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Industrial Policy and Global Big Business Revolution: the Case of the Chinese Coal Industry¹

PETER NOLAN & HUAICHUAN RUI

Judge Institute of Management, University of Cambridge,
Cambridge CB2 1AG, UK

ABSTRACT *China has actively implemented an industrial policy during the last two decades. However, despite important progress, the overall result is rather disappointing. Should China continue to pursue industrial policy? Should China focus instead on developing successful globally competitive firms within the global value chain? This paper, based on an in-depth case study on the Shenhua Group, which has been deliberately built as an indigenous globally competitive coal corporation, argues that it is still possible for China to build powerful big businesses in some sectors. However, a well-designed industrial policy is necessary.*

KEY WORDS: Industrial policy, big business revolution, coal industry, China

Introduction

China officially first designated 55 enterprise groups in 1991 to trial the building of indigenous competitive groups, and then expanded this number to 120 by 1997. In addition, 300 enterprises were selected as key enterprises to be supported by the central government in 1996, and this number was subsequently increased to 520 by 1999. These groups and enterprises are collectively known as the ‘national team’ and are considered to be the mainstay in their respective sectors and the national economy as a whole (SC, 1991, 1997; CESRY, 2001).

There is a list of active industrial policies to support these key groups and enterprises: extensive support from the banking sector; shelter from international competition behind a wall of protective tariff and non-tariff barriers; an independent accounting system, which removed the barriers between different sectors, departments and regions; permission for the establishment of internal group finance companies; the granting of import and export rights; rights to establish international

Correspondence Address: Peter Nolan, Judge Institute of Management, University of Cambridge, Cambridge CB2 1AG, UK. Email: phn21@cam.ac.uk

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joint ventures, and rights to float a share of equity on national and international stock markets (CSSA, 2001, 2002; Nolan, 2001; SPC, 1996, 1999).

After over a decade of effort, the overall result is rather disappointing despite important progress. By 2002 there were 11 Chinese companies in the *Fortune* Global 500, ranked by value of sales (*Fortune*, 22 July 2002). However, as *Fortune* comments, 'Chinese companies still account for less than 2% of Global 500 revenues. . . . All 11 companies remain state-owned, and overmanning is still rife. The oil giant Sinopec (No. 86) needs 937,000 employees to generate \$40 billion in revenues, while Exxon's 97,900 employees bring in \$192 billion.' What *Fortune* does not point out is that China's most successful large firms, the State Power, China Telecom, China Mobile, PetroChina and Sinopec, all operate behind high protectionist barriers and their operations are mainly confined to the domestic market.

China's industrial policy has failed to create globally competitive 'national champions' on a large-scale. There seem to be more and more reasons for the Chinese government to give up its industrial policy. First, the mainstream view in development economics believes that undistorted prices, competitive markets and free entry for small firms, rather than big business and controlled markets, are the keys to development. Second, this epoch has seen truly global corporations being created, making the task of catching up for firms based in developing countries even more difficult. Third, even if China wished to continue its industrial policy, it would be much more difficult than before, due to joining the World Trade Organization (WTO).

Any given country's decision to implement an active industrial policy depends on both industrial needs and government capacity. This paper, based on an in-depth case study of the Shenhua Group Corporation Limited (hereafter Shenhua), aims to provide evidence of the needs and possibilities of China's ability to build indigenous globally competitive companies. The next section shows that even in the outmoded coal industry, the global big business revolution has created a new breed of even more powerful super-large internationally competitive companies, which have created an enormous challenge for China. The section after shows that, simultaneously, by joining the WTO, China's weak state-owned enterprises (SOEs) and tens of thousands of township and village owned enterprises (TVEs) will have to compete face-to-face with the global giants. The fourth section provides evidence that China is still capable of building a powerful big business provided a well-designed and active industrial policy is in position.

Business Revolution, Global Value Chain, and Concentration in the Coal Industry

The Global Big Business Revolution

Instead of an epoch of national champions and conglomerates, the business structure of advanced economies has been revolutionized since the late 1980s. With the forces of the collapse of Communism, privatization, trade and capital flow liberalization, and new information technology, by the late 1990s there was a very high degree of firm concentration on a global scale in a wide range of sectors (Nolan, 2001, pp. 134–50).

The revolution has brought a dramatic growth in the business capability of the major international companies, through concentrating on their core business, enhancing their brand names, and massive spending on R&D and IT. Global

mergers and acquisitions (M&A) rose from less than \$300 billion in 1992 to around \$3500 billion in 2000. The concentration process was inexorable, permeating almost every sector. Firm after firm shed non-core business in order to focus on the areas in which the firm could compete globally, which has resulted in a small number of firms accounting for over one-half of the global sales in numerous sectors, from the extremely high-tech sector of aerospace, which is dominated by Boeing and Airbus, to the less high-tech sector of coal, whose international market is dominated by BHP Billiton, Rio Tinto and Anglo American.

The Global Value Chain Cascade Effect on Developing Countries

The business revolution is relevant to this paper through its impact on developing countries such as China. Introducing a new concept of the global value chain cascade effect would be helpful in examining such an impact.

