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Market Entry Barriers for FDI and Private Investors: Lessons from China's Electricity Market*

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Abstract: EMI is one of the priorities of regional cooperation identified by leaders from the EAS region. The countries in the region have made great efforts to push for the electricity sector reform so as to boost the participation of private investment. However, a review of these reform experiences suggests that there is significant disparity between the expected and actual outcomes of reform. China has implemented its reform program since the 1990s, and a major reform was introduced in 2002, with the corporatization and unbundling of electricity being achieved. But, a competitive market has not yet been established due to both political and technical difficulties. Motivated by the Power Purchase Agreement (PPA), the participation of private investment in China was expanded in the 1990s. Paradoxically, after the introduction of a major reform in 2002 which created more favorable conditions for the private sector, foreign investors retreated from China. Among other things, the authors identified the fragmented regulatory system, unpredictable pricing mechanism, limited access to transmissions, fuel and financing, and unchecked expansion of the state-owned sector as major barriers that impeded the participation of the private sector. The policy responses and implications of China's experience for the region are also discussed.

***Keywords*:** FDI, Entry Barrier, Electricity Market Reform, Electricity Market Integration

***JEL Classification*:** L43, L94 and P28

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1. Introduction

In the fifth EAS, leaders cross the region emphasized the need for greater regional cooperation on energy and welcomed the efforts to address market barriers and promoted more transparent energy trade and investments (Shi & Kimura, 2010). Clearly, market liberalization is an important part of EMI in the East Asia Summit region. However, for the electricity sector, once dominated by publicly owned monopolies over the full range of sector activities from production to distribution, market liberalization is a hard nut to crack. Since the 1980s, electricity sector reform has been implemented across the region in hope to break the monopoly and in turn to attract private investment. A review of these reform experiences suggests a significant disparity between the expected and actual outcomes of reform (Sharma, 2005). The World Bank attributed the disparity to the political nature of electricity tariff setting and the huge stake of investments and assets involved (Manibog, *et al.* 2003). To better understand the barriers of private participation specific to the region, this study will examine China's experience in electricity sector reform and private participation in the electricity sector. Since the introduction of economic reform in 1978, China has implemented a profound reform in the electricity sector, paving the path for private and foreign investor entry. Paradoxically, after a major liberalization reform in 2002, private and foreign investment in the electricity sector receded, revealing that breaking the entry barrier is much more than a one-strike effort. The study is aimed to systematically examine the barriers that hinder the participation of private and foreign investors in China's electricity sector and shed light on policy measures to address this problem.

2. Chinese Electricity Market Reform

Before the reform, the Chinese electricity sector was a typical state-owned and

vertically integrated industry run directly by the power ministry. As a major measure to break the bottlenecks of power shortage, China begun its electricity sector reform in the 1990s. The reform initiatives are discussed as follows.

2.1. The Unbundling of the Electricity Industry

The first step of the reform was the corporatization of the electricity businesses once run directly by the government. In 1997, the state electricity company was created to take over the management of the electricity industry and the power ministry was scrapped in the following year. In 2002, the State Council officially adopted the electricity system reform program, which asked for the separation of power grid and plant and claimed that the goal of the reform was being implemented to establish a competitive electricity market. The unbundling went smoothly. The state grid and its junior counterpart, South Grid, were established. Both are responsible for electricity transmission and distribution. On the power plant side, five power generation companies were also put into operation. However, the establishment of a competitive electricity market has never been within reach because of political and technical difficulties.

2.2. Electricity Pricing Mechanism

In China, electricity prices are subject to government regulations. The National Development and Reform Commission sets both the on-grid price and retail price. The rule of price regulation has been changed several times. At the beginning of policy implementation, in order to promote investment in the electricity sector, the on-grid price was set based on the cost and allowed return of individual projects. Later, for improving the efficiency of investment, a yardstick pricing mechanism was introduced. Under this rule, the same on-grid tariff is applied to all power plants of the same type located in the same region no matter what the individual cost was. To tackle the impact of the fluctuation of fuel price on power plants, a mechanism to link the on-grid price to coal price was also established. However, this mechanism has not been strictly followed; coal prices have skyrocketed and general inflation has risen

driving power plants into difficult financial situations in recent years. The retail price of electricity, on the other hand, has been set more discretionally as the independent transmission and distribution price is not yet determined. China has adopted the rate of return method for setting transmission and distribution prices. However, the rule for accounting regulatory assets and allowed costs has not been established.

2.3. Market Entry Regulation

The liberalization of the power generation sector entry was done well before the major reform in 2002 with the aim of alleviating the serious shortage of electricity supply caused by the take-off of the Chinese economy. As a result, foreign investors were encouraged to build Independent Power Plants (IPP) in China at very favorable terms. The long term Power Purchase Agreement (PPA) usually offered the foreign investors three guarantees, i.e. guarantee of the sale of electricity, guarantee of the electricity price, and guarantee of the investment return. The committed return could be as high as 15% to 20% annually. This super-national treatment ceased by reform in 2002 basically putting all agents of the electricity sector, both domestic and foreign, into the same regulatory framework. In 2010, a new package to encourage private investment was announced by state council. Renewable energy such as wind, solar, geothermal, and biomass were identified as sectors that generally welcomed the involvement of the private sector. The private sector is also permitted a controlling stake of, or sole ownership of, conventional power plants. The participation of the private sector in nuclear power plants is also allowed in the form of joint venture. The electricity transmission and distribution business, dominated by State Grid, South Grid and a small number of local grids, is still de facto, closed to foreign or private investment, even without explicit embargo.

3. The Evolving Role of Foreign and Private Investment in China's Electricity Industry

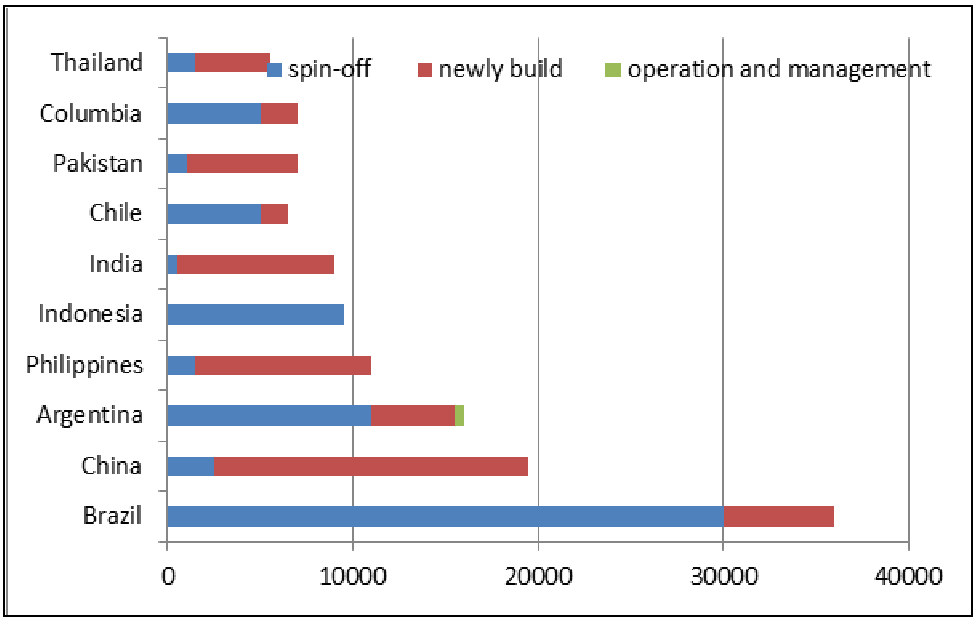
Corresponding to the change in policy regime and market conditions is a change

in the role of foreign and private investment in China's electricity sector. Supported by preferential treatment, foreign and private investment experienced a booming in the 1990s. The major reform introduced in 2002, which provided a more secure legal framework for market opening, also terminated the super-national treatment to foreign investment together with other factors (for example, the Asian financial crisis of 1997 led to a large scale exodus of foreign investors). As a result, foreign and private investment that had accounted for a considerable share of power generation capacity now plays a relatively insignificant role in China's electricity sector.

3.1. The Prime Time for Foreign and Private Investors in the 1990's

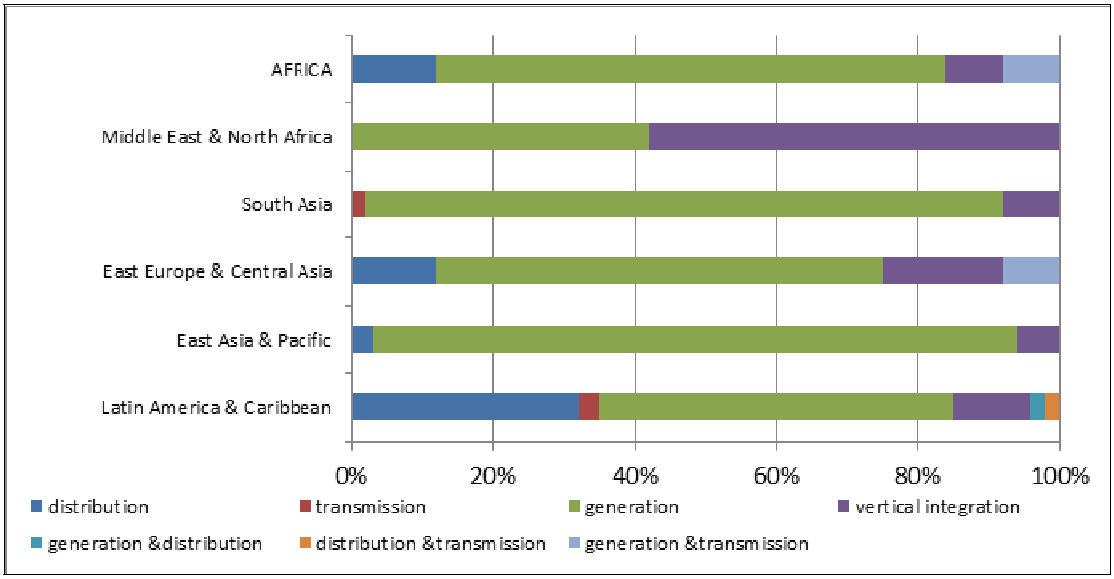
As the Chinese economy took off after the reform in 1978, electricity supply increasingly became a bottleneck to further development. To close the gap of electricity demand and supply, the Chinese government worked out a policy to encourage investment from all sources to this sector. Among other things, PPA was widely used during this time to attract the foreign investment. As the result, Independent Power Plants (IPP) mushroomed; and their numbers rivaled central government owned power plants. Local governments were owners or co-owners of most IPPs while a considerable number of foreign and private players also participated. The World Bank data revealed that from 1990 to 1999 China attracted USD 19 billion FDI to invest in the electricity sector; second only to Brazil (see Figure 1). Most FDI to China was greenfield investment rather than divesture, making China an outstanding target of investment as compared to other developing countries. Power plants were the main field of investment, roughly accounting for 90% of total electricity-related investment. This pattern is generally in line with other East Asian and Pacific countries (Joscow，2010)(see Figure 2).

Figure 1: The Type of FDI in Electricity Sector: China and Other Developing Countries



Source: World Bank, IPP Database.

Figure 2: The Type of FDI by Region



Source: World Bank, IPP Database.

3.2. The Large Retreat of Foreign Investors around the Electricity Reform in 2002

Supported by the PPA introduced at the beginning of the reform, foreign and private investors flooded into electricity sector. In 1990, the foreign and private sector accounted for 12.2% of total generation capacity. This share peaked at 14.5% in 1997. Afterwards, the share went down. The share in 2004 was only about half

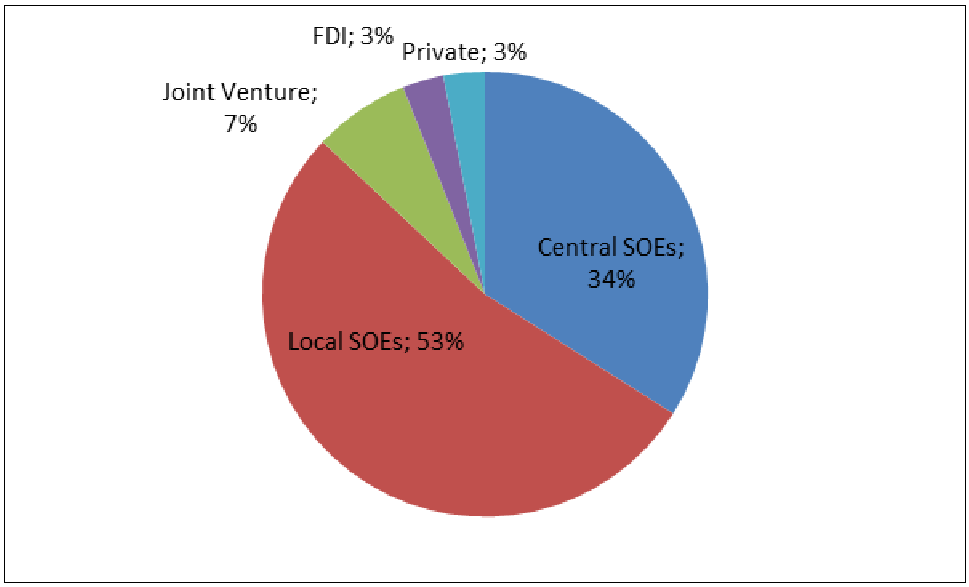
of that in 1997. The decline of the share was not only the result of slower growth of foreign and private investment relatively to the state-owned sector, but also represented an absolute decline of the installed capacity of the non-state sector. There was an exodus of foreign investors around the time when the major reform was introduced in 2002. The American company Mirant, listed in Fortune 500, sold all of its stake in Shandong Guodian, and Shajiao power plant in Guangdong, and closed its office in China in 2002. The American energy company, Celgard, sold its shares in Zhejiang, Guangdong, Hebei and Hubei in 2003. The power plant in Zhejiang province that Celgard had withdrawn from had been the first joint venture power plant in that province. Alstom, a French energy company, walked away from Laibing power plant, a textbook case of the first BOT project in China. Simens, HAW, Vattenfall, and Peak Pacific, all followed the suit and withdrew their investment in China (Yang, 2005). The exodus of foreign investors does not seem to be over. In 2011, AES, one of the largest IPPs in the world, planned to sell all or a large part of its assets in China. The transaction is estimated to be worth several hundred million dollars (Zhang, 2012).

3.3. The Current Situation of Participation of Foreign and Private Investment in China's Electricity Sector

Due to the lack of national level data, we take the Guangdong and Shandong provinces as examples to demonstrate the current situation of participation of foreign and private investment in China's electricity sector. Both provinces are major economic power houses in China and have experienced very rapid growth in power generation capacity. Guangdong is a province that enjoys a relatively high degree of participation of foreign and private investment but the share of foreign and private owned capacity is relatively small. In 2010, foreign and private investment accounted for 13% of total thermal power plant capacity. Most investments took the form of joint venture, which accounted for 7% of total capacity, while solely foreign- and private- owned each accounted for 3%. Local state-owned plants took a relatively larger share of total capacity, at 53%. The central government's SOE accounted for one third of the total (see Figure 3), foreign and private investors

usually running small power plants. Among twelve power plants with more than 1.2 million KW in Guangdong province, seven are local SOEs, three are central SOEs, and only two are Sino-foreign joint ventures. Most private power plants are captive, supplying few or no electricity to the grid. In recent years, private investors have also entered the business of renewable energy, building wind farms and rubbish fired plants.

Figure 3: The Ownership Structure of Thermal Power Generation in Guangdong Province

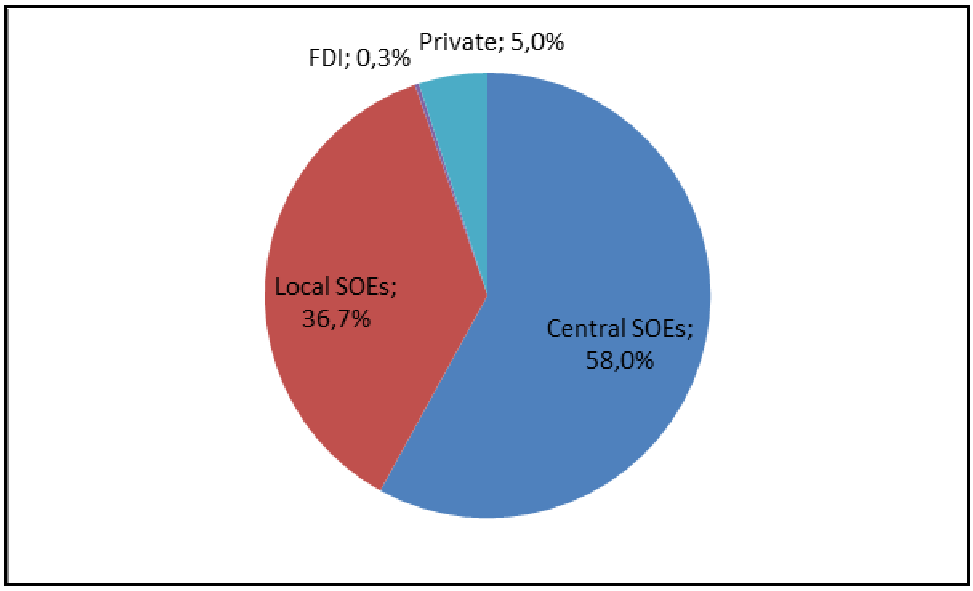


Source: author's calculation.

The Shandong province represents a more typical pattern of ownership structure of generation capacity that is dominated by the central SOEs. Huaneng, Huadian, Guodian, Datang and other central government owned SOEs represent almost 60% of total generation capacity. The electricity produced by these central SOEs are transmitted on the backbone grid while the plant of local SOEs and non-state sectors are mainly stand-alone power sources or transmitted on the local grid. The size of foreign and private owned power plants in Shandong is even smaller than its counterpart in Guangdong. There is only one private power plant with a capacity more than 1 million KW, ranking 14th in Shandong. The foreign-owned plants are even smaller than the private ones, usually producing below 60 KW, a result of the

withdrawal of big foreign players from the market.

Figure 4: The Ownership Structure of Power Generation of Shandong Province



3.4. The Performance of Foreign and Private Power Plants

The performance of power plants can be measured by financial and technical efficiency. Because of a lack of financial indicators, we compare one of the most important technical indicators - the coal consumption per kWh. The results show that foreign funded power plants are basically on par with the state power plant while private power plants are inferior to other players in terms of technical efficiency. Data from both Guangdong and Shandong present a similar picture (see Tables 1 and 2). However, the difference in technical efficiency could be the result of the difference in the scale of power generator and the age of equipment, rather than the difference in management skill. The private power plants are mainly installed with smaller and older generators. Therefore, the low technical efficiency of the private sector does not necessarily suