power shortages worsened in virtually all parts of the country as growth in power output averaged only half that of GNP growth’ in the 1980s (Fridley 1992, 507. See also Wu and Li 1995, 167–78; Thomson 1996, 726–50). Its profitability had also dramatically declined as the result of the classic squeeze: ‘control on many elements of cost to industries, such as material prices, interest rates, and wages, were loosened considerably, while output prices remained fixed by the government’ (Fridley 1992, 508, 514). There was also insufficient capital investment in the sector as the central government adopted the fiscal contract system with provinces, which led to a rapid decline of the centre’s fiscal resources relative to those of the provinces and thus its capacity to finance power projects. To address the shortage of electric power and insufficient investment, in 1985 the central government adopted the policy ‘who invests benefits’. This allowed provincial and local governments and large enterprises to invest in power project constructions. Local governments and large enterprises were able to use their accumulated retained surpluses and to borrow large amounts of funds from banks in order to engage in badly needed power generation. Their investments gave them not only the assur-

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7 Before 1979, China’s SOEs were typically production units in a centrally planned economy; the government determined the production plan, allocated the investment and materials supply, directed the products to designated producing units at planned prices, and controlled employment, wages, and prices. SOEs transferred all their surplus funds to the state budget, and relied on the budget for subsidies to cover losses and grants for investment. The profit retention system, adopted in the early 1980s, allowed the SOEs to retain a proportion of profits for their own discretionary use. In 1987, the central government adopted the contract responsibility system, under which each SOE signed a contract with its supervisory agency, promising the remittance of a certain amount of tax revenue and profits, but retaining most of the decision-making rights in the enterprise’s daily operation. See World Bank (1988); Naughton (1996); Lardy (1998).
ance of power supply but also the special position to bargain with higher levels of government. ‘Instead of being plan acceptors and robots as subsidiaries of the national government, all of the power groups and provincial power companies [did] their own planning’ and assumed increasingly autonomous operational rights (Yang and Wu 1996, 738).

The second round of government restructuring in the power industry indicated the unique relationship between political and economic reform. While diversified investment sources allowed vertical decentralisation between central and provincial governments, political reform aimed to centralise the authority in a horizontal way—placing all energy sectors under one ministry. Political reform adopted by the central government in 1988 aimed at re-centralisation in reaction to ‘overheating and relatively high rates of inflation with measures designed to curb money supply, and increase remittance from the provinces to the centre’ (Burns 1994, 154).

Economic reform measures allowed provincial power authorities and local governments to invest in power generation and thereby gained not only the necessary power supply but also increasing autonomous operational rights and decision-making independence in investment. Finally, the ‘dual pricing system’, adopted with the diversified investment sources, provided provincial governments with opportunities and incentives to accumulate more financial resources to develop local economies. Though the changes only marginally enhanced the formal autonomy of enterprises in relation to Beijing, in practice they encouraged the independence of local governments in the marketplace which eventually tipped the balance of control over industry away from the central government.

After the economic retrenchment of 1989–92, the Third Plenary of the 14th CCP Congress in 1993 endorsed the creation of a rule-based market system as well as privatisation and restructuring of state-owned enterprises (SOEs). The third round of government restructuring followed in the same year. The primary goal of this round was to allow greater allocation of resources by the market than by the government through separating administrative from economic/commercial functions of government ministries. With this guideline, splitting from the MOE, the Ministry of Electric Power (MEP) was created, assuming the responsibility for planning, co-ordinating, supervising, regulating and managing the country’s electric power development. In particular, the MEP formulated and oversaw implementation of unified electric power industry plans with the State Planning Commission and other government agencies, co-ordinated the development program of the electric power industry, and provided services to electric power enterprises. The MEP also shared certain responsibilities with the China Nuclear Industry Corporation and the Ministry of Water Resources with respect to nuclear and hydroelectric systems.

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8 On the fiscal contract system, see Ma (1997); Wong (1997); Montinola, Qian and Weingast (1995, 50–81); Qian and Weingast (1997, 149–85).
9 With the policy ‘whoever invests benefits’, the central government adopted the dual pricing system for power to get on grids. That is, power tariffs for getting on grids (purchase price) from old power generation plants would be set by the MEP while that from new plants, invested by provincial and local governments, would be set by provincial governments, based on investment costs, rates of depreciation, operation costs and reasonable profits. The SPC would approve the changes of end-users’ power tariffs by balancing the regional differentials between the power prices from old and new plants, taking the macroeconomic situation, regional development and history into consideration. The SPC might agree, reject or stagger the changes over a period of time or even delay the change. The dual pricing system was adopted in 1985 and continued until the Power Law was adopted in 1996 (PDPB 2000).
power plants, respectively. Organisationally, the MEP managed five inter-provincial regional power administrations and nine provincial power bureaux. The regional power administrations were responsible for managing their respective regional power networks, dispatching the power from the plants connected to such networks and supervising the power bureaux at lower administrative levels. They were the intermediates between the MEP and provincial power bureaux. In those provinces where the power bureaux were historically subordinated to both the MEP and provincial governments, each power bureau managed its provincial power grids and dispatched power to meet local demands.

The third round of restructuring the power industry highlighted the incongruous interests among energy industries and the special needs of the power industry, especially its demand for investment which could not be supplied by government allocation of grants alone. The reform, however, did not accomplish one of the main goals of government reform at the time—shrinking the redundant government bureaucracies. Indeed, despite all the reform efforts, until then government restructuring had ‘reaped few results, merely leading to the reappearance of the abnormal cycle of “streamlining, bloating, streamlining again and bloating again” ’ (Li, N. 1998, 17). This can be explained with the analogy used by some economists in China that reforms in government were just like trying to drive monkeys away from the temple. Dismantling the temple is the only way for monkeys to be conclusively expelled. So long as the ministry remained, bureaucrats would eventually find their way back to the temple after being dismissed and meddle with the operation of the market, thus defeating the reform.

The main objective of the reform in the mid-1990s was to allow the government to focus on its role as policy maker and regulator, transferring the responsibility of operations and investment to a corporation. Following this guideline, in October 1996 the State Council gave permission for the MEP to start the process of forming a corporation in order gradually to give up its role in allocating resources and let the market take over some operations in the power industry. On 16 January 1997, the State Power Corporation of China (SPCC) was formally created. It was hived off from the MEP, with which it remained entangled until March 1998 when the latter was disbanded as part of the general institutional restructuring of the central government at the First Session of the Ninth National People’s Congress (NPC). The aim of the government reform in 1998 was to commence the process of streamlining the bureaucracy and the process of separating government regulatory functions and commercial activities. The aim of reforming the structure of the power industry was to change the ownership of the power industry from direct government ownership, under which ‘the government both owns and has direct managerial control over the industry’, into a government-owned corporation ‘which manages the industry so that government is one step removed from day to day control’ of the industry (Hunt and Shuttleworth 1996, 15).

There was and is a general misunderstanding that, subsequent to the government restructuring, the regulatory role of the former MEP would be assumed by the China Electricity Council (CEC), which was created by the MEP in 1988 as a government agency in charge of professional activities of the power industry. Rather, the SPCC handed over its government and regulatory functions to a much smaller department under the auspices of the SETC, which itself is the macroeconomic regulatory department accountable to the State Council. The SPCC took over the ownership and operation of all the assets previously owned by the MEP,
including power plants and grid networks, about 80% of the national generation and transmission capacities. Meanwhile, as a macroeconomic manager, the State Development and Planning Commission maintains its authority over the country’s five-year plans, approving large power projects, approving changes of power tariffs for end-users and related pricing on coal, rail, etc. Between 1996 and 1998, the MEP was gradually extricating itself from enterprise functions and relinquishing its control of assets to the corporation.\textsuperscript{10}