A value chain is a systematically coordinated production and delivery process, comprising all the steps leading to an ultimate 'downstream' sale from the initial 'upstream' raw material processing. As business internationalizes, value chains are lengthening, extending across borders and drawing in more firms. However, global companies have also become more effective supply chain coordinators, with the aim of meeting customers' needs, minimizing costs, maximizing market share and profit, or strengthening strategic control.

Giant or core companies, acting as 'systems integrators', penetrate the global value chain deeply, both upstream and downstream. They are closely involved in business activities that range from long-term planning to meticulous control of day-to-day production and delivery schedules. This has created an explosive 'cascade' effect on suppliers, causing rapid restructuring among first, second and even third tier suppliers, working across sectors and between developed and developing countries. For example, the intense competition and consolidation among automobile makers forced the consolidation of their supply companies, including those providing components and steel; and the liberalization and high-speed consolidation in the global steel and electricity markets promoted consolidation among their suppliers, including those providing iron ore and coal. In most sectors of the entire value chain, there is an ever-larger sphere of coordination and planning of the entire value chain orchestrated by the core systems integrators.

As a result, the boundaries of the large corporation have become blurred. The more the indigenous firms join the global value chain as either suppliers or customers, the more multinational companies (MNCs) relocate as joint ventures or independent firms, the deeper and broader the global value chain will impact host countries through the unitary planning of the 'system integrators'. In other words, the national interests of the host countries may become downgraded in relation to corporate interests, and policy makers in developing countries may well have to consider carefully both the role of indigenous firms within the global value chain and the national economic security.

Consolidation in the Coal Sector during the Big Business Revolution

People typically associate the concept of big business with sectors such as the aviation and automobile industries, but regard the coal industry as a declining business. However, the big business revolution is affecting even this sector. Coal remains one of the most important sources of primary energy. Global hard (black) coal

production has grown by almost 50% in the last 25 years to 3834 million tonnes (Mt) in 2001. By 2002 coal still accounts for 23% of the world's primary energy consumption, and 39% of electricity fuel and 70% of global steel production depend on coal feedstock (WCI, 2003). Known coal reserves worldwide are thought likely to last for 250 years at current levels of consumption, much longer than the life expectancy of oil reserves.

Compared with the institutional changes under way in most other industries, the coal industry still lags behind in terms of global consolidation. However, the speed of consolidation is still remarkable. In the late 1990s, M&A in the coal sector grew to record levels, reaching \$17 billion in 1995, rising to a new peak of \$26 billion in 1998. However, in 2001, the process scaled new heights. The BHP/Billion merger alone was valued at \$31.1 billion (*Financial Times*, 24 March 2001; *The Sunday Times*, 25 March 2001). Following the rapid growth of M&A, the future of the international coal trading industry is seen as 'an oligopoly with interests in the three main exporting centres, South Africa, Central America and Australia' (*Financial Times*, 6 September 2000). The market has been controlled by a small number of powerful international mining companies: Rio Tinto, Anglo American, BHP/Billiton with over 62% of the total internationally traded coal in 2001 (Table 1). Each of them is still actively pursuing a policy of M&A.

The competitive advantage in the global coal industry lies primarily in size and management skills. Size enables international outreach and the construction of a set of low-cost coal-mines across the world. This reduces risk, and ensures location within or close to each major market. Successful global firms also enjoy the financial resources to purchase mines, invest in exploration and evaluation of resources, negotiate with governments, deal with complex land rights and environmental issues, apply best practice across the whole mining business, integrate their global mining operations within a single global marketing system, and thus they are able to force down costs more successfully than smaller local companies. Most global coal companies are not simply coal companies. Rather, they operate diversified operations focused on mining products. Their size and capital advantages enable them to adjust themselves to business shift (*Financial Times*, 21 May 2001).

The BHP/Billiton merger was pursued precisely in order to enhance the firm's competitive advantage:

The companies balance each other well, with an exceptional breadth of assets and capabilities which have taken many years to develop! This merger brings together some of the world's finest mining, metals and energy assets under a dynamic and unified executive team. Few, if any, of our competitors will be better placed to serve the commodity requirements of our diverse customer base. The financial strength, international scope, and enhanced project skills of the combined group should bring major new growth opportunities internationally. (www.ft.com, 18 March 2001).

Two years later, with these advantages, BHP Billiton has become an industry leader or a near-leader in aluminium, metallurgical coal, sea-borne steaming coal, copper, ferro alloys, iron ore and titanium minerals (BHP Billiton, 2003).

Entering 2002, the world economy was in recession. However, the coal business exceptionally was enjoying prosperity. Following its acquisition of Glencore International AG's Australian and South African coal business in the first quarter of 2002, Xstrata was fast becoming one of the world's largest export thermal coal producers, with a capacity of 70 Mt of coal output per year (Xstrata, 2003).

