BOSTON UNIVERSITY
The Frederick S. Pardee Center for the Study of the Longer-Range Future
Center for Finance, Law & Policy

March 2015
Paper 1

GEGI Working Paper

RESEARCH FROM THE GLOBAL ECONOMIC GOVERNANCE INITIATIVE

The State and the Firm: China's Energy Governance in Context

Edward A. Cunningham
Assistant Professor, Department of Earth and Environment, Boston University
Director, China Programs, Harvard Kennedy School

Abstract

This paper focuses primarily on the evolution of China's domestic energy governance, the waves of centralization and decentralization that have characterized the relationship between industry and government in this sector, and the resulting structure of China's energy industries. It is important to understand both the fragmentation of the governance structure and mechanisms available to the Chinese state, and the twin processes of ownership and investment diversification that have shaped the bulk of China's natural energy market. This domestic context provides a useful framework for further analysis of China's energy and natural resource investments abroad.

By the end of 2014, Chinese outward foreign direct investment (ODI) ranked fifth in the world, accounting for 5.7 percent of the global total, just ahead of Russia yet trailing Luxemburg, the U.S., Japan and the Netherlands. This level of investment placed China ahead of entire regions of the world, such as Latin America, the Commonwealth of Independent States (CIS), Southeast Asia, and Africa. The rise of Chinese ODI over the past decade has indeed been rapid, is increasingly significant, and often perceived as linked to policy goals of the Chinese central government globally. However, growth to date reflects less a global scale surge into a wide range of markets, and more a continued commitment to investing the majority of capital domestically, albeit often through preferential foreign channels, and certainly supplemented by growth in genuine international investment. Much of China's ODI has historically remained quite local, serving largely as a convenient channel to invest Chinese capital domestically. In 2013, well over one-half (58 percent) of Chinese ODI was directed to Hong Kong, with another 12 percent to the British Virgin Islands and the Cayman Islands.[1] Chinese Academy of Social Sciences (CASS) scholars estimate that well over one-third of China's FDI consists of such round-tripping, destined for the Chinese domestic market, with the remainder focused on securing stakes in large financial institutions.

From an industry level perspective, while energy imports and international energy stakes are growing from a small relative base, China's energy system remains nearly 85 percent self-sufficient. In this regard it is important to note that

[1] CEIC China Premium Database.

China remained a net energy exporter as recently as 1997. From an institutional perspective, the capacity of domestic regulatory institutions seeking to inform international energy investments remains significantly limited. Moreover, from an elite politics perspective, the domestic orientation of Chinese senior leaders' political portfolios renders direct links between foreign policy interests and increasingly diverse energy investments tenuous in the majority of cases. It is certainly the case that majority state ownership of key energy firms has undoubtedly continued to afford the Chinese central state certain rights of senior personnel appointment, the granting of access to capital at preferential rates from policy banks, and the ability to utilize approval authority to pick industrial "winners". However, state ownership has also created governance challenges that have periodically weakened the ability of the state to shape energy outcomes, and rendered some industries highly concentrated, others highly fragmented, and a regulatory capacity that remains splintered at best.

An Enduring Focus on State Ownership

State ownership looms large in the debate surrounding China's ODI and the role of the state in shaping such investments. An oft-cited observation is the fact that over two-thirds of Chinese ODI in 2009 was accounted for by central government owned state-owned enterprises (SOEs).[2] Even by 2013, 40 percent of non-financial ODI was invested by state-owned enterprises strictly defined, and

[2] Nargiza Salidjanova, "Going Out: An Overview of China's Outward Foreign Direct Investment", *US-China Economic & Security Review Commission*, March 30, 2011, p. 6.

limited liability corporations (LLCs) – most of which have significant state ownership at the central or local level – invested another 38 percent.[3] The dominance of central government SOEs in ODI flows seemingly contradicts the high degree of economic liberalization that has fueled rapid growth in China for several decades. As Margaret Pearson argues, China's creation of formally independent regulatory agencies "in form, is consistent with, and informed by, key tenets of the global wave of regulatory reform: releasing some economic functions from direct government management; establishing regulators as market 'referees'; and increasing the capacity and efficiency of the economic bureaucracy."[4] However, it is important to note that while formal regulatory institutions in China have, to some degree, modeled themselves after the idealized "regulatory state", the Chinese Communist Party (CCP) has retained key aspects of direct corporate influence.

In addition to privileged access to state-subsidized loans from policy banks such as the China Development Bank, the two most direct levers of influence are: i) personnel power through the appointment of senior SOE executives by the CCP Organization Department and the State Assets Supervision and Administration Commission (SASAC); and ii) project approval power for the majority of medium-to-large size investment projects through the National Development and Reform Commission and a host of other institutions. This concentration of influence is critical, and illustrates the longstanding importance to the central state of

[3] CEIC Database.
[4] Margaret Pearson, "Regulation and Regulatory Politics in China's Tiered Economy," Draft paper prepared for conference on "Capitalism With Chinese Characteristics: China's Political Economy in Comparative and Theoretical Perspectives, Indiana University, May 19-20, 2006, p.7.

maintaining the ability to influence corporate decision-making. Central state ownership, and the formal right of personnel management that such ownership legitimates, greatly complements project approval and other regulatory rights that the central state has retained despite liberalization reforms. As Margaret Pearson again argues: "It is important to emphasize that it is not, as often characterized, bureaucratic inertia and vested interest that keeps the state-owned sector alive. Rather, it reflects a conscious effort by the Chinese government to concentrate and consolidate this top tier as a key part of China's development strategy."[5]

Moreover, despite considerable liberalization, China's energy industries historically have been identified as areas in which central state ownership and management should be "pushed" or "furthered" (*tui jin*) to ensure an absolute controlling (*juedui kongzhi*) shareholder stake.[6] This has not been the case historically in many other industries, as Barry Naughton and other scholars have well documented.[7] Even two years after the widely-referenced and critical 15th Party Congress Report, in which China's President Jiang Zemin provided ideological rationalization for the inclusion of entrepreneurs in the Communist Party and Party support of private capital, the Fourth Plenum made clear that "natural monopoly"

---

[5] Ibid., p.14.

[6] "China names key industries for absolute state control" China Daily, December 19, 2006. See also Dahe Daily, "*Qi da hangye bixu you guozi kongzhi, qi da hangye baokuo jungong, dianwang dianli, shiyou shihua, dianxin, meitan, minhang, hangyun*" December 19, 2006. http://epaper.dahe.cn/dhb/htm2006/t20061219_774304.htm

[7] For useful treatment of the central state's attempt to reduce state ownership in broader industries, see Barry Naughton, "Selling Down the State Share: Contested Policy, New Rules", *China Leadership Monitor*, No.1, Part 2, March 2002. For an analysis of the drive to increase state shares in strategic sectors such as energy, see Barry Naughton, "SASAC Rising", *China Leadership Monitor*, No.14 Spring 2005; and Barry Naughton "Top-Down Control: SASAC and the Persistence of State Ownership in China", draft conference paper, June 26, 2006.

industries such as energy and other "lifeline" industries required control through the state-owned economy "*guoyou jingji xuyao kongzhi*".[8]

Such special treatment has continued to the present day. Specifically, SASAC identified national defense, electric power, petroleum and petrochemical, telecommunications, coal, civil aviation, and shipping industries in 2009 and 2010 as requiring the strengthening of central state ownership and management.[9] These industries were first enumerated in a December 5, 2006 SASAC promulgation entitled: "Guidelines and Opinions Regarding the Furthering of State-owned Capital Adjustment and the Reorganization State-owned Enterprises".[10]

In the energy sector, this focus on strengthening state ownership has also perpetuated significant costs, largely through inefficiencies in rates of production, capital use, industrial structure, and levels of technological innovation. As is discussed later in this paper, such inefficiency is most apparent in the structure of China's oil and gas industries, whereby one company – CNPC – produces three-quarters of the nation's natural gas and nearly two-thirds of national crude oil. Government leaders such as former Premier Zhu Rongji appreciated the long term costs of China's historical industrial organization, in which one firm performed onshore exploration and production of crude oil and gas, another firm refined such

---

[8] CCP Central Committee Circular, "*Zhonggong zhongyang guanyu guoyou qiye gaige he fazhan ruogan zhongda wenti de jueding*", Fourth Plenum of 15th Chinese Communist Party Congress, September 22, 1999, in SASAC, *Zhongguo guoyou zichan jiandu guanli nianjian 2007*, (Beijing: Zhongguo Jingji Chubanshe, 2007).