The SPCC was created as a giant state-owned stock-holding corporation\textsuperscript{11} with 80% of China’s power sector assets with a total worth of 474.1 billion yuan (US$57bn), including power plants and grid networks, with 1.64 million employees, 140 GW of operating capacity and 100,000 km of 220 kV power lines, including 13,616 km of 500 kV high-voltage transmission cables. It is authorised by the State Council to be the main owner, investor and manager of state-owned power assets inherited from the MEP and therefore has the responsibility to ensure the security and value-adding of state-owned assets and to protect the state’s investment. It is the economic entity for power generation, transmission and distribution, construction and operation of cross-region power transmission grids, and the legal entity for unified management of the national power networks. Its independent financial status entitles it to deal directly with foreign investors and lenders and to raise and guarantee up to 50% of foreign capital for power projects. In sum, it became a legally recognised entity (a ‘legal person’) that enjoys rights and owes civil responsibilities in relation to the full extent of its assets.\textsuperscript{12}

Currently, the power industry in China remains under the vertically integrated,

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\item \textsuperscript{10} State Council (1996). See also Worthley and Tsao (1999, 571–87); Andrews-Speed and Dow (2000, 335–47) and Lee and Hengst (1998, 19–24). Contrary to the common conception that the SDPC sets power tariffs for the country, the SDPC approves changes (normally increase in) of electricity sale price to end-users based on the purchase prices from power production enterprises, which are set by provincial governments (for those invested by provinces) and the SPCC (for those invested by the state). See ELPRC (1997, 14–18).
\item \textsuperscript{11} State-owned and stock-holding are apparently contradictory, as the CEO of the SPCC explains, “the so-called “stock holding” stresses that the capital linkages within the State Power Corporation system are not “wholly owned”’ (Gao 1999, 5). It is, however, emphasised that the SPCC would maintain the predominant position in terms of ownership while other forms of ownership are allowed, especially in power generation plants. While the SPCC took over 80% of the assets of the country’s power industry, four provinces and regions, which traditionally are more independent in making decisions on their economic development than many other provinces, are outside the jurisdiction of the SPCC—Guangdong, Hainan, Tibet and Inner Mongolia. Their decisions on power development—investment, pricing and operation and management standards—are subject to the same approval and regulation from the SDPC and SETC that applies to the SPCC. Inner Mongolia is an independent financial unit from the SPCC while its power generation and transmission are logged into two separate regional power networks—Northeast and China East Power Network.
\item \textsuperscript{12} As a public-owned corporation, the SPCC has a legal status which allows it to borrow on the domestic and international market by issuing shares. The China Power Investment Corporation International, 100%—owned by the SPCC, is an international financing arm of the SPCC. Huaneng International, a direct subsidiary of the SPCC, has been listed on both New York Stock Exchange and Hong Kong markets. See SPCC’s home page <http://www.cep.gov.cn>. While the creation of these institutions was approved by the State Council, they enjoy great discretion in conducting their business provided they follow the general five—year plan. Meanwhile, the SPCC has the authority to issue shares abroad, public equity, bonds and other debt instruments, borrow from international financial institutions and attract foreign direct investment. All these economic activities are conducted within the general policy guidelines, for the SPCC is a government-owned enterprise and its president and top employees are appointed by the State Council.
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monopolised control of the government. The SPCC consisted of five regional power groups, nine independent provincial power companies, the China Huaneng Group, the Three Gorges Hydro Power Group, and the National Grid Construction Company. Reform is still going on in separating government and regulatory functions from commercial ones at the regional and provincial level. Regional power groups control power grid construction and cross-provincial dispatching with their unified transmission networks among 17 provinces. Nine provinces have independent provincial power grids of different sizes because historically the power sector in these places has always been under the control of provincial governments. Provincial power companies control their provincial power generation, transmission, dispatching and distribution. Recent efforts at centralising construction, ownership and control rights over the main arteries of transmission and distribution networks in the country, while decentralising the ownership of power generation plants, constitute the steps taken by the SPCC to separate power generation from transmission in order to introduce competition among power generators. This is one of the main policy goals that the SPCC is striving to achieve from 1998 to 2000: a gradual separation of government and economic functions at three levels—national, regional and provincial—through corporatisation of power plants, construction of nation-wide interconnected transmission networks and promotion of competition among independently run power plants that bid for access on to the grids (Gao 1999, 1–5).

