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Viewpoint

China's electricity market-oriented reform: From an absolute to a relative monopoly

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ARTICLE INFO

Article history:

Received 22 December 2011

Accepted 16 August 2012

Available online 15 September 2012

Keywords:

China's electricity

Market-oriented reform

Absolute and relative monopoly

ABSTRACT

The market-oriented reform in electricity industry has become a global trend since 1980s. Although China's electricity industry has been reformed since 1978, the substantial reform has not been conducted until 1985. Before 1985, China's power industry had been absolutely monopolized by the central state-owned companies. The absolute monopoly has been broken since 1985, when the Chinese government opened doors for non-central state-owned investment entities and foreign investors in power supplies in order to solve the chronic power shortage. In 2002, the comprehensive electricity reform plan entitled *Scheme of the Reform for Power Industry* was enacted. However, implementation of this plan was delayed due to electricity supply shortages. Even worse, a new kind of monopoly has been developed under the background "the state advances, the private sector retreats" in late years. In some sense, the former absolute monopoly has transformed the current relative monopoly. We contend that the relative monopoly has reversed the market-oriented reform in China's electric industry. If the relative monopoly remains unchanged, it will be harmful to public welfare.

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1. Introduction

Market-orientated reform in electricity industry has become an international trend since 1980s. The market-oriented reform can be traced back to the Chile electricity reform in 1982. The Chilean model was generally perceived as a good example in bringing rationality and transparency to power pricing. The Chilean practice has influenced subsequent reforms in other countries' electricity industry. A landmark electricity reform took place in UK. The UK government restructured and privatized the state-owned Central Electricity Generating Board to separate the ownership and operation from generation. The experiences of British were then used as a model or a catalyst for the deregulation of other countries (Thomas, 2006). Meanwhile, it also should be pointed out that the market deregulation in many of other countries occurred without the widespread privatization that characterized the UK model. For example, Norway electricity reform has maintained a dominantly public ownership and decentralized production structure (Midttun and Thomas, 1998). Although the institutions and market designs were in different deregulation procedures tend to be very different; the two principal underlying concepts are the same. These are (i) separating the contestable functions of generation and retail from the natural monopoly functions of transmission and distribution;

and (ii) establishing a wholesale electricity market and a retail electricity market. The role of the wholesale market is to allow trading between generators, retailers and other financial intermediaries both for short-term delivery of electricity and for future delivery periods (Sioshansi and Pfaffenberger, 2006; Woo et al., 2003).

In this paper, we focus on discussion of market-oriented reform in the Chinese electricity industry. The paper is organized as follows. Section 2 provides a report of China's electricity industry and related studies. Section 3 investigates China's electricity reform from an absolute to relative monopoly. Section 4 discusses the effects of the relative monopoly. The conclusions are provided in the last section.

2. Background information of China's electricity

China's first power generation with an installed capacity of 11.67 KW (Kilowatts) was launched in 1882 in Shanghai. China had built a total generation capacity of merely 1.85 GW (giga-watts) nation-wide during the first 70 years from the launching of the first commercial power generator to the founding of the People's Republic of China in 1949 (Tian, 2008). The Chinese power generation capacity has been expanding at an accelerated speed since 1949 (see Fig. 1). It took almost 30 years, from 1949 to 1978, for China to increase its total capacity to 57 GW. In contrast, the annual addition of generation capacity increased from a few GW in the 1980s to 10–20 GW in the 1990s

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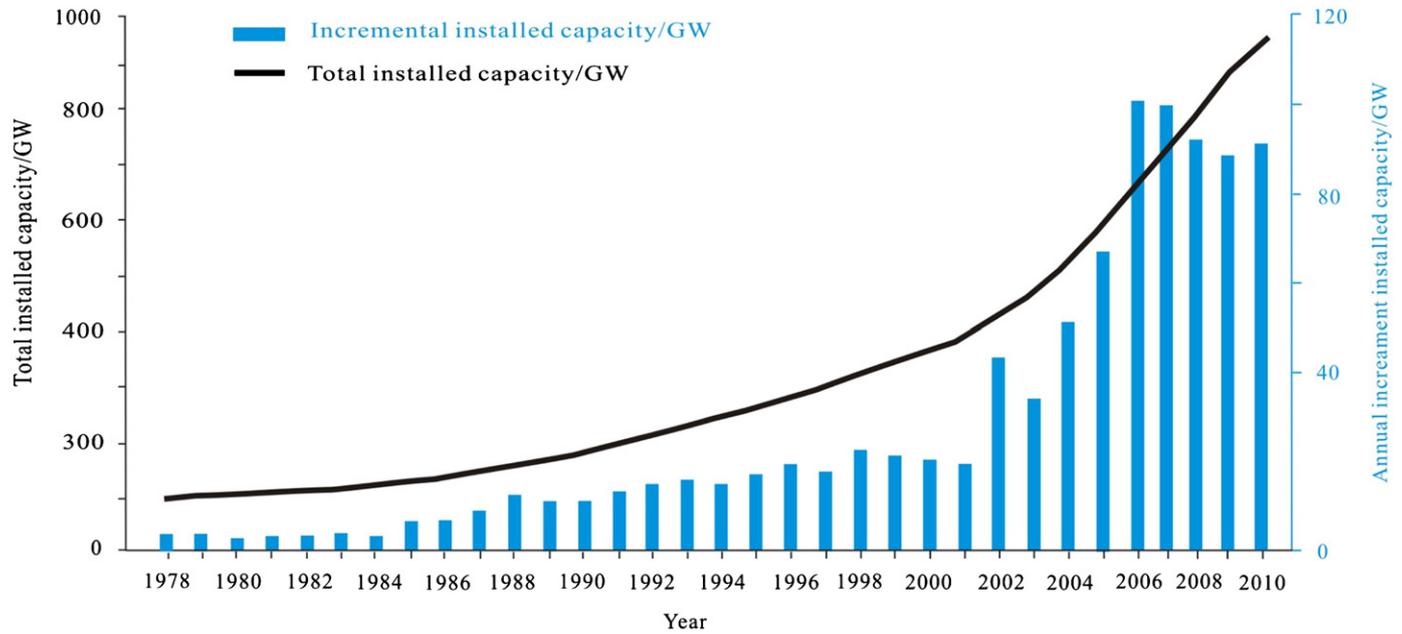