[9] Kang Yi, Liu Weixun, "List of key Chinese subsidiaries 'Not For Sale' being drafted" Economic Observer (January 19, 2009). http://www.eeo.com.cn/ens/Industry/2009/01/22/128015.shtml.

[10] "*Guanyu tuijin guoyou ziben tiaozheng he guoyou qiye chongzu de zhidao yijian*". Available at: http://www.sasac.gov.cn/gzjg/xcgz/200612180138.htm.

feedstock into product such as diesel and naptha, and a third managed offshore exploration, production, and foreign joint ventures. As a result, Zhu chose to enact a series of reforms in 1998 to integrate vertically China's three major oil and gas corporations to enable them to compete domestically, then internationally. The current dominance of CNPC in oil and gas exploration and production reflects the extent to which this 15-year-old reform remains very much incomplete.

A Turn to the Outside World, A Loosening of Regulatory Levers

While regulations relating to ownership of Chinese domestic energy assets are tightening, rules governing the growth of outward FDI have increasingly liberalized to allow a wider range of firms and regulators increased breadth in approval and to lower institutional barriers to capital outflow. This diversification of actors and decentralization of approval have supported increased volumes of investment abroad but have also weakened central state oversight over such investment. The State Council remains the highest state authority over outward investment, while four other institutions mediate the disposition of state assets, conversion of foreign exchange, as well as approval of projects and ventures abroad. SASAC governs the sale, merger, acquisition, and annual auditing of a select group of state assets at the central and local level. The commission also has input into personnel movements concerning individuals of vice-ministerial rank and below. The State Administration of Foreign Exchange (SAFE) regulates the utilization of foreign exchange by issuing certification of funding sources and amounts. The

Ministry of Commerce (MOFCOM) and the NDRC are most closely coordinated, as they use common standards and criteria to review proposed projects, partnerships, ventures, and mergers/acquisitions/sales. MOFCOM approves outward FDI projects by ensuring that administrative measures relating to SASAC, SAFE, and the NDRC are adhered to, by granting approving of each ODI proposals and by recording all relevant investment, destination, and financial information relevant to each project. The NDRC enjoys approval authority as well, but is concerned with the alignment of the proposed project or investment with national industrial policy, and with the financial or industrial capacity of the proposed parties involved.

Following the accession of China to the WTO, coordination between these institutions has understandably grown in complexity and volume. A series of reforms was enacted in recent years to simplify and to decentralize approvals to address the increased investment volume. By early 2006 SAFE had begun to allow local SAFE branches to approve investment projects of a value lower than $10 million. Simultaneously, limits on the quantity of foreign exchange permitted for ODI investments were also removed. In December 2008 the China Banking Regulatory Commission authorized all commercial banks to be able to provide loans for cross-border M&A, thus removing another lever for central government control and a *de facto* monopoly on such loans. In 2009 MOFCOM, like SAFE, permitted local branches to approve investments, but raise the limit to $100 million through Circular No. 5. A "Fast Track" program to expedite approvals was also implemented by MOFCOM that reduced approval time for smaller projects to under three days. SASAC then codified this simplified raft of reforms through the publication of the

"Interim Measures for the Administration of Overseas State-Owned Assets of Central State-Owned Enterprises," effective July 2011.

A Splintered Bureaucracy

Despite the proliferation of actors and loosening of regulations discussed above, the National Energy Commission attempts to oversee national implementation of energy policy with only nine departments and a staff size of approximately 130 people – double the 50-60 staff of the original Energy Bureau, but still quite limited.[11] In all, China's central government may contain approximately 910 individuals whose work in some way is related to energy policy. In contrast, the US Energy Information Agency (EIA) alone – an organization dedicated mainly to data gathering, analysis, and education – employed 620 people in fiscal year 2004. The US Department of Energy (DOE) employed 14,713 individuals in the same period.[12] The disparity in personnel is striking, particularly in the context of the processes of decentralization, ownership diversification, corporatization, and rapid capacity expansion that characterize China's current energy market.

When considering the link between Chinese energy investments and policy, it is important to note that China's energy regulatory entities have been, and continue to be, characterized by overlapping jurisdictions and waves of centralization and decentralization. Chinese energy governance has remained persistently fragmented. Analysis of four key centralization initiatives conveys the consistently splintered

[11] These departments include: General Integration, Strategic Planning, Policy, International Cooperation, Science and Technology Energy Savings, New Energy, Coal, Electric Power, Petroleum and Natural Gas.
[12] Email communication with US EIA staff, December 20, 2005; US DOE website.

nature of such governance domestically, and frames well the higher challenge of coordinating such governance with more diffuse foreign energy policy goals.[13] The 2008 creation of the National Energy Administration and the 2010 establishment of the National Energy Commission (headed by the Premier) are simply the latest in a long line of centralization efforts, and precedent suggests that the lifetime of such institutions in China may be quite short.

Repeated Attempts at Administrative Centralization (1953-1982)

Significantly, Beijing's first attempt to centralize energy oversight proved short-lived. Between 1953 and 1955, the newly founded central government created the Ministry of Fossil Fuels (MFF) to combine the coal, electricity and petroleum industries into one entity for energy policymaking, allocation, planning and development. By 1955 the need for management specialization and heightened growth of energy demand from six percent to over 15 percent quickly led to the abolishment of the MFF and the formation of separate ministries for coal and petroleum.

A second administrative consolidation trend emerged in 1960, when the disastrous results of the Great Leap Forward and the withdrawal of Soviet advisers led to economic growth plummeting from slightly under nine percent the previous year to negative 0.3 percent. Coordination was strengthened among the Ministry of Electric Power (MOEP), Ministry of Coal Industry (MCI) and Ministry of Petroleum

[13] This section is a more detailed treatment of a summarized argument in Edward Cunningham, "China's Energy Governance: Perception and Reality", MIT Center for International Studies Audit of the Conventional Wisdom, (March 2007).

Industry (MPI) while reduced demand required the shuttering of many plants and refineries. This consolidation then moderated with the decentralization trends unleashed by the Cultural Revolution mid-decade. The markedly lower growth rates in 1971 coincided with a partial re-consolidation effort, whereby the MOEP and the Ministry of Water Resources Utilization were combined to form the Ministry of Water Resources and Electric Power, and the Ministry of Petroleum Industry merged with the Coal and Chemical ministries to form the Ministry of Fuels and Chemicals.

By mid-1980 the economy's growth rate began to drop, reaching a mere five percent the following year. The central government then launched a third wave of attempted administrative centralization that led to the creation of the previous State Energy Commission (SEC). The SEC never received dedicated staff, an independent base of operations and funding, leading to one observer deeming its creation 'one of the major non-events of 1980'.[14] Previously existing agencies continued to operate as before, and the commission dissolved two years later amid 9-10 percent economic growth rates and a proven inability to raise the capital necessary to support sufficient power generation for the burgeoning national economy. As scholar Victor Shih notes: "The planners' tight grip on the economy was first loosened when growth far exceeded the plan in 1982 and in 1983. Deng responded by sending a series of political signals to members of his factions in the provinces to

[14] Thomas Fingar, "Implementing Energy Policy: The Rise and Demise of the State Energy Commission", in D. Lampton (ed.) *Policy Implementation in Post-Mao China,* (Berkeley: Univ. of California Press), 1987, p.207.

increase investment and to take their own initiatives".[15] Shih also argues that in early 1984 the economic figures from 1983 revealed "continual economic vigor and a thirst for capital from the grassroots level…[and] in late April 1984…the *Meeting for Some Coastal Cities*…had a strong agenda to devolve investment and lending power to the localities."[16] The growth of the early 1980s provided an opportunity for the new, reform-oriented leadership to begin the process of removing government from commercial enterprise work and the business of controlling energy production.

Decentralization I: Rise of Corporations (1982-1998)

This need for capital and technology acquisition, most immediately for the electric power generation necessary to the industrial growth that China's leaders were encouraging, led to 1986 policy changes that allowed the entrance of new investors upstream into coal, electric power and oil production. Provincial, municipal, and local governments, as well as private domestic and foreign firms were encouraged to invest in coal mines, power plants, and a range of oil refining and production activities. In order to facilitate this step-change in energy production, energy assets were also corporatized. During this decade major energy firms were established such as China National Petroleum (Group) Corporation (CNPC), China Petrochemical (Group) Corporation (Sinopec) and China National

[15] Victor Shih, *Factions and Finance in China: Elite Conflict and Inflation* (Cambridge: Cambridge University Press, 2007), p.110.
[16] Ibid., p.114-5.