Conversion of the MEP to the SPCC signified a major change in the guiding principle of the industry, from ‘maximising employment, maximising the distribution of the benefits of economic activity to itself and its jurisdiction, and (as regards electricity) minimising foreign influence on the production and distribution of a strategic commodity’ (Bleevens 1999, 25) to encouraging market competition, promoting economic efficiency, maximising profits and maximising the utilisation of foreign capital and technology. It is to create a political and economic environment into which market competition can be gradually introduced. In reality, the change has been less significant; the relationship between the SPCC and regional power groups and independent provincial power bureaux remains similar to that between the MEP and Regional Power Administrations and provincial power bureaux. Sorting out and separating different functions will take some time as old habits die hard.

**Driving Forces Behind the Conversion**

As a key infrastructure industry, the development of the power industry has always been one of the Chinese government’s top priorities. As in most countries, the ‘natural monopoly’ character of the industry has been used to justify not only state ownership but also high levels of regulation (Stigler and Friedland 1962, 1–16; Priest 1993, 289–323). The power industry in China has been monopolised by the state, which sets investment targets, approves (indeed finances) investment in power projects, sets quality standards and regulates prices through a hierarchical structure from the State Council through the State Planning Commission (SPC) before 1998 (and the State Development and Planning Commission (SDPC) after 1998), the State Economic Commission (SEC) before 1998 (and the State Economic and Trade Commission (SETC) after 1998), the Ministry of Energy/Electric Power (between 1993 and 1998) and lower levels of government and power
bureaux (Lieberthal and Oksenberg 1988). Under the planned economy, the state in theory owned all generating plants, transmission grids, distribution networks and all other necessary facilities. In practice, most power plants and transmission grids and distribution networks were managed jointly by the central government through the MEP and provincial governments. Regional power bureaux were representatives of the MEP as intermediates between the central and provincial governments. Pricing, investment, development and distribution were all controlled by the central government. The State Council through the SPC and SEC made a five-year plan in which certain power projects were outlined and investments with which to construct those projects were laid out. The MEP would carry out those plans and oversee the construction of the power plants and all the other operational activities of generating plants, transmission and distribution. The central government through the MEP and SPC each year also controlled pricing by using a catalogue system, which determined the basis of power tariffs throughout China, providing ‘preferential treatment to heavy industry, chemical plants and agriculture in terms of both allocation of power and the price of power’ (Andrews-Speed et al 1999, 437).

Reforming the centrally owned and centrally controlled power industry has taken place within the general reform context in China—gradual and progressive, moving one step at a time from the planned economy towards a market-oriented economy, with reform in one sector creating pressures for matching reforms in other areas. The Chinese economic reform so far has gone through two main stages. The first stage took place from 1979 to 1992, during which the planned economy was gradually dismantled with the introduction of market mechanisms and market forces. The official policy guideline at this stage was to create a socialist planned commodity economy, which meant that government planning would continue and ultimately allocate resources. The main reform measure was the dual-track system—‘the coexistence of a traditional plan and a market channel for the allocation of a given good’ (Naughton 1994, 52)—including a household contract-responsibility system, dual pricing and fiscal contract agreements. The second stage of reform began in 1993 when the Party officially abandoned the formula of a commodity economy and adopted a development goal of creating a socialist market economy. Despite the debate about whether it is possible to develop a market economy in a socialist political system, efforts have been made in China to allow and encourage market forces to play the primary role in resource allocation by converting the state-owned enterprise (SOE) into a ‘legal person’ operating on its own, assuming sole responsibility for its profits and losses. The Company Law was enacted at the end of 1993 to provide a legal basis for corporatisation so that the market can assume the primary mechanism of economic activity.