Fig. 1. China's power installed capacity/GW. (Sources: Wang, 2010; China Electricity Council, 2011).

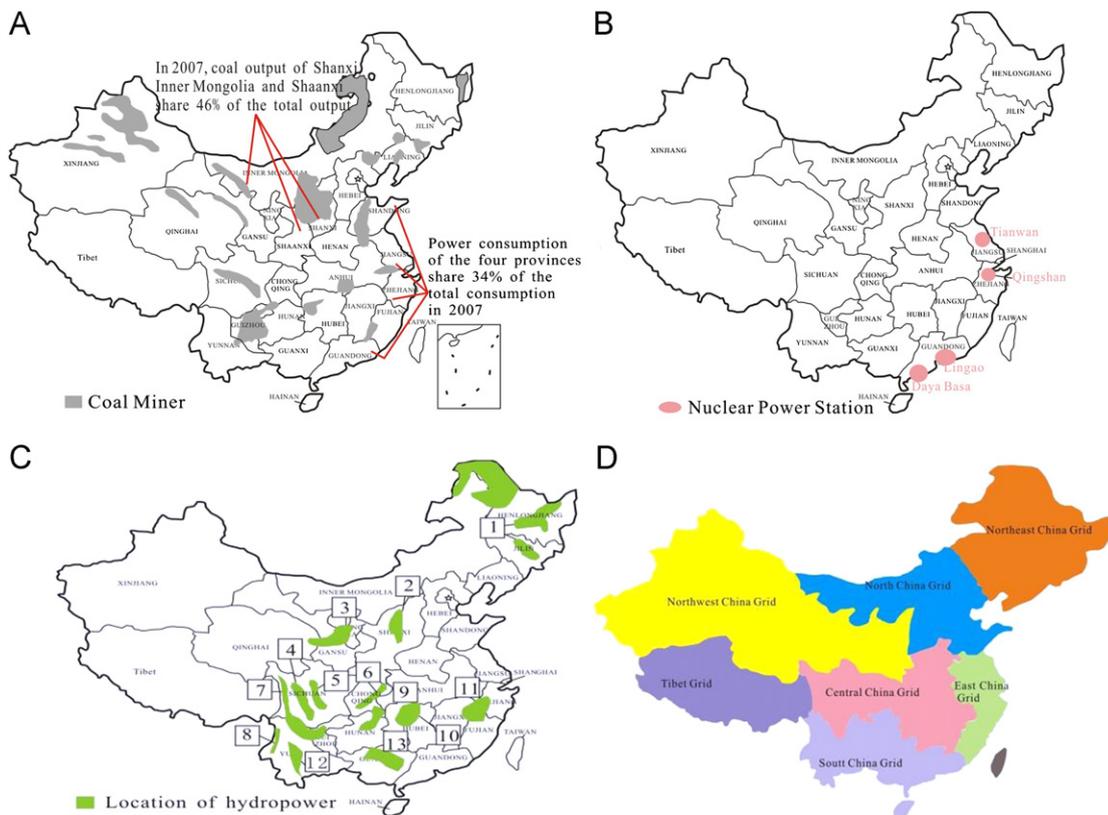


Fig. 2. (A) The location of coal miner and main power consumption; (B) the location of nuclear power, (C) the location of hydropower basis and (D) China's seven individual grid systems. (Sources: Wang et al., 2009)

(Tian, 2008) to almost 100 GW in later years (China Electricity Council, 2011). The total installed capacity has roughly doubled since 2003 to 2010, from 380 GW to 960 GW (China Electricity Council, 2011). In 2006 alone, 102 GW of new generating capacity was added, an increment substantially larger than the United Kingdom's entire electric power system (Steinfeld et al., 2009).

By the end of 2010, installed generating capacity of China's electricity industry was 960 GW, second only to the United States' roughly 1075 GW. Within the installed capacity of 960 GW, coal-fired power plants accounted for 74%, hydropower for about 21%, while nuclear power, wind power, and other energy types for 5% (China Electricity Council, 2011).

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