Table 1. Major indices of the world's and China's leading coal companies in 2002 (Mt, m\$US)

	Coal Out-put	Global traded coal (1)	Market capitalisation (b\$) (2)	Employee (3)	Turn-over	Net earnings (4)	Production locations	Products
Rio Tinto	149	149 (26.7%)	13.2	36,141 (5,550)	10,828 (351)	651	Australia, South Pacific, Europe, North America, South America, Indonesia	Iron ore, coal, copper, industrial minerals, aluminium, diamonds & gold
BHP Billiton	120	120 (23%)	32.9	51,037 (18,496)	17, 800 (536)	1,900	South Africa, Europe, Latin America, Australia	Aluminium, petroleum, base metals, coal, ferroalloys, diamond and speciality, (steel was de-merged in 2002)
Anglo American	64.8	61.8 (11.9%)	21.8	185,000 (10,000)	20,497 (1,710)	1,563	South Africa, Rest of Africa, Europe, North and South America, Australia, Asia and Middle East	Forest products, industrial minerals, diamonds, platinum, gold, industries, coal, base metals, ferrous metals, iron ore
Shenhua	77	20	11	90,000 (9,716)	3,110	382	China	Coal, electricity, (oil products by 2005)
Yanzhou	38	14	2.8	82,000	1,361	147	China	Coal, coal water mixture, urea, methanol products

Notes: (1) The data for the top three global companies were those of 2001. The global coal trade was 625 Mt in 2001. The figures in brackets refer to the percentage shares of the global traded coal for each company.

(2) The capitalizations for the three global giants refer to the data on 31 December 2002, 30 June 2002, and 31 December 2002 respectively. For China's coal companies, the figures refer to their assets.

(3) The figures in brackets refer to the employees dedicated to coal business. (4) Net earning = profit after taxation.

Sources: Annual Reports, various years for each company; Osiris (2003).

WTO Accession and the Diseconomy of China's Coal Industry

Joining the WTO will Force China to 'Dance with Wolves'

The previous section analysed the global big business revolution, which has created giant international firms. During the same period, China was claiming admittance to the WTO. To gain admittance, China agreed to dismantle almost the entire range of mechanisms that has formed the core of industrial policy in the past two decades, as a succession of countries have supported the growth of large indigenous corporations.

The Chinese government was well aware of the deficiencies of its firms in worldwide competition as early as in 1996:

Our industry structure improvement will be implemented in a more open and competitive global environment. The reduced trade tariff after entering the WTO will make our market more open to the outside and incur more intensive international competition into the domestic market. We must face the fact that in capital and technology intensive industrial sectors, not only do we have a weak base and low starting point, but more importantly, our competitive advantage of labor intensive industry will cease to be an advantage. . . . If global giants control our market, most of our firms will be heavily disadvantaged, and our economic growth will likely be ousted by market constraints. Therefore, speeding the development of big business is vital for our survival, and also a strategic task which ensures the security of national industry. (SPC, 1996, pp. 6–7)

These severe concerns are grounded on the complete understanding of the fact that diseconomy of scale is a common problem for almost all Chinese industrial sectors. China's coal industry offers a prime illustration of how severe the problems are which resulted from the lack of economies of scale domestically and from the global big business consolidation. It is well known that coal has held a special position in China. China is the world's largest coal producer and consumer. Coal output grew from 618 Mt in 1978 to 1.4 billion tons in 2002 (Table 2). Coal still accounts

Table 2. China's coal production 1978–2002 (Mt)

Year	National Total Output	Key SOE		Local SOE		TVE	
		Output	Ratio (%)	Output	Ratio (%)	Output	Ratio (%)
1978	617.86	341.84	55.33	180.7	29.25	95.32	15.43
1980	620.4	344.39	55.51	162.39	26.18	113.6	18.31
1985	872.28	406.26	46.57	182.78	20.95	283.2	32.47
1990	1,079.88	480.22	44.47	205.09	18.99	389.7	36.09
1995	1,360.73	482.28	35.44	213.35	15.68	665.1	48.88
2000	951.06	528.15	55.53	191.28	20.11	201.63	21.20
2001	1105.49	618.48	56	223.16	20	263.85	24
2002	1393.35	711.63	51	263.45	19	418.27	30

Note: Adding the three ratios of key SOEs, local SOEs and TVEs might be not equal to 100, because of the tiny ratio of other categories of coal producers.

Sources: (1) SPC (1997, p. 131); (2) CCIY (1999); (3) SCA (2001, p. 1; 2003); (4) Ye & Zhang (1998, pp. 401–402).

for 68% of China’s primary energy production and consumption and generates over 80% of the country’s electricity. China produced 137 Mt of coking coal in 2001, ranking first in the world, to supply the world’s largest steel production. Furthermore, self-sufficiency in coal, electricity and steel has recently enabled China to become the centre of the world’s manufacturing industry.²

Such an important industry was nonetheless the principal loss maker among China’s industrial sectors until 2001 (except in 1997). A mass of evidence attests to the low level of efficiency and financial difficulties, rooted in severe diseconomies of scale and scope.

Before 1978, 85% of China’s coal was produced by state-owned coal companies (SOEs), including 104 key SOE coal bureaus and fewer than 2000 local SOE coal producers. However, after the mid 1980s, with encouragement from central government, township and village owned coal-mines (TVEs) developed dramatically, reaching 72,000 in 1996, resulting in a huge change of the ownership structure in which state and non-state each share half (Figure 1). Table 3 shows that before the government’s closure policy started in 1998, the average output per company in China was only about 17,101 tons. After the closure policy, the average output for China’s coal companies was increased to 50,000 tons by 2002. The market share of the largest 10 coal producers increased from 13 in 1997 to 21% in 2001, compared with the US in 2001 when the top five coal producers accounted for 51% of total US coal production (NMA, 2003). Among China’s coal companies,

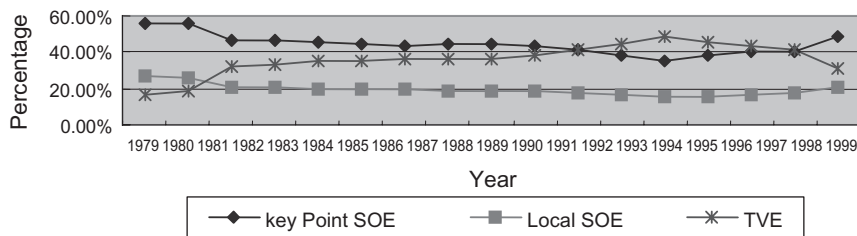


Figure 1. The ratio of production between key SOE, local SOE and TVE 1979–2000. Sources: (1) SPC (1997, p. 131); (2) CCIY (1999); (3) SCA (2001, p. 1); (4) Ye & Zhang (1998, pp. 401–402)

Table 3. Size structure change of China’s coal producers 1998–2002

	Numbers of producer		Total Output (Mt)		Average Output per producer (tons)		% of national output	
National Total	1998	2002 (1)	1998	2002	1998	2002	1998	2002
Large/medium SOEs (>450,000t)	448	283	449	712	1Mt	2.5 Mt	36	51
Small SOEs (30,000–450,000t)	1,794	2,383	172	263	96,000	110,365	14	19
TVEs/small SOEs (<30,000t)	69,800	25,000	612	418	8,800	16,720	50	30

Notes: (1) Data for large/medium SOEs and small SOEs were those of 2000.

Sources: SCA (2003); SSB (2001, pp. 48, 80); Yan *et al.* (2000, p. 28).

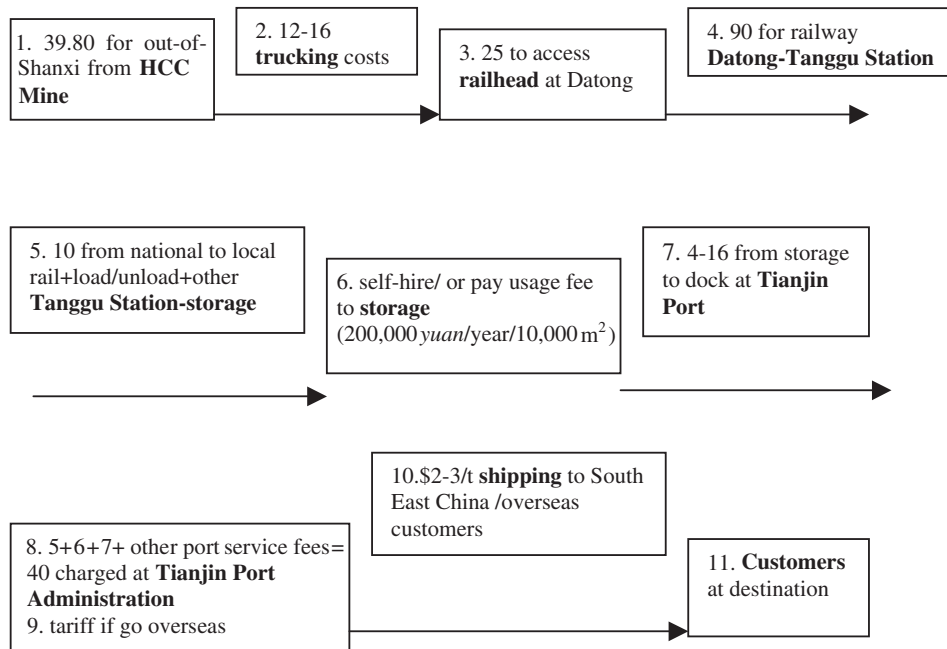


Figure 2. Costs from Datong of Shanxi province to Tianjin Port for coal producers (*yuan/ton*) *Notes:* (1) The total cost for HCC Mine (a TVE mine) was at least 220.8 *yuan/ton*, compared to its production cost of 40 *yuan/ton* in 2000. (2) The difference between costs for SOE coal and TVE coal was that SOE coal producers did not need to pay categories of 1, 2 and 3 as they had their own rail connecting them to the national rail network. *Source:* Interview sources.

‘none has significant market share and none could influence market competition’ (SCA, 2000, p. 5). Moreover, few coal companies have dedicated rail, port and power plants, leading to high transaction cost and placing coal companies in a very disadvantaged position.

This sort of diseconomy of scale and scope has inevitably caused excessive competition, extremely scattered capital and technical investment, a chaotic coal market, depressed coal prices, low productivity, and large scale loss-making. Figure 2 shows a typical example where the difficulties of rail access for coal firms increased by over as much as four times the cost of their production.

More importantly, dispersed capital and excessive competition also obstruct technological progress and the capacity to merge among enterprises. Excess competition prevents most SOEs from producing at full capacity so that making a loss is inevitable, and mergers impossible (for lack of strength). Moreover, too many producers from various regions, provinces and government departments, local and sector interests block M&A among themselves.

While China’s coal industry suffers from diseconomy of scale and scope domestically, the international coal giants have recently gained strength through an unparalleled process of consolidation (as seen in section 2), and are accelerating their entry into China. The rate at which multinational coal companies are entering China is much faster, and the threat to indigenous firms is more intense than expected.

During the relatively short period of the past two or three years, all the global mining giants, including BHP Billiton, Rio Tinto, Anglo American, and CVRD

have not only arrived in China, but have completed preparation work and started to 'take action'. This action is based on the beliefs that China is the 'final frontier' for their business success and that China's coal market is too big to neglect. One confidential report from a global mining company stated: 'Foreign players need to secure their positions in the market early to ensure access to attractive opportunities, as there will only be a selective few players that will emerge as industry leaders'. Concurrently, the Chinese government, in November 2002, granted foreign mining companies the right to extract coal in China. The world's leading companies are actively engaged in establishing joint ventures in order to save time and costs in mine and rail building, and to acquire local market knowledge. The government has established few special conditions for foreign firms in respect of tax and resource access. Therefore, joint ventures in this sector will truly compete with domestic companies on a level playing field in both the home and international markets.

The threat from the MNCs is reflected not only in the fact that the international mining giants may compete in China's domestic and exporting markets, but also in many other aspects. Although the tariff cut on coal (from the current 6 to 3% only by 2005) resulting from China's joining the WTO was assumed not to be significant, the liberalization of non-tariff regulations was believed to result in more imports of coal and coal equipment. In 2002, coal import to China increased to 10 Mt from 2.49 Mt in 2001, which led to the price reduction of the domestic Qinghuangdao benchmark to the detriment of the domestic coal producers. In addition, both tariff cuts on imported oil and gas, as well as environmental concerns, may result in more oil and gas being imported to attract former coal users. Finally, as a result of a cascade effect of the global value chain stated above, the relocation of the MNCs in manufacturing will well impact domestic coal companies on quality, price, and service.

To avoid the fate of being merged, acquired or closed, China's coal companies need to run their own large efficient mining businesses in order to achieve economies of scale, to produce a competitive price and high quality of coal, and to withstand intensified global competition.

Building Big Business by Industrial Policy rather than by Market Forces

If China is to develop its own globally competitive big business, should it wait for firms to emerge spontaneously from free market competition, or actively build them through a well-designed industrial policy? According to the mainstream view, the market mechanism should allow free entry and exit for small firms, with the 'winners' emerging naturally through market competition. In the absence of such a free competitive market, as in the case of a socialist economy, privatization is regarded as the primary task of the 'transition'. Restructuring should be left to the new private owners. State-led industrial restructuring, including building big business, is considered to be unnecessary and undesirable.

However, the case of China's coal industry has demonstrated a rather opposite truth. Our case studies on the bankruptcy of certain large SOE coal bureaus demonstrate the unfeasibility of their rapid privatization in the specific institutional setting of China's transitional economy. In China's coal industry, although no large SOEs have been privatized, 50 large SOE coal companies or mines were forced into bankruptcy in 1999 and 2000, and a further 220 SOE coal-mines will be going bankrupt by 2005 (CCC, 2000). These bankruptcy cases provided a clear indication of the unfeasibility for their privatization.

The first critical problem encountered by the 'Bankruptcy Working Group' was that China's Bankruptcy Law (*pochan fa*) (1986) gave no guidance about a case such as this. The Law applied only to 'legal persons' such as the SOE coal bureau rather than mines, but many of the proposed bankrupted objectives were mines while their affiliated coal bureaus were kept alive. In addition, China's coal industry had never before had a case of bankruptcy, so there was no precedent. Therefore, the Group had to find an innovative way to deal with the new problems.

The second problem was that of financing the huge bankruptcy costs, including writing-off the banks' bad debts, one-off payments for redundancy, and subsidies to the local government for social security payments for redundant workers. There were only two possible sources of funds: the central government and the sale of the assets resulting from the bankrupted mines. However, it proved difficult to sell the assets because no one wanted to buy assets of an assumed declining industry in an often remote part of China. The price that could be obtained from asset sales was therefore disappointingly low. In some cases, the Working Group calculated that cash from the sale of assets would cover only 15% of the total bankruptcy cost. The central government did not have the financial resources to meet the remaining 85%.

The third problem was that many of the coal bureaus' liabilities had been transferred to the balance sheet of the coal-mines that were ready for bankruptcy. This was connected to the fourth problem, namely the absence of a neutral and fair auditing and legal process. This made it possible to falsify company accounts.

The final problem was that the bankruptcy caused the rapid growth in the numbers of redundant workers. It was reported that during the ninth Five-year Plan (1996–2000) there were about one million employees dismissed in China's SOE coal sector, reducing the total number of employees to about three million. No government, facing the threat of social turbulence, can neglect so many redundancies.

All the problems stemming from this bankruptcy case may very likely emerge during the process of privatization. If bankruptcy is so difficult, one should not expect privatization to be easy. If privatization is difficult, then waiting for big business to result from privatization becomes problematic and costly. Being aware of the possible difficulties, China started to privatize SOEs from as late as 1997 when the people's basic living standard was secured. Nevertheless, privatization in the coal industry has mainly been conducted in small SOEs owing to the huge difficulties of privatization for the large SOEs.

Most significantly, many industries are too important for the government to allow them to develop without industrial policy guidance. In the case of the coal industry, the strategic significance is reflected in the fact of China's severe shortage of oil and high reliance on coal. Coal becomes even more crucially important after the government implements the coal liquefaction project (see below). Keeping state ownership of the most important coal companies might be the major advantage for the government to control and guide the industry to serve the nation's strategic energy needs.

The Shenhua Group: Can China Build Internationally Competitive Big Businesses?

This section uses the example of the Shenhua Group to substantiate the claim that China can build large globally competitive firms based on the government's comprehensive policy support.

Table 4. The output, sales revenue and profit of Shenhua Group from 1998 to 2002

Year	Coal output (Mt)		Coal sales (Mt)		Coal export (Mt)	Rail freight (Mt km)	Port (Mt)	Electricity generation (Mkwh)	Sales revenue (million yuan)	Profit (million yuan)
	Without FWBs (1)	With FWBs	Without FWBs	With FWBs	(2)		(3)			
1998	7.13	13.75	9.24	14.69		2,395		330	2,422	51.61
1999	11.20	18.40	14.12	20.42		3,669		340	3,879	43.91
2000	24.12	37.54	25.22	38.59	7.5	10,554		16,190	14,099	176
2001	35.86	52.74	40.20	56.02	18	19,167		20,490	19,900	1,573
2002	45.02	77.33	57.10	77.73	20	31,966	16.53	23,860	25,720	3,158

Notes: (1) FWBs = Five Western Bureaus. (2) The data hereafter refer to those of Shenhua Group as a whole. (3) The port started to operate in 2002.

Sources: Shenhua Group Annual Reports, from 1998 to 2001; Shenhua Group memos; Chen (2003).

China's ambition to build globally competitive big businesses in the coal sector has been pursued explicitly since the 1990s. Although this sector is still highly fragmented, it has also made significant progress as a direct consequence of the government's active industrial policy. As one of the key trial enterprise groups, Shenhua has been built from zero in 1985 to its current position as one of the most important competitive coal corporations in the world. The speed of development can be seen from Table 4. The degree to which the government is able to utilize China's competitive advantages successfully to support such a dramatic rise in Shenhua will provide a significant indicator of China's capacity to implement its industrial policy of building large firms, known in China as the 'national champions'.

China's Advantages in Building Big Business in the Coal Industry

First, China is an immense country with abundant resources. Although the per capita amount of these resources in proportion to its 1.2 billion population is small, in many sectors the national total is huge. The government can make use of the country's abundant and diverse resources to support the growth of its big business. In Shenhua's case, the government gave a mandate to Shenhua to extract coal from the Shenfu Coalfield, whose total recoverable reserve is as much as 223 billion tons, with estimated reserves of 1000 billion tons. This compares with a national total of 1100 billion tons of recoverable coal reserves. Shenhua is therefore planned as China's most important future coal base as north and central China's coal is substantially depleted.

Secondly, the fact that China's state-owned businesses still occupy a central position in the economy is usually seen as a disadvantage by privatization advisors, this nonetheless gives the government a powerful weapon for restructuring industrial assets.³ To follow closely the model of the world's leading coal producers, Shenhua was designed with a dedicated railway to ship coal from the Shenfu Coalfield to a dedicated port facility. It was also assigned dozens of power plants from SPC to consume millions of tons of coal from Shenhua itself.

The construction of Shenhua based on such a design required approval and coordination from more than four ministries and six local governments, which are either responsible for the coalfield, local land, or the infrastructure. As the

state is the ultimate owner of all of these properties, and also the ultimate administrator of all levels of government departments and local governments, it was therefore able more easily to grant Shenhua the use of all the properties and to ensure better coordination among all government departments. It would have been much more difficult for a private individual to coordinate these complex provincial, regional and departmental interests. So far this is the only Chinese coal group to achieve this sort of economy of scope with correspondingly low transaction costs.

Thirdly, big business needs large investment. Capital shortage is a major constraint for developing countries in trying to build large, capital-intensive enterprises. Although China is relatively poor compared with other well-developed countries, it can concentrate dispersed funds for important collective ventures. The large amount of savings and foreign direct investment (FDI) can help meet China's huge investment demand. In Shenhua's case, the Chinese government granted the Shenhua project preferential loans of over US\$9.2 billion during its construction period from 1985 to 2005. This made it the third largest investment project in China and one of the world's largest overall. This compares with a figure of US\$1.1 billion for China's total investment in the coal sector in 2001 (CSD, 2002, p. 53).

Fourthly, possessing advanced technology is another determinant of the success of big business. China's coal industry is relatively backward by global comparison, but this does not prevent the government from importing advanced equipment for Shenhua. In addition to having more than 98% of its equipment imported, Shenhua has installed a reliable automated dispatching system for underground mining. Much labour has thereby been saved. This illustrates another very significant support from the government, which not only provided huge investment, but also, exceptionally, allowed Shenhua to replace labour with imported equipment. This provoked a big debate on whether China should still make use of its comparative advantage of cheap labour and avoid possible social turbulence caused by the large redundancy resulting from the use of advanced equipment. Or should it, instead, seek to improve productivity by using advanced technology and equipment as early as possible in order to compete with the giant coal companies? In the end, the latter view prevailed, which was demonstrated by the fact that Shenhua's principal coal-mine – Daliuta – has already been established as one of the most advanced in the world, with the highest productivity record – 118 tons per employee per day – in the world in 2002.