Reform in the power industry has gone through two similar stages. In the first decade of the general reform, reform in the power industry lagged the general reform; reform measures adopted in this sector were essentially passive responses to the broader changing political and economic environment. This is partly the

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13 Before 1985, the vertically integrated power industry had only one price—sale price to end-users—instead of three different kinds of prices as is the case now—purchase price from producer to grids, mutual-supply price and sale price to end-users. The first two prices were invisible through internal transfer and the sale price to end-users was set by the MEP with the approval of the Pricing Bureau under the State Council. A cataloguing system is still in use listing different prices for residents, non-residents, commercial use, heavy industries, light industries, agriculture, poor regions, etc.
result of inertia in the planned economy and partly of the unwillingness of the government to let this important infrastructure industry go. Since 1993, the industry has been experiencing fundamental changes which reflect the state’s policy in this sector: the combination of construction and concentration of the state’s control of transmission, distribution and dispatching through centrally controlled transmission networks, while devolving ownership and managerial rights of power generation plants to encourage competition. This section of the paper examines this development to show the driving forces behind the reform in China’s power industry.

Under the planned economy, the electric power industry was strictly and rigidly controlled through central planning. The central government would determine production quotas and prices for power, receive all profits from enterprises and subsidise or absorb all losses when it was necessary. It would also determine power distribution through rigid and comprehensive five-year plans. The plan-making was organised in a hierarchical structure. That is, the State Planning Commission (SPC), an arm of the Chinese Cabinet (the State Council) set initial output targets which were then sent to various industrial ministries under the State Council and to provincial planning commissions. Bureaux at lower strata responded with their own views on the targets and projected output and input requirements needed to reach the targets. After this process was repeated several times, the SPC decided a set of output targets and supply requirements. It also determined the selection of power projects by controlling the allocation of government funding and foreign exchanges, and supplied all the regulations and requirements for production, transmission, distribution and investment. The Ministry of Energy, and later the MEP, would work out the detailed plans to implement the decisions with the co-operation of provincial power bureaux. As a central government ministry, the MEP also assumed responsibilities as an enterprise in producing and distributing electricity, and as a regulator for the power bureaux of the provincial and lower-level governments (Lieberthal and Oksenberg 1988).

After the 3rd Plenary Session of the 11th Central Committee of the Chinese Communist Party (CCP) in 1978, the role of central planning gradually eroded. Strict plans gradually changed into policy guidelines for most sectors of the economy. The power industry, however, remained under the strict control of the central government until 1984 when some changes were adopted to respond to the serious problem of power shortages. One of the first reform measures was the Y0.02/kWh consumer surcharge. The money was dedicated to an Electric Power Construction Fund, which was needed to make up the inadequacy of central funding for this capital-intensive industry. By the mid-1980s, rapid economic growth, especially in the coastal regions, had dramatically increased demand for electricity and thereby imposed great pressures on central, provincial and local governments to loosen the restrictions on investments in the power industry.

In 1985, the central government officially adopted the policy ‘who establishes, who controls, and who utilises’ (Stepanek 1992, 443). The central government began to change the allocation of the central budget for industries to interest-bearing bank lending and other sources of financing. Coastal provinces and some large enterprises were the first to use their ‘retained’ budget surplus plus bank borrowing to invest in building small-scale power generating units. Those which were able to bring in foreign funds to finance their economic growth also looked for overseas financial help in developing their much-needed power industry. For example, the Guangdong government negotiated, with the permission of the central government,
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China’s first joint-venture BOT (build–operate–transfer) power project, with Hong Kong Hopewell Holdings. Diversified investment sources were adopted more as a response to rapid economic growth than an active initiative to reform the power industry. Yet, when the decision was adopted to move away from state allocation of investments to banks loans, retained profits and other sources of funds, other governments and large SOEs were able to invest in the power generating plants. Consequently, central control in the sector became obsolete, and provincial and lower levels of government and large SOEs gained not only the guarantee of much-needed power supply but also two of the three important aspects of property rights—utilisation rights and return rights—and thereby greater economic and political independence.