Offshore Oil Corporation (CNOOC) in the oil industry as well as Huaneng Group in electricity generation. In 1988 the ministries of Petroleum, Water Conservancy and Power, and Coal Industries were abolished, and many of their regulatory responsibilities were transferred to the new corporations.

Such a combination of trends necessitated, in the eyes of many conservative leaders, a movement to reassert Beijing's authority in the form of a centralized Ministry of Energy (MOE). The ministry was launched in June of 1988, as economic growth began to dip, reaching four percent the following year, and was designed as a fourth attempt to provide central oversight over the newly complex set of actors in the energy sector. The ministry never integrated well with the much more powerful State Planning Commission (SPC). This gap in coordination was perhaps best illustrated in the major disparity between energy demand estimates that the SPC and MOE calculated for the Eighth Five-year Plan. The 1991 SPC estimate for total required electric power build-out for the 1991-1995 period equalled 83.6 GW, only 70 percent the 121.7 GW estimate of the MOE.[17] This new 'supra-ministry' soon followed in the footsteps of its predecessors, however, suffering from internal competition and dissension, and was disbanded less than five years later, in March 1993. As one scholar wrote: "Unfortunately, the MOE was little more than a collection of the same vested interests within one umbrella organization, the same

[17] Xiaoqian Zhou (ed.) *China's Electric Power Program*, (Beijing:Water Power Publishing, 2007), p.117

personnel, the same allegiance, and the same entrenched interests…the MOE was never able to function as a cohesive group."[18]

The creation of energy corporations in the mid 1980s marked an important break from past governance patterns, and represented a new model of both interacting with the rapidly evolving global energy market outside China's borders and also attracting the financing and technology necessary to harness the energy potential within the country. This need was articulated in numerous official documents, including a September 10, 1993 MOEP instruction: "…foreign investment in the nation's electric power industry not only supplements inadequate domestic construction funds and ability to manufacture power generating equipment, moreover the technology and management experiences that foreign investment will bring, as well as the economic efficiency created, will be good…in the past 10 years alone foreign investment constitutes 11 percent of electric power construction investment."[19] A 1994 Ministry of Electric Power plan reiterates this need: "China can fulfil about three-quarters of the new business [which includes rehabilitation programs for existing plants] internally, leaving $25 billion for foreign suppliers; such help will be welcomed, provided it is accompanied by foreign finance".[20] The emergence of corporations also marked a critical step in the

---

[18] Daniel Chow, "An Analysis of the Political Economy of China's Enterprise Conglomerates: A Study of the Reform of the Electric Power Industry in China." *Law and Policy in International Business* 28(2) (1997), p. 406.

[19] MOEP document no. 341, "Expanding the Scale and Use of Foreign Investment to Accelerate Electric Power Development", September 10, 1993. In Xiaoqian Zhou (ed.) *China's Electric Power Program*, (Beijing:Water Power Publishing, 2007), p.826.

[20] Pei-Yee Woo, "China's Electric Power Market: The Rise and Fall of IPPs", (PESD Working Paper No.45), August 16, 2005. p.11.

'marketization' of China's infrastructure. As one scholar has noted, corporate involvement "fundamentally changed expectations about electricity – power was now regarded as a commodity to be bought and sold on the market, rather than allocated by government".[21]

In addition, the corporation emerged in part as a means of organizing productive assets and property rights. The proliferating government entities discussed above claimed ownership over financial stakes in SOEs that overlapped and that were often illegitimate and at odds with one another. The logic of corporatization[22] stemmed from "its ability to specify ownership rights and to legally separate enterprise from state administration".[23] The "Company Law", which was passed on December 29, 1993, served as the primary legal framework to identify claims over liabilities and assets of the rapidly diversifying economy, and to regulate formal decision-making powers at the firm level in an effort to make firms more independent of political influence. In fact, articles 3 and 4 clearly state that the liability and rights of shareholders of a firm are in proportion to their capital contribution to the firm. Moreover, article 7 explicitly states that SOEs under reorganization to corporation status must "identify and verify" the firm's assets and

---

[21] Yi-Chong Xu, *Powering China: Reforming the Electric power Industry in China*, (Aldershot: Ashgate) 2002. p.126.

[22] Corporatization is defined as the diversification of ownership structure, and in this paper particular attention is afforded the introduction of sub-central state and of nonstate parties as shareholders "to make SOEs operate as if they were private firms facing a competitive market or, if monopolies, efficient regulation". (Mary Shirley, "Bureaucrats in business: the roles of privatization versus corporatization in state-owned enterprise reform," World Development 27, no. 1 (1999), p. 115). See also Colin Xu, Tian Zhu, and Yi-min Lin, "Politician control, agency problems and ownership reform: Evidence from China," Economics of Transition 13, no. 1 (2005): 1-24.

[23] Xu, p.100.

"determine the respective owners of the property rights therein, and settle its creditor's rights and liabilities".[24] The law therefore provided an opportunity both to re-evaluate the nest of outstanding claims against many SOEs in the energy sector and to at least begin the process of removing party political actors from the daily management of firms.

By the mid-1990s the central administration of the energy sector was again performed by disparate entities, many of which had been reinstated, as well as the rising energy corporations that were increasingly straddling commercial and regulatory functions. This array of government actors included, but was not limited to, the State Development and Planning Commission (SDPC), the State Economic and Trade Commission (SETC), the Ministry of Petroleum Industry, the Ministry of Geology and Mineral Resources, the Ministry of Electric Power, the Ministry of Land and Natural Resources, and the Ministry of Coal Industry. In 1998, as part of a government-wide restructuring of industrial policy in the 'pillar industries' of energy, transportation, and telecommunications, the Ministry of Coal Industry and Ministry of Electric Power Industry (MEPI) were abolished and the State Administration of Coal Industry (SACI) was formed under the SETC, granting provincial governments operational management over coal mining enterprises and larger scale electric power projects. Much of the operational authority for the electricity industry was transferred to the newly established State Power Corporation of China (SPCC).

[24] See <www.cclaw.net/download/companylaw.asp>.

Decentralization II: Rise of Multiple Agencies (1998-2008)

The pluralization of corporations during the 1980s and 1990s led to a major set of industrial and institutional reforms in 1998 that significantly reduced central government capacity in the form of personnel, dedicated funding and institutional structure. Despite the mobilization of corporate resources, the central state did not initially redeploy its resources to guide energy investments at the firm level. Philip Andrews-Speed captures this process well, observing:

> '[i]n the past, the leaders of the major state-owned energy companies were able to play a major role in determining the policies and plans for their individual industries. Progressive corporatization of these companies has reduced the power of these executives to influence national policy to a great extent, but the capacity of government to lead has not been enhanced in a commensurate way. Indeed, with more players in the sector, the government's ability to manage the energy sector has actually diminished.'[25]

Barry Naughton has also recognized the migration of energy decisions to the firm level, writing:

> 'Particularly following the revival of state sector profitability, some of these organizations are extremely rich and powerful. The state companies under central SASAC's [State-owned Asset and Supervision and Administration Commission] purview include, for example, the State Electricity Grid and the big electric power–generation companies…This middle layer of the state economy is the least transparent…in between the fully corporatized and often listed companies, and the national government."[26]

---

[25] Philip Andrews-Speed, "China's energy woes: running on empty", *Far Eastern Economic Review*, June 2005, p.17.

[26] Barry Naughton, "Claiming profit for the State: SASAC and the capital management budget", *China Leadership Monitor*, vol. 18, Spring 2006, p.4.

In March of 1998 the NPC approved a wide-ranging plan that had been designed by the Politburo the year before to consolidate the central government apparatus and state-owned industry. The 40 ministries overseeing China's growth were reduced to 29, with many employees transferred to SOEs, research institutes, quasi-private firms, or simply laid off. The reforms affected over 33,000 central government personnel and within two years had laid off more than 4 million government employees.[27] In the energy sector, power struggles between the SDPC and the SETC ensued, and by February 2001 the SACI and coal, power, and other administrations under the SETC were closed, as were most of their provincial, prefectural, and county counterparts. In March 2003, the SETC itself was abolished and the majority of its functions transferred to the SDPC, subsequently renamed the National Development and Reform Commission (NDRC). Immediately prior to this major realignment, the nation's first independent regulator for the power industry was established: the State Electricity Regulatory Commission (SERC). The emergence of this unprecedented, arm's-length body heralded what many scholars have termed a new era of the 'regulatory state' in energy.[28] Others, such as Margaret Pearson, argue that such restructuring is another attempt to strengthen state control but continues to be plagued by historical institutional fragmentation.

---

[27] Luo Gan, "Explanation of Plan for Institutional Restructuring of the State Council", *Ta Kung Pao*, March 7, 1998 (in FBIS, DR/CHI, March 10, 1998, 98-068); Cheng Li, "China in 1999: Seeking Common Ground at a Time of Tension and Conflict", *Asian Survey*, 40:1 (2000), p.122. For related WTO accession issues please see Joseph Fewsmith, "China and the WTO: The Politics Behind the Agreement," National Bureau of Research (NBR) Analysis 10:5, Essay 2 (November 1999).

[28] For representative works supporting this perspective, see Dali Yang, *Remaking the Chinese leviathan: Market transition and the politics of governance in China* (Stanford University Press, 2005).

She writes: "the most recent round of bureaucratic restructuring in March 2003 strengthened the state's efforts to maintain authority over strategic assets".[29]

However, while some degree of consolidation under the NDRC did take place by the early 2000s, a range of new entities, like SERC, began to proliferate and become linked to the energy sector. At the central level, the State-Owned Assets Supervision and Administration Commission (SASAC), established in 2003, claims nominal ownership rights over, and bears responsibility for, the management and disposal of certain state-owned assets (including merger and acquisition approval and other energy asset restructuring). The commission also has input into personnel movements concerning individuals of vice-ministerial rank and below. The State Environmental Protection Agency (SEPA) was recently raised to ministerial rank to become the Ministry of Environmental Protection (MEP), and enforces environmental standards and compliance by energy firms, while resource extraction rights, operation management, and conflict resolution responsibilities are largely shared by the Ministry of Land and Resources (MOLAR), the Ministry of Water Resources (MWR), and the State Administration of Coal Mine Safety (SACMS). The interests of these entities, of course, do not always align. SERC and the pricing bureau of the NDRC seek to strengthen competition by maintaining higher numbers of energy firms in industries such as power generation. In contrast, other central

[29] Margaret Pearson "The Business of Governing Business in China: Institutions and Norms of the Emerging Regulatory State", *World Politics*, vol.57 (January 2005), p. 304-5. See also Margaret Pearson, "Governing the Chinese Economy: Regulatory Reform in the Service of the State," *Public Administration Review* 67, no. 4 (2007): 718-730.

agencies, such a SASAC, aim to maximize returns on assets by encouraging the consolidation of existing firms.

This fractured system of energy governance in China is reflected in the energy industry's fractured structure. The following section will address the market structure of China's oil and gas, coal, and electric power industries in an effort to illustrate the significant differences between the concentrated oil and gas on the one hand and fragmented coal and electric power on the other. While much of the relevant literature is concerned with reforms in the Chinese oil and gas industry and the rise of such firms, the vast bulk of national energy production relies on coal and electric power – markets as fragmented as the authorities attempting to regulate them.

National Energy Structure: An Overview

Oil and Gas

Scholarly and political analyses of China's energy system often focus primarily on the oil and gas industry, motivated by: i) the perceived strategic nature of these hydrocarbons; ii) China's relatively recent emergence as a net oil product importer and net crude oil importer in 1993 and 1996 respectively; and iii) the increasingly global investment activities of Chinese oil and gas firms since the late 1990s. This attention has reinforced the view that China's energy sector is heavily concentrated and dominated by a handful of large incumbent firms, financed largely by the central

government, and therefore resistant to major change, institutional or otherwise.[30] Unlike analyses of the private or quasi-private sector in China, which frame state involvement as a largely "helping hand" model of development, analysis of the energy sector often characterizes Beijing as an interventionist state actor pursuing regressive pricing and finance policies.[31] These perspectives argue that barriers to market entry for non-incumbent firms are high, incentives to support protectionism by incumbent firms are many, financial resources for non-central state actors are limited, and political pressure to subsidize prices dominates the political economy landscape.

This analytical framework is influential and its implications significant, because it implies that forces for change – technological, financial, or regulatory – are greatly weakened in China's energy sector. Indeed, much of the data culled from sub-sectors that are most exposed to international markets (and therefore most "visible" to international observers) support this characterization. The oil and natural gas industries have remained cartelized in structure despite the introduction of significant institutional reforms in the late 1990s and various reforms related to WTO compliance in the early 2000s. China's three major oil and gas firms traditionally functioned as separate segments of the supply chain. CNPC was created in 1988 to manage China's oil and gas exploration and production onshore,

---

[30] Peter Nolan and J. Zhang, "Globalization Challenge for Large Firms from Developing Countries: China's Oil and Aerospace Industries," *European Management Journal* 21, no. 3 (2003): 285-299.
[31] For example Amy Jaffe et. al., "Beijing's oil diplomacy," *Survival* 44, no. 1 (2002): 115-134; Robert Ebel, *China's Energy Future: The Middle Kingdom Seeks Its Place in the Sun* (Center for Strategic & International Studies, 2005); Linda Jakobson and Daojiong Zha, "China and the Worldwide Search for Oil Security," *Asia-Pacific Review* 13, no. 2 (2006): 60-73.

both domestically and internationally. Sinopec was established in 1983 to build and operate China's refining capacity downstream and petrochemical production. CNOOC was created in 1982 to specialize in the exploration, development, and production of oil and gas in China's territorial waters (with a depth over five meters).

However, this form of state control, achieved through the corporate separation of upstream exploration and production of crude from downstream refining of product, proved difficult to maintain once upstream price reforms were designed to stimulate production. Partial liberalization of crude oil prices by the mid-1980s through the mid-1990s rendered CNPC's onshore exploration and production activities upstream increasingly profitable. Such liberalization did not occur downstream in the oil product market. Heavily regulated downstream retail prices for oil products such as diesel and gasoline increased losses for the refining activities of Sinopec. For example, in 1983 the central government introduced a three track pricing system. A fixed annual quota of output was determined, and over two-thirds of that output was sold at a first, low price of RMB100/ton ($5.60/ton), while over one-quarter was sold at a second, higher price of RMB555/ton ($31.00/ton). Above-quota production (six percent of total production that year) could be sold at a negotiated price on the market. The low price was abolished by 1993, at which time over two-thirds of crude oil was sold at negotiated prices. In refining, foreign companies had begun to enter oil storage,

product importation, and third-party processing, as well as provincial and local companies.[32]

Rising imports (leading to China's switch to net importer status of oil product that year) led to a focus on managing oil consumption and by 1994 the oil pricing market was dismantled. All crude and product prices returned to being fixed by the central government. In April all import rights were abolished. As Andrews-Speed has written: "Thus, having introduced an oil-pricing system which was evolving rapidly towards being an open market, the government has made a rapid retreat. Prices are now tightly controlled and respond only sluggishly to the international markets…In one step the government reversed ten years of reform."[33]

The wide-ranging industrial and governmental reforms introduced in 1998 sought to improve the competitiveness of these three firms by vertically integrating them, with particular focus on the two largest (CNPC and Sinopec). After the reforms, Sinopec held both upstream and downstream assets in China's southern and eastern regions while CNPC held upstream and downstream assets in the north and western regions. To deepen commercial reforms and separate regulatory function and corporate management, all three firms listed portions of their assets on foreign exchanges through newly established subsidiary firms.

Yet, despite these considerable attempts to reform the structure of the oil and gas market, much remained the same. Peter Nolan captures this stagnation well,

---

[32] Philip Andrews-Speed, "Reform of China's Energy Sector: Slow Progress to an Uncertain Goal", in Sarah Cook, J. Zhuang, and S. Yao (ed.), *The Chinese Economy Under Transition* (Macmillan, 2000), p.113.
[33] Ibid., pp.114, 117.

and highlights remaining unresolved questions relating to the continuing influence of the central government and competition between the firms, writing: "The relationship between the floated company and the parent remains unresolved. While the floated 'children' [subsidiary firms listed on international stock markets], may wish for prosperous independence from their 'parents', the 'parents' (CNPC and Sinopec) have responsibility for a total of 1.5 million employees and several million family members."[34] He concludes that the "Chinese oil and petrochemical industry is still highly protected."[35]

Figure 1. Market Concentration of Energy Sub-Sectors, Post-1998 Reform

Top Firm	Share of Production in Respective Industry		
	1998	2003	2010
CNPC (Crude Oil)	67.3%	64.5%	61.4%
CNPC (Natural Gas)	70.8%	72.9%	74.9%
Huaneng (Electricity)	2.4%	9.7%	11.8%
Shenhua (Coal)	0.6%	5.1%	6.9%

Source: NBS China Energy Yearbook, various years; NBS China Electricity Yearbook, various years; CNPC Annual Report 2010; China Economy Supervision Center (ed.) *China's Industrial Map: Energy* (Beijing: Social Sciences Academic Press, 2006, p.49, 134; INNET, China's Energy Outlook 2004, p.11; LBNL, China Energy Databook 2008; Author's estimates. Electricity ratio based on installed capacity.

[34] Peter Nolan, "China and the Global Business Revolution," Camb. J. Econ. 26, no. 1 (January 1, 2002), p.125. See also F. Fesharaki and K. Wu, "Revitalizing China's Petroleum Industry Through Reorganization: Will It Work?," *Oil & Gas Journal* 96, no. 32 (1998).
[35] Nolan, p.126.

Indeed, a review of oil and gas production figures since the 1998 reforms reveals little significant change in ownership structure. Barriers to significant market entry have remained high. As Figure 1 illustrates, one firm – CNPC – accounts for well over one-half of China's crude oil production and three-quarters of its natural gas supply. CNPC has actually consolidated its dominance in gas over time and the lack of significant domestic market structure change in crude oil is also apparent. Andrews-Speed highlights the continuing obstacles to competition in the industry, arguing: "The issue which does not seem to have been addressed is whether one oil company may invest and conduct exploration, production, refining or distribution in the other's territory…The longer the period of [regulatory] ambiguity, the stronger the position of the companies. One glaring deficiency in the legal framework is the absence of a petroleum law."[36] Given the reform challenges present in the oil and gas industry, it is understandable how analysis of China's energy market, particularly when viewed through this prism, would support a bias privileging a more monolithic status quo.

Coal and Electric Power

Despite the concentration of actors in China's oil and gas industry, it is important to note that the term "fragmented authoritarianism", which accurately and persuasively framed the political economy of a reform-era China, emerged first

[36] Philip Andrews-Speed, S. Dow, and Z. Gao, "The ongoing reforms to China's government and state sector: the case of the energy industry," *Journal of Contemporary China* (2000), p.15.

from a study of China's electric power system.[37] Returning to Figure 1, the coal and electricity statistics reveal these markets to be considerably less concentrated in structure than their crude oil and natural gas counterparts. Shenhua Group, China's leading coal supplier, has only recently neared seven percent of national production. In contrast its American counterpart, Peabody Energy, commands over 20 percent of the US coal market. Huaneng Group, the largest power producer in China, produces just over 12 percent of national installed electricity capacity.

Figure 2. Dominance of Coal: Primary Energy Production

	1976	1986	1996	2006
Coal	***68.8%***	***72.4 %***	***74.9%***	***75.7%***
Oil and Gas	27.5%	23.3%	18.9%	15.3%
Other	3.7%	4.3%	6.2%	9.0%

Source: LBNL, China Energy Databook. Data normalized (EJ) and percentages calculated.

As Figure 2 illustrates, the nation's coal industry forms the backbone of the sector, consistently accounting for three-quarters of China's national primary energy production. However, in contrast to the oil and gas markets, the structure of the coal and electricity industries, upon which China's economic growth is based, have been anything but static.

[37] Kenneth Lieberthal and Michel Oksenberg, "Bureaucratic Politics and Chinese Energy Development" (US Department of Commerce, International Trade Administration, 1986); Kenneth Lieberthal and Michel Oksenberg 1988).

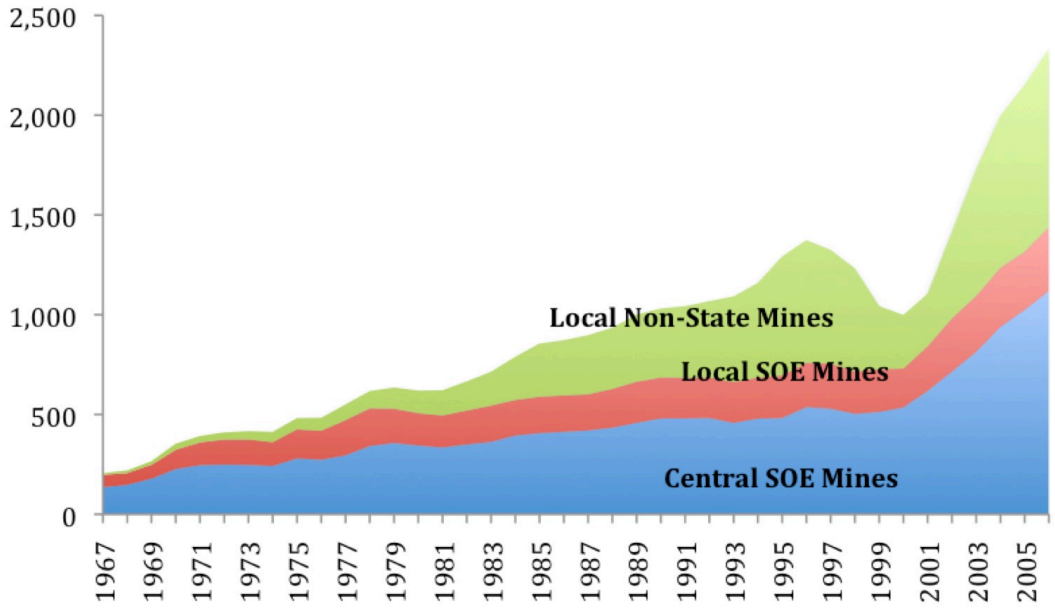
Ownership and Price Reforms

Coal Industry

Unlike the situation in the oil and gas industries, twin processes of ownership and investment diversification have penetrated extensively upstream, in the coal market. Coal fuels over two-thirds of primary energy consumption in China and dominates the electric power industry, contributing 74 percent of total electricity production in 2013.[38] This most vital foundation of China's energy supply has relied significantly on mines owned and operated by firms at the provincial or local level. At the outset of the Cultural Revolution in 1966, approximately 80 percent of China's coal was produced by "State Key Mines" owned and operated by the central government. In the beginning of the reform period in 1978 this ratio had been reduced to slightly above 55 percent. By 1995 these central state mines contributed 37 percent of output.

[38] China Electricity Council, 2014.

Figure 3. China's Coal Production by Ownership (million tonnes)



Source: LBNL, China Energy Databook.

Much of this variation in ownership over time is the result of limited central state capacity to increase supply through SOE mines administered by the central and local governments during periods of rapid economic growth and resulting energy shortage. This shortage led to the promulgation of policies that encouraged local non-state mines (LNSM) to grow to fill the gap in production. This cycle is evident in Figure 4, which illustrates the greater volatility of LNSM in comparison to mines owned by the central and local state. The figure also illustrates the greater time sensitivity of LNSM production rates. These mines were able to stop and start production in a much more timely fashion and in step with economic growth, while state-owned mines at the central and local level display both growth rates clearly lagging economic growth and displaying lower values than LNSM.

Responding to the high economic growth of 1978-79 and then again of 1982-85, LNSM grew at rates that were at times multiples of the CSM and LSM, and well higher than GDP growth rates. LNSM growth averaged 22.5 percent during the boom of 1982-85. Subsequently, during the economic slowdown of the late 1980s, the growth of LNSM dropped precipitously to rates lower than the central state mines. LNSM growth returned during the boom of 1992-95, averaging 13.8 percent in comparison to a meagre 0.1 percent for CSM and 1.2 percent for LSM. By the end of 1997 the combination of a slowing economy and central government rhetoric regarding the enforcement of regulation closing down LNSM led to significant declines in LNSM growth.[39] The overall pattern of LNSM growth rates far exceeding CSM and LSM growth rates during periods of high economic growth followed by LNSM growth rates falling dramatically (often below CSM and LSM rates) in periods of lower and moderating economic growth is clear.