Fifthly, core business with high potential demand is another key to the success of big business. Shenhua's high quality low sulphur and low ash coal is in great demand. In addition, the government also supports Shenhua as a pioneer in China in the development of coal liquefaction.⁴ This is currently unnoticed but potentially extremely important for both China and the world's economy. In 1993, China became a net oil importer and it is forecast to import 100 million tons of oil in 2010. In line with the strategy of not allowing foreigners to control its oil industry, the government strongly supports Shenhua as the operator of the programme by awarding almost all the nation's fund for 'substituting coal for oil' to Shenhua. As the cost may be controlled below \$20 per barrel, the market for Shenhua's oil products should have a promising future. Chairman Ye is confident that, by 2020, Shenhua should be more like an oil producing company than a purely coal company.

Finally, under China's centralized and hierarchical political system, millions of officials and public servants are still appointed by the organizational departments

of the Chinese Communist Party (CCP). The central government appointed Ye Qing to be Shenhua's Chairman, Chief Executive and Party Secretary. For over a decade, from 1986 to 1998, Ye was former deputy director of the State Planning Commission (SPC) in charge of energy and communication. This background determines his suitability to manage Shenhua because the structure of this conglomerate requires both the authority and ability to coordinate all sectors in so many regions. In fact, Ye's powerful leadership in Shenhua since 1998 is the key to Shenhua's success.

Ye's leadership is demonstrated by his successful merging of the two formerly parallel companies, Shenfu and Dongshen Coal Companies, which resulted in the reduction in the number of employees, the minimization of social welfare expenditure, and lower production costs. Ye also implemented a succession of internal management reforms. Moreover, through Ye's effective coordination of Shenhua with the Ministries of Railway and Communication, the military and local governments, Shenhua's railway and port construction was completed in 2001, two years ahead of schedule, which saved Shenhua 40 *yuan* per ton of coal in freight costs.

Building Globally Competitive Big Business allows China to Restructure the Domestic Market and Participate Fully in the World Market

We have seen that China's objectives in building big business are to restructure industry in order to achieve economies of scale and scope domestically, and to improve China's capability to compete with the global giants. Shenhua has made obvious progress in respect to both of these objectives.

The Chinese government has been trying to close TVE coal-mines in order to pursue a policy of economy of scale by force since 1998, and this has incurred strong resistance. However, Shenhua was successfully able to 'close' some TVE mines: Shenhua leases the right to extract coal from the TVE mine at a fee of 10 *yuan* per ton. Local governments keenly supported the lease as they were able to receive much more significant income than by doing nothing, which not only enabled local governments wholeheartedly to close TVE coal-mines, but also fundamentally reduce rural poverty. Shenhua's leasing of two TVE coal-mines in Baode County of Shanxi province has promoted Baode's revenue from 27 million *yuan* in 2000 to 68 million *yuan* in 2002 and an expected 100 million *yuan* in 2003. This increase has assisted Baode in eliminating age-old poverty (Ye, 2003).

Shenhua also made great progress in pursuing its economy of scale and scope (see Table 4) based on its core coal business and supporting rail, port, power and future coal liquefaction businesses. It is the consequential low price of coal that enabled her to share an increasing amount of the coal export market with the most powerful global suppliers such as BHP Billiton.

Compared with the global coal giants, Shenhua is currently still small. However, its competitive potential is large. Apart from the advantages analysed above, several features of the global coal industry could assist Shenhua in catching up. These include the fact that the level of consolidation in the industry is still low (no single company accounts for more than around 5% of total global coal production); the industry is relatively competitive, compared to sectors such as aerospace, oil and petrochemicals; leading global companies in the mining sector do not rely mainly on research and development for competitive advantage; firms in this sector do not establish competitive advantage through large outlays on building a global brand name; the capital goods necessary to operate large modern coal-mines are

easily available from specialist mining equipment companies, without any restriction on technical transfer; and finally, labour intensive operation and geographical location provide China with advantages over Australia and Indonesia in exporting to the world's biggest coal importing markets – Japan and Korea.

Constraints on Building China's Big Business

Shenhua's immense potential cannot disguise the huge difficulties that China's government still faces in building its big businesses. Shenhua itself illustrates many of these problems and constraints. The fundamental problem is rooted in China's low level of development, which means that Shenhua cannot focus purely on fighting the global giants or profit making, but has to share social responsibility with the government, to look after loss-making SOE mines, and to contend with tens of thousands of TVE mines struggling for their survival. The central government's decision to force Shenhua to take over the Five Western Bureaus in 1998 was precisely because the central government could not accept the subsidies requested by the Inner Mongolian government as a condition to accept the five unprofitable Bureaus. As a result, Shenhua's entire configuration was transformed overnight and its competitive capacity drastically limited. The Five Western Bureaus brought with them about 60,000 employees, huge liabilities, and outdated facilities and technology, compared with Shenhua's 22,000 employees, substantial profits, and world-class equipment and technology.

The central government failed to control the entry of TVE coal-mines into the mainstream of the coal industry due to their contribution to relieving local poverty. As a result, the surplus coal market became a major constraint on the market expansion of the big coal groups.