While diversified investment contributed to the relatively high growth rate in the power industry—about 7% of average annual growth in the 1980s—it also brought new problems which demanded more reforms in the industry. One of the problems was the relatively small size of the new generating units. ‘As late as 1987, 86% of China’s total generating capacity was comprised of plants smaller than 100 MW’ (Blackman and Wu 1999, 698). For technical reasons, small thermal power plants are rarely as efficient as large ones. They also contribute more environmental pollution and waste more energy than large ones. Three main reasons led to the development of small-sized generation units. One is that the central government’s approval was needed to build any generation plants larger than 25 MW or exceeding US$30m. To avoid the central government’s sanctions, provincial governments opted for building small plants. Second, the high costs of constructing power generation plants made it difficult for provincial and local governments to build large ones. Finally, poorly connected transmission networks meant that those who were able to build large generation plants might not be able to sell their extra power to the grids.

Despite the diversified investments in the power industry and a near tripling of installed generating capacity from 1980 to 1992, the shortage of power remained a major obstacle to rapid economic growth. Many localities adopted the much-publicised policy of ting san, kai si (closing plants for three days of the week) and a growing number of urban residents suffered from regular rolling blackouts. By the beginning of the 1990s, power production still fell short of demand by about 20% and the worst shortages took place in the coastal regions where the economy was growing the fastest (Li and Dorian 1995, 619–26). These problems called for further changes in government policies and more far-reaching reforms in the power industry. While the demand for power development far outstripped the availability of official finance to fund such projects, introducing other sources of finance, especially foreign investment, would have the effect of imposing financial discipline on power enterprises. Corporatisation of power generation plants was partly designed to boost investment in the industry by tapping the vast pool of domestic and overseas private capital in order to overcome the budget limitation and allow

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14 The World Bank (1996, 49) describes property rights as a bundle of rights which include ‘the right to use an asset, to permit or exclude its use by others, to collect the income generated by the asset, and to sell or otherwise dispose of the asset’. Since the planned economy precluded private ownership, and private ownership was precluded in the power industry until the 1990s, the right to sell or dispose the asset (alienation rights) was not an issue. The change of policy in 1985 meant that those who invested in power generation plants gained utilisation and return rights.
power generation to expand. The Power Law promulgated in December 1995 confirmed the general policy guideline of transforming from the planned to a market system and specified the goals of this round of reform:

- to encourage the development of the power industry consistent with development of a socialist market economy and the environment [and] to encourage private investment in power generation, but not in other power sector activities, such as transmission and distribution. (Shao et al 1997, 54)

Most of the foreign funds coming into China’s power industry in the first half of the 1990s were from international financial institutions, the World Bank and the Asian Development Bank (ADB), from foreign governments’ credits and concessionary financial techniques, and from overseas export-import banks. Companies from Japan, Italy, Germany, the United States, France, Switzerland, Canada, Russia and Britain all made significant sales of technology or equipment to China with such sovereign borrowing. But these foreign sources supplied a mere 10% of China’s total investment in the power sector. Over 90% of the power plants were built with domestic funding, which came primarily from China’s special banks (the Bank of China, the Development Bank of China, the Industrial Bank of China, and the People’s Construction Bank of China) or local international trust and investment corporations (ITICs) (Li and Dorian 1995, 919–26).

Those foreign funds that did come as direct investments involved joint ventures with provincial or local power authorities in China. These projects required not only central approval but also guarantees provided by state-owned banks, such as the Bank of China or People’s Construction Bank, or acceptable financial institutions, such as ITICs. Even though the Minister of MEP stated in 1993 that no more new power projects would be guaranteed by central banks nor would the MEP guarantee purchase agreements, foreign direct investment did not materialise until 1996 when the first wholly foreign-owned BOT project was approved by the central government.¹⁵ Sovereign financing created risk-negated situations either when the Chinese bank or ITIC was the borrower (and then lent the fund to the state-owned power companies) or when foreign banks lent money directly to the power company (provided an approved Chinese financial institution acted as guarantor). Yet the practice continued because it was believed that the power industry was too important to the national economy to relinquish ownership to foreign companies. Facing this dilemma in the mid-1990s, the central government speeded up the process of corporatisation to force power plants to be financially partly responsible for their operation and thereby create a more friendly environment for attracting investment.