As a result of such growth patterns, the overall share of output contributed by LNS mines increased from 14.1 percent in 1978 to 38.3 percent in 2006. By 2006 more than half (52.0 percent) of China's coal was produced by firms owned by actors outside of the central government. As Elspeth Thomson has documented:

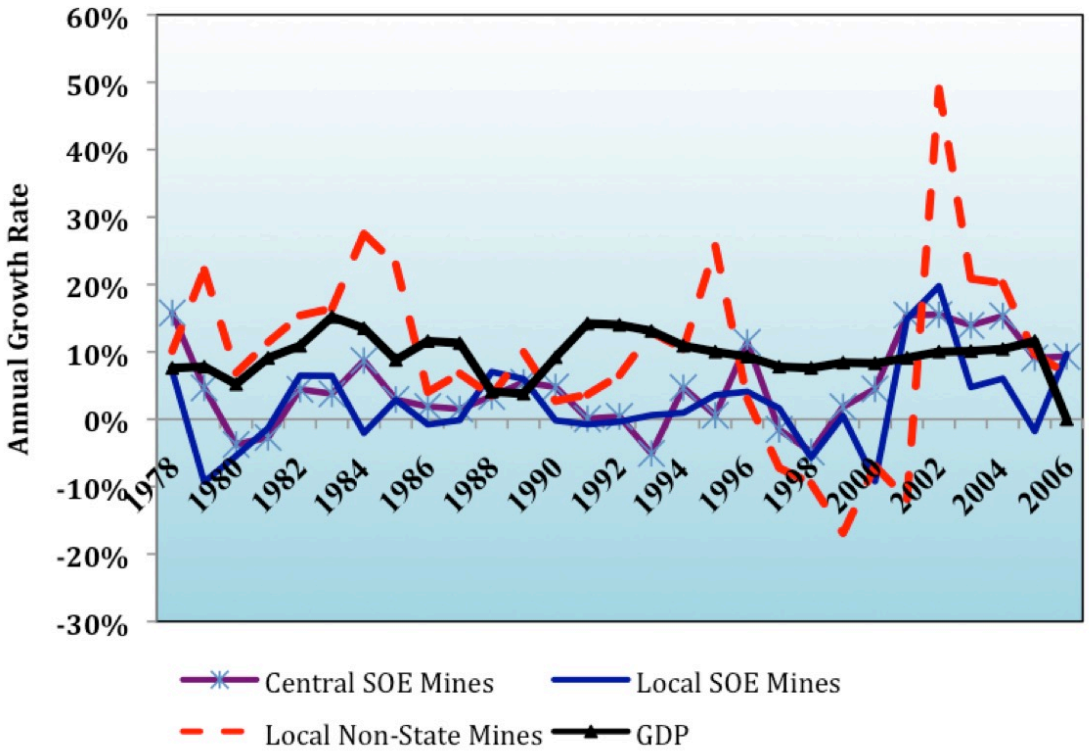
> "By the late 1970s the government had recognized that the fastest output growth was being achieved by the LNS mines and that their continued existence was vital to the economy. It therefore adopted a policy of spending the limited capital resources available on a few key large mines and infrastructure projects too large and capital-intensive

[39] While the growth rate did decline, the severity of the drop in LNSM growth rates during the period 1998-2002 is considered by most to be suspect due to significant underreporting.

for the peasants to undertake. Operators of local mines were encouraged to open mines using whatever resources they could find."[40]

Even during the most recent period of high economic growth since 2002, during which CSM did begin to increase output rapidly, non-state mine growth rates exceeded that of mines owned by the central and local state.

Figure 4. GDP Growth and Mine Growth by Ownership



Source: LBNL, China Energy Databook.

[40] Elspeth also points out the additional attractions of local mines: "Besides mitigating the shortage problem, relieving the critical lack of railway capacity on the north-south lines, and costing half as much to build and operate, LNS mines also contribute to other Chinese government objectives. They become operational much sooner, add to the wealth of peasants, help reduce rural unemployment, stem rural-urban migration, stimulate the development of rural industry and help halt the ecological damage resulting from the scavenging for firewood." Elspeth Thomson, "Reforming China's coal industry," *China Quarterly* (1996): 729.

Financial data for these coal firms highlights both their economic importance and their ownership diversity. Recent sales income figures, which distinguish between private, joint shareholding, collective and foreign invested firms, reveal the range of non-state actors that is obscured by aggregate national statistics. As seen in Figure 5, 48.5 percent of total sales income for the coal industry in 2005 was earned by firms without controlling stakes owned by the central or local government.[41]

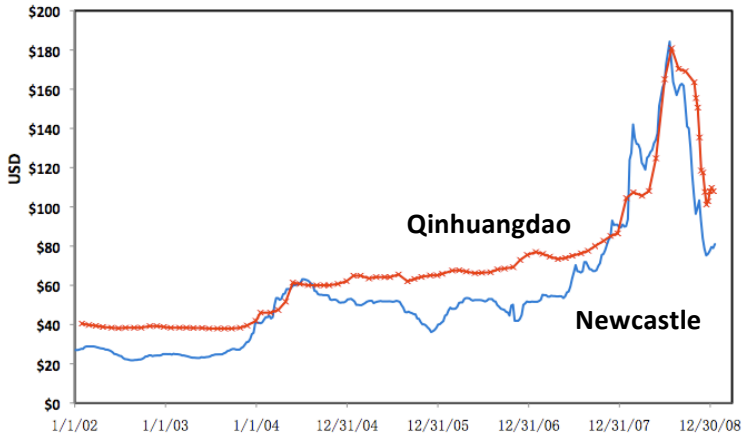
Much of this decentralization of ownership and investment resulted from the gradual liberalization of coal pricing. Coal prices were partially liberalized in 1984, immediately preceding the 1986 regulation allowing sub-central government actors and firms to invest in electric power generation, discussed at length below.[42] Coal prices were reformed to account for coal quality differences in the early 1980s and in 1984 a dual track system of prices was introduced, as it had been earlier in agriculture, to create incentives for increased production.[43] Each production unit produced a fixed quota amount of coal at a state-set price to be distributed by state channels to demand industries such as metallurgy, steel, and chemical production.[44] Above-quota coal could either be sold back to the state at 50 percent higher prices (and eventually 70 percent higher prices) or on the emerging free (largely illegal

---

[41] China Economy Supervision Center (ed.) *China's Industrial Map: Energy* (Beijing: Social Sciences Academic Press, 2006), p.203.
[42] See State Council Notice document no. 86, April 17, 1986: 'Provisional Regulation on the Encouragement of Fundraising for Power Construction Investment and Implementation of the Multi-Rate Power Tariff'.
[43] Naughton, *Growing Out of the Plan: Chinese Economic Reform*, 1978-1993 (Cambridge University Press, 1995).
[44] Bin Wang, "An imbalanced development of coal and electricity industries in China," *Energy Policy* 35, no. 10 (2007): 4959-4968.

"black") market.[45] Coal exchanges, that were established in five cities in 1992 to reduce the extortion occurring through middlemen, had little effect and the black market continued. By June 1993 the central government allowed central state-owned mines (SCMs) to sell 80 percent of their coal production at market prices, and by 1994 decreed all coal freed from quota prices.[46] There was considerable backsliding, as many government officials had profited from arbitrage between market and state prices for coal. Also, thermal coal prices for power plants continued to be subsidized, yet Guizhou was technically the last province to abolish official state subsidized thermal coal pricing for power plants on July 1, 2006.[47]

Figure 5. China's Historical Thermal Coal Spot Prices Converge with Regional Benchmark



Source: Newcastle data from Reuters. Qinhuangdao data from China Coal Transport and Distribution Association (CCTD), converted with daily exchange rate data from NY Fed and calorific value (QHD: 5800 kcal/kg, NWC: 6700 kcal/kg). This graph profited greatly from discussions with He Gang and others at PESD, Stanford University.

[45] Thomson (1996), p.745.
[46] Ibid.
[47] For detailed analysis of this process, please see Elspeth Thomson, *The Chinese Coal Industry: An Economic History* (Routledge, 2003).