The capital resources of China's big groups are too small. Shenhua was financed almost entirely by loans, with a tiny capital fund. Shenhua has to repay loans and interest totalling 31.4 billion *yuan* from 2001 to 2010, an average of 3.14 billion *yuan* each year, and four billion *yuan* in the peak year. One third of Shenhua's coal production cost was for repaying loans and interests to the bank. This severely compromises the competitive position of Shenhua coal and handicaps its further expansion.

Finally, Shenhua is also constrained by other weaknesses that are common to all SOEs: namely the social welfare burden, overstaffing and unconstrained government intervention. Moreover, Shenhua's achievements appear to owe a great deal to the qualities of its leader, Ye Qing. However, Ye is already over 70 years old. It is far from certain that he will be replaced by an equally effective leader.

Shenhua's problems are not unique, but reflect the typical problems for all the large groups in China as acknowledged by the SPC (1996, 1999). Obviously, the degree to which China can build its own indigenous big business very much depends on the degree to which the government can eliminate or reduce these constraints. China's SOEs have large workforces and still provide the social welfare safety net, neither of which can be reduced or replaced overnight. TVEs were supposed to be closed more easily and faster, but this view was proved wrong. TVE mines fiercely resist closure and the local governments doggedly protect them.

Conclusion: Implications of China's Building Indigenous Big Business

In view of the dramatic impact of the global big business revolution, indigenous and competitive big business in China can only be built through powerful and effective government action. Even though China's industrial policy is still fragmented and is guilty of many errors, its positive effects on her economy and society can be clearly seen from the example of Shenhua.

In general, large enterprises performed much better than medium and small enterprises in terms of their turnover and profits (e.g. see Jefferson *et al.*, 2003). For example, in 2000, the 515 key state enterprises made profits of 225.3 billion *yuan*, accounting for 98% of total SOEs profits (i.e. the other SOEs in total almost made no profits) (SETC, 26 February 2001). In 2002, the 510 key state enterprises made profits of 280 billion *yuan* (SETC, 2003a), accounting for 104% of total SOEs' profits in 2002 (i.e. the other SOEs were loss-making) (SSB, 2003). Key enterprises have obviously become the backbone of the national economy, while they also play a leading role in local economies:

In 2001, Guangdong province had 41 key enterprises, accounting for 0.2 percent of the provincial total, but their sales revenue, profit and assets accounted for 18.5, 21.5, and 31 percent respectively; Jilin province had 14 key enterprises, accounting for 0.5 percent of the provincial total, but their sales revenue, profit and assets accounted for 43.3, 34.7 and 27.4 percent respectively. Moreover, in 2001 China's key enterprises performed better than the Global 500 firms in terms of their 7.6 percent of sales revenue annual increase while the latter decreased by 0.4 percent, and of their 3.8 percent higher proportion of profit revenue. (SETC, 2002)

In the coal industry, the positive effect of the government's industrial policy is reflected not only in Shenhua's case, but also in the entire industry. The industry turned a loss into a profit of 1.51 billion *yuan* for the coal sector in 2001, basically because of the profit contribution of 1.5 billion *yuan* from 25 key coal corporations. In 2002, 32 out of 33 key coal enterprises made a profit totalling 2.33 billion *yuan* (SETC, 2003b).

However, there are many constraints to the implementation of China's industrial policy and the construction of large globally competitive corporations. Domestically, China has lagged behind the advanced economies in both technology and management for a whole century. It is also a poor, regionally and sectorally unbalanced country – factors that have severely handicapped large firms in catching up with their international competitors. Since the reform in 1980s China has had to face three intertwined challenges from development, transition and globalization, which have deeply embarrassed the government. On the one hand, the government has demonstrated its ambition to build indigenous big business, but on the other it has to discount this ambition in order to save SOEs and TVEs. However, the implication is not that the government should give up its industrial policy, but improve its effectiveness by dealing better with the numerous conflicts of interest.

Regarding the industrial policy itself, the first issue is how to select and to identify 'strategic' industries. Should the government give up those sectors that are strategically important but in which it may be incapable of building globally competitive large firms at present, such as aerospace? Should the government concentrate all its efforts on those industries that are strategically important and in which it may be feasible to build global giants, such as the coal industry?

These considerations suggest that the second issue is how to set different policies for different industries. In the case of China's coal industry, numerous matters require a well-designed industrial policy – from entry control, resource allocation, regulation of controlling rents and royalty on one hand, to the building of large corporations and the control of foreign investment on the other.

Postscript

On 16 July 2003, 13 days after our second interview with Mr Ye Qing, the Department of Organization of the Chinese Communist Party announced that Mr Ye was stepping down from the position of chairman and Party Secretary of Shenhua. The current president, Mr Chen Biting, was nominated as his successor. It was emphasized that this is a normal leadership change, based on the regulations about age limits for SOE top managers (Shenhua Group, 2003).

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Notes

1. Unless otherwise indicated, the data in this paper are based on our current research project of 'The impact upon China's coal industry of the global value chain cascade effect', and our previous research project of the Chinese Big Business Programme.
2. China's manufacturing sector overall consumes 60% of its energy (most as coal and electricity) and 64% of its steel.
3. Many of Europe's leading firms (e.g. Arcelor, EADS, Renault, ENI, Rolls-Royce and BAe Systems) had their origins in massive restructuring of state-owned firms.
4. Coal liquefaction is a technology through which coal is transformed to oil.

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