Corporatisation power plants does not mean privatisation. It means ‘depoliticisation’ by limiting, if not eliminating, the Party’s direct control over management and

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¹⁵ Li (1977, 23–6); Duffy et al (1996, 9–15); Baldinger (1993, 35–6). The first ever wholly foreign-owned power project, Laibin B project in Guangxi Province, was agreed upon through bidding among 14 developers from around the world in November 1996, after only six months’ consideration. Laibin B became the first Chinese infrastructure project financed entirely with foreign capital, the first to be developed by a wholly foreign project company under a BOT framework, and the first BOT project in China to be formally approved at the state level by the State Planning Commission (see Parsons 1997–98, 73–5). One of the main reasons for sovereign debts rather than foreign direct investment is the absence of a well-established legal system in China. Often, foreign investors and the Chinese partners do not even negotiate on the same basis. This significant problem is beyond the scope of this study.
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de-linking the government’s formal ownership from the management function. Corporatisation is one way to introduce market forces and market competition in order to deal with arbitrariness in the distributional relations between the state and enterprises and related incentive problems. In the power industry, corporatisation focused on generation plants. Soon after it was created in 1993, the MEP started the process of corporatising power plants at the regional and provincial level by ‘floating public power plants assets, issuing corporate bonds, establishing power development funds and channelling foreign investment for power projects’ (Yang and Yu 1996, 747). The process, however, was extremely slow because of the threat of high inflation in the mid-1990s and concerns about employment levels and foreign take-overs. It increased its pace after 1995. Power generation plants were converted into shareholding companies and some even listed on domestic and overseas stock markets. When a large number of large power plants were corporatised, the essence of direct government ownership—government allocation as investment, a centrally set pricing system, remission of profits, and above all central planning—all changed. Converting direct government ownership to a public corporation at the national level became inevitable (Chow 1997, 383–433).

While corporatisation was proceeding, the MEP wanted to entrench the government’s control of the power sector in its production, transmission, distribution and dispatching. Forming large enterprise groupings was the chosen mechanism to achieve this goal. The State Council at the beginning of 1996 gave permission to create the State Power Corporation of China (SPCC). The creation of the SPCC in January 1997 signified a new stage of economic reform in the power industry, in which control of the industry must first be centralised in order to ensure a smooth transfer from a planned economy to the socialist market system at the regional and provincial level. Furthermore, diversified investment sources in the power industry in the previous 15 years had decentralised the government’s role in developing, investing and managing power production, transmission and distribution. Once power is decentralised to local governments, it is very difficult for the central government to exercise control over the general development of the power industry, equality in pricing and standard setting. More importantly, to create competition among power generators requires integrated transmission grids which are a ‘natural monopoly’.

To introduce competition among power generation plants, the central government has decided to ‘re-allocate’ authority in the power industry by consolidating control of transmission and distribution networks, their development and power dispatching, while decentralising control of power generation plants by encouraging various kinds of ownership. To do so, the SPCC has adopted two strategies: one is corporatisation of regional and provincial power bureaux and the other is the construction and improvement of transmission and distribution networks. By corporatising the regional power groups, the SPCC assumes control of the arteries of cross-provincial and cross-regional transmission grids. Four out of the five regional power groups have already been converted into ‘branches’ of the SPCC. Instead of being independent legal entities, they are representatives of the SPCC in each region, in charge of protecting the value of state assets, managing and supervising the regional and provincial transmission grids, mediating the relationship among provincial power companies, and making plans for regional power development (SPCC 1999a). When provincial power bureaux are corporatised, their government and regulatory functions are given to the provincial governments and
their economic functions are inherited by the provincial power companies, which become direct subsidiaries of the SPCC. This provides the latter with more direct control than it was able to exert previously. The program of construction and improvement of urban and rural transmission and distribution networks is partly designed to centralise control as well, especially replacing the county power bureaux with direct control over provincial power companies, so that the SPCC can set the same standard on management, accounting and auditing systems, number of employees, their wages and, more importantly, the same price for rural and urban customers (SPCC 1999b, c, 2000a). While centralisation is proceeding then, at one level, the SPCC is decentralising control over power generation plants, allowing a variety of ownership of power generators to exist so that competition can be introduced when integrated and interconnected transmission networks are better constructed.