In addition to price liberalization, reforms in the 1990s allowed progressive marketization through the organization of annual bargaining conferences (termed "订货会") between the major mines, power plants and Ministry of Railways (MOR). The role of the NDRC as an active player in these sessions has gradually declined, transforming instead to a mediator role. The state-led conference was formally abolished in 2004 but the negotiation meeting continues in an evolved form named the Coal Production, Transportation and Demand Linking Session ("煤炭产运需衔接会"), as all coal contracts still must be accompanied by signed documentation from the MOR indicating that sufficient rail capacity has been reserved to transport the coal under contract.[48] Thermal coal prices on the spot market rose 25–30 percent year-on-year by mid-2004, while contract prices in China had increased by less than 10 percent. Due to this disparity, power plant managers interviewed all observed that since 2003 mines have continually renegotiated their prices and failed to deliver coal to the plant at the contract price. The domestic media has also reported openly about the extent of the problem.[49] These liberalization policies eroded coal subsidies considerably and by 2002 the spot price of Qinhuangdao coal (QHD), China's widely referenced thermal coal benchmark, had aligned closely with rising international prices. As Figure 6 illustrates, prices of Qinhuangdao coal in China and Newcastle coal in Australia tracked well through the most recent volatility caused by rapid demand shocks in the region.

---

[48] In late 2005 the NDRC promulgated "*Guanyu zuohao 2006 nian quanguo zhongdian meitan chanyunxu xianjie gongzuo de tongzhi"*, which made clear that the NDRC had abolished the "temporary interference" of the central government in coal pricing for electricity generation and encouraged the signing of long-term contracts between coal and electricity firms.

[49] "Favorable coal prices to be abolished" *China Daily*, 23 July 2004.

Electric Power Industry

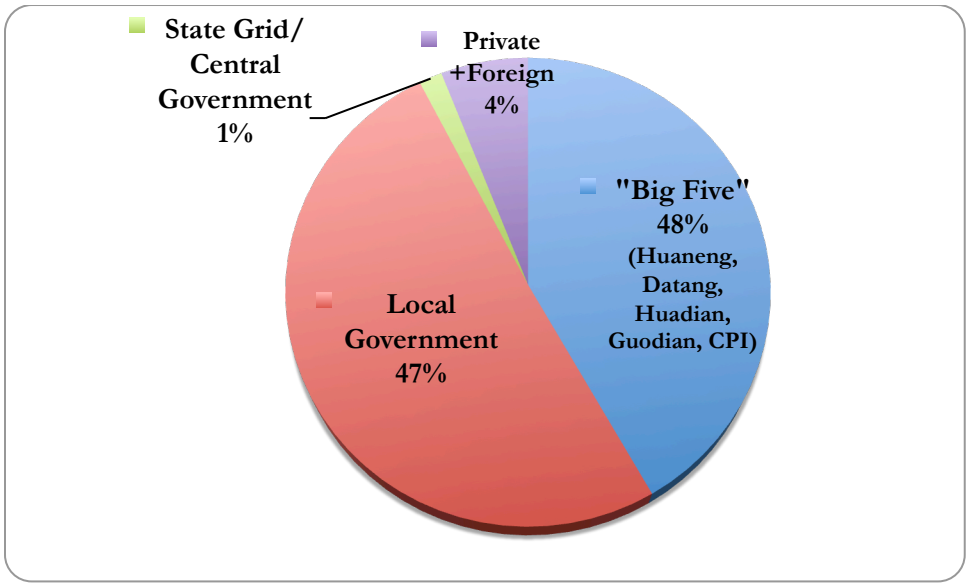
Processes of ownership and investment diversification have also penetrated upstream in the electricity generation industry, the result of far-ranging reforms in electric power generation.[50] As occurred in the coal industry, the financial and administrative resources of the central government proved inadequate to meet power generation demand; a shortage that by the boom years of the early 1980s became acute. Reforms pursued by the central government sought to: i) diversify sources of finance and augment state-directed capital by allowing, for the first time, non-central government entities to invest in and build power plants; ii) raise electricity tariffs by abolishing command era pricing that only covered operating, transmission and distribution costs and introducing "cost-plus" or "rate of return regulation" that accelerated capital repayment and guaranteed 12-15 percent returns; and iii) levy a series of national fees to create specialized funds for capital investment.

A constellation of local and regional government actors that resulted from such reforms now extends deep into the power generation sector, including provincial government investment funds, local government SOEs, grid and grid-subsidiary groups, and nuclear power firms. This complexity has been recently noted by a few studies. Chi Zhang and Thomas Heller observe that "During long periods of shortage, Chinese reforms focus on getting new power on line as quickly

[50] For an excellent updated review of reforms in China's electricity sector see Chi Zhang and Thomas Heller, "Reform of Chinese electric power market: economics and institutions," in David Victor and Thomas Heller (ed.), *The Political Economy of Power Sector Reform: The Experiences of Five Major Developing Countries* (Cambridge: Cambridge University, 2007).

as possible, and delegate much of the task of adding capacity to provincial and local authorities."[51] In the six years since the dissolution of the State Power Corporation of China (SPCC) that once vertically integrated regional electric grids and electric power generation, it is notable that the "Big Five" companies that were the generating assets of the SPCC command less than half of China's electricity generation market.

Figure 6. Ownership of Power Generation Installed Capacity, 2013



Source: China Electricity Council, 2014.

The energy corporation initially served as a vehicle to resolve increasingly blurred rights and claims between central and local control over energy assets during this untangling process, and also to attract foreign technology and financing to develop domestic resources under tight credit market conditions and poor fiscal

[51] Chi Zhang and Thomas Heller, p. 77.

capacity. Initial reforms were rather successful. For example, in 1975 China suffered from a shortage of approximately 5 GW, or 12 percent of national generating capacity; this grew to 15 GW or 16 percent by 1986.[52] Rapid increases in electricity capacity began in the late 1980s to respond both to these historical shortages as well as the fast-growing demand resulting from the expansionary economic reforms of the early 1980s. By the late 1980s annual capacity increases averaged a respectable 15GW, through the boom of the 1990s.

More specifically, formal financial reform of the electric power industry began in 1984 with the passing of legislation that transformed direct state funding of power plant construction into loans from state banks.[53] At that time, there was no foreign or non-central state investment in China's power industry. Price reform deepened in 1986, and was highlighted by the promulgation of the 'Provisional Regulations on Encouraging Fund Raising for Power Construction and Introducing Multi-Rate Power Tariff'.[54] This battery of reforms increased wholesale prices and diversified sources of finance by permitting sub-national government, private, and eventually foreign-invested entities to invest, in an effort to encourage investment through three main mechanisms.

---

[52] See State Council Notice "Speeding up the development of the electricity industry", document no. 114, July 25, 1975; Chi Zhang and Thomas Heller, p. 93.
[53] See Ministry of Electric Power Notice "Provisional measure transforming all budgetary infrastructure fund allocations into loans", document no. 84, December 27, 1984. This was followed months later by the MOEP Notice "Central government and State Council leaders' memo on questions relating to the utilization of foreign financing to speed the building of electric power", document no. 54, February 26, 1985.
[54] See State Council Notice document no. 86, April 17, 1986.

To attract new investors, the reforms raised the wholesale tariffs paid to the power producers and introduced a pool purchase price (PPP) to a 'cost plus' formula that guaranteed a 12–15 percent rate of return for newly invested plants. In addition, an RMB0.02 fee was added to the end-user retail prices nationwide to raise capital for the newly established electricity construction fund. Lastly, a wide range of special fees and charges, such as the 'fuel and transportation surcharge', were also allowed by 1986. These fees were collected by the central and local governments to finance various projects such as the Three Gorges dam project and the "coal for oil substitution" project and a portion was also disbursed to local projects.[55] Such reforms diversified ownership, diluting the central government's share of generation assets, and also introduced sufficient sub-national funding to increase generation capacity and largely solve the major power shortages of the 1980s and early 1990s.[56]

Firms such as Huaneng Group proved effective at building partnerships with foreign financial institutions and creating the foundation for rapid expansion. The prominence of electricity firms in this crucial stage of policy and economic reform is reflected in the fact that six of the original 22 SOEs approved by the State Council to issue shares in overseas stock markets hailed from the electric power industry.[57]

---

[55] Zhang Chi, "Reform of Chinese electric power market: economics and institutions", PESD draft paper, Stanford University, January 2003. p.9.

[56] Intermittent short-term shortages always existed, as is the case in most developing (and, occasionally developed) nations.

[57] The six firms are Huaneng International Joint Stock Company, Shandong Huaneng Electricity Joint Stock Company, Shandong International Power Development Company, China Harbin Power Plant Equipment Group, Northeast Electric Transmission and Transformation Equipment Corp, Datang Power Company. The listings occurred in 1994.

Huaneng Power International, Incorporated (HPI) was established in June 1994 and in October of the same year listed on the New York Stock Exchange, issuing $1.25 billion in American Depositary Receipts.[58] By 1995 over 40 power investment companies had begun operation, forming what has been characterized by some scholars as 'a group of independent power producers (IPPs)'.[59] In January 1998, HPI was listed on the Hong Kong Stock Exchange and in November 2001 the firm successfully issued A-shares in the domestic market. By 2002, 13 percent of the total investment in the Chinese power industry was foreign.[60]

By March 1997, another power firm – Beijing Datang Power Generation Corporation – became the first Chinese firm to list in the London Stock Exchange. In December 1996 the State Power Corporation of China (SPCC) had been established and within a few months the MOEP had been transformed into the Department of Electric Power within the SETC, with a staff reduced to fewer than 20 people. This reorganization served to separate production, including both generation and distribution, from regulatory functions. In 1999 the China National Nuclear Corporation (CNNC), which managed the country's nuclear power sector, was also split into two separate firms. One firm focused on resource extraction, nuclear processing for civilian and military use, waste treatment and safety, while the other remained responsible for the construction and execution of nuclear power plants.

[58] Investor Communication company document, 'In pursuit of world class corporate governance and IR'; see < www.fa100index.com/images/PDF/huanengpower.pdf>.
[59] Xu, p.127.
[60] Woo, p.11.

The year 1996 resulted in a raft of new laws that brought legal, if not regulatory, clarity to the power industry. The Electricity Law was passed and allowed non-state entities to participate in the generating sector, while also furthering the separation of regulatory and ownership functions of power producers. Between 1998 and 2002 subsequent legislation revised and clarified regulatory changes designed to separate generation and transmission assets formally, split generation and transmission pricing, launch small-scale market power pooling trials and elaborate future reform objectives.[61] These objectives included (a) the formal separation of generation from transmission in terms of ownership and regulation; (b) the establishment of new pricing mechanisms to internalize environmental costs more effectively; (c) the creation of competitive regional markets for the dispatching of generators; and (d) the development of market-oriented pricing mechanisms throughout the power value chain, from generation to transmission, distribution, and retail pricing.[62] Cross-subsidization through price discrimination still plagued the sector however. For example, in 2002 the average rural price for electricity was RMB0.66/kWh, compared to an urban average of RMB0.44/kWh. The largest differential between regions reached RMB0.264/kWh.[63]

[61] Prominent examples of such legislation were State Council Documents 146, 5 and 2704 of 2002; and later 2 of 2003 and 432 of 2005.
[62] Edward Steinfeld, "Energy Policy: Charting a Path for China's Future", World Bank China Note, June 2004.
[63] State Council Office of Economic Restructuring, 'Zhongguo dianli jianguan jigou jianshe yanjiu baogao', November 2004, p. 150.

The great expansion of power that began in the mid-1980s through the reforms discussed above also heralded the relative decline of central funding for such expansion. For example, between 1980 and 1994, "the annual growth rates of both power generation and installed capacity averaged more than 8 percent, while between 1980 and 1992, the share of central government investment in total power sector investment decreased from 91 percent to 30 percent".[64] The central government provided nearly half of power industry investment during 1985–90. In the following five years, however, between 1991 and 1995, only one-third of investment funds flowed from the central government. Financial levers of influence have clearly narrowed. In the same period, local sources accounted for 42.9 percent of the total. The third largest category of investment was foreign, equalling 9.9 percent. Moreover, the variation across regions was considerable, from provinces such as Tibet that were dominated by central state funds, at 98.7 percent, to powerhouse Guangdong market, in which only 3.5 percent of funding was from the central state. [65] Statistics for the Southern Grid reveal both the progressive efforts of local government to meet rising power demands and the necessary freedom from central guidance that the region enjoyed in order to succeed. Foreign investment shares were highest in Guangdong and Hainan (23.2 percent and 21.7 percent respectively), as were local government investments (54.1 percent and 41.7 percent).[66]

---

[64] Binsheng Li and James Dorian (1995) 'Change in China's Power Sector', *Energy Policy*, 23 (7): 619–626. p.625.
[65] Xu, p.172.
[66] Ibid., p.173.

In 1998, after two years of operation, the SPCC had earned a mere RMB7.01 billion in profits, based on sales revenue of RMB260.64 billion.[67] Partly as a result of such poor performance supporting the argument of reform-minded leaders, in 2003 the firm, which controlled 49.5 percent of installed capacity, was broken up into five major generation firms (the "Big Five"). Additionally, 6.47GW of installed capacity was allowed to remain under the authority of the State Power Grid Company for eventual sale in an effort to finance power grid development, and 9.2GW was assigned to a separate firm to cover non-core business expenses.[68]

Conclusion

Understanding the role of the state in China's energy governance enables a more nuanced analysis of the relationship between state and firm in the area of ODI and China's rise as a global investor. Analysts who see a strong and authoritarian state supporting outward investments and those who see a liberalizing China with such investments led rather by increasingly powerful and independent companies are fueling false dichotomies. This paper's tracing of the evolution of China's energy governance highlights the ways in which market-led means have been be deployed to achieve state-led ends. At the industry level, it is clear from China's coal and electric power generation industry data that in periods of high economic growth, market-led policies of loosening prices and diversifying ownership can be pursued

[67] Matthew Miller (2000) 'Beijing's power sector feels wind of change', South China Morning Post, 13 January. p.10.
[68] Woo, p.9.

by the state to achieve goals of "late development", such as rapid capital agglomeration and industrialization, only to then be curtailed in periods of lower growth.

Second, the paper provides evidence that economic liberalization reform need not be incremental and is, in fact, reversible. Use of market-based policies does not preclude the state from reasserting traditional interventionist policies later in the development process to consolidate central state ownership, despite the creation of powerful firms and local state interests in the process of reform. China's central state has proven quite successful in allowing periodic reductions in state ownership, pricing authority, and monopoly producer rights to ensure the growth of what is arguably the most politically critical sector of the economy. It has also proven capable of reasserting its claims on assets when private, local state, and foreign sources of investment are perceived to be no longer necessary to satisfy development objectives. It is during these periods that ideological concerns privileging central state ownership, always present, return to enjoy political currency.

The energy industry has experienced several periods of such central state reassertion. In the electric power generation industry, the electric power deficits of the early to mid-1990s resulted in the major overhaul of market access terms, project rate-of-return terms, tax incentives, depreciation rates, on-grid price guarantees, approval procedures and other policies by the central state to attract systematically foreign investment and high efficiency power generation technology.

As quickly as such investment ramped up, it collapsed when all such seemingly long-term and long-cycle policies were systematically revised to exclude foreign investment during the Asian Financial Crisis and the resulting economic slowdown beginning in 1997.

Such shifts towards industry structure consolidation and away from economic liberalization are equally clear in the study's treatment of the coal industry. For example, during rapid rise of local and foreign investment in the electric power generation industry of the early to mid-1990s, described above, a similar diversification of financial sources was occurring in coal production capacity. Local non-state coal production capacity rose from a third (36 percent) of total production in 1990, to one-half (48 percent) in 1996. After the Asian Financial Crisis and central state ownership consolidation, local production capacity dropped to a low of 28 percent in 2000, despite the higher capital and labor efficiency of local mines.

In the context of the current global economic downturn, China's diversification reforms of the past, born during periods of high growth and energy shortage, are again being revisited and reversed. In particular, the portfolio of ownership and investment in the energy sector is being reassessed with the 2010 creation of the centralizing National Energy Commission mentioned above, and in other 'back bone" sector such as the airlines, telecommunications, and transportation, central state ownership again appears to be consolidating. However, the strengthening of incumbent SOE firms through consolidation may prove to be highly problematic in meeting the pressing challenges of local pollution, global climate change, and the

environmental and social challenges created abroad resulting from Chinese ODI. This will be particularly true given the lack of comprehensive reform in corporate governance, in regulatory independence, as well as in media and legal independence. Historically, Chinese firms and local governments pursuing their own economic interests served well, on the whole, the central state's more basic goal of increasing national energy supply throughout the past three decades. These interests do not align in the same manner when the policy goal shifts to other objectives, such as the rapid reduction of energy intensity, energy demand, the implementation of a national strategy to combat climate change, and the management of social and environmental costs of investments abroad.