Conclusion

Several developments in the power industry illustrate the broader features of the economic reform in China.

First, government restructuring and economic reforms are inseparable. Economic reforms require changing Party policy guidelines, which in turn will lead to political reform in one form or another. Meanwhile, economic reform can only proceed within appropriate political and organisational structures. This interaction between the two reforms has been illustrated here.

Second, as some foreign observers state, ‘there is a tendency on the part of the Chinese to try everything and see what works best and what they want to avoid’ (Anonymous 1995, 27). The slow, cautious and pragmatic process of reform is not necessarily a problem for economic development all the time. For example, the Chinese government decided to open the power sector to foreign direct investment in 1992 when large investments were needed to alleviate the power shortage. For much of the period between 1992 and 1997, however, investment in the sector was dominated by sovereign financing. Despite the negative aspects of sovereign borrowing, tight government control on foreign borrowing did help avoid the balance of payments crises which set many East Asian economies back during the 1997–98 Asian financial crisis.

Third, the reform has often been taking place from the ‘bottom up’ after policy guidelines have been set at the top. The process is continuing and interactive. Successful economic reform, such as diversification of investment sources to provinces and lower levels of governments and corporatisation of large power generation plants, propelled the central government to reform the industry as a whole and has made possible the eventual conversion of the government ministry into a corporation.

Introduction of market competition to power generation is still at the embryonic stage. While China has adopted the single purchase agency model for reforms, allowing generation to be de-integrated from transmission and distribution, competition among generators has not been fully implemented. Most power generation plants, including those that are owned and controlled by the grids, have been corporatised and have separate accounts from the transmission grids. Currently, all power generation plants, excluding those small-sized units which are required by the central government to close, are allowed to sell power to the grids indiscrimi-
nately. Experiments on competing to gain access to grids, however, have been launched in Shandong, Zhejiang, Shanghai, Liaoning, Jilin and Heilongjiang Provinces. Having realised that ‘investment in transmission serves to facilitate competition in generation’ (Yarrow 1995, 82), the SPCC has been concentrating on construction and improvement of urban and rural transmission and distribution networks since 1999. Meanwhile, changing the ownership and structure of provincial and regional power bureaux is continuing. The SPCC is still facing fundamental challenges. It faces the difficulty of separating and clarifying government and administrative functions from economic and commercial ones at both the national and provincial levels. It must cope with a large number of redundant employees in all power enterprises while exercising its social responsibilities. The nature of the industry and the social responsibility embedded in a public corporation mean that any reform efforts must balance these two principles. That is why the reform process in the power industry is likely to be more gradual than many foreign advocates or even Chinese reformers would like. Finally, the reform of the power industry and the pace of that reform both depend very much on the broader development of economic and political conditions in the country.

What makes the SPCC an interesting case study is not the *de jure* change in ownership of the power industry but rather the efforts of the Chinese government to restructure the industry following the example provided by many developed countries: changing the ownership and managerial structures through corporatisation and commercialisation, and restructuring the industry by unbundling power generation from transmission and distribution. Even though no real markets have been created yet either in generation, wholesale or distribution, the SPCC was created to facilitate all these changes within the broader political and economic environment of a transition economy. Its creation may be the first step in a gradual process that will dramatically affect the working of the Chinese electric power industry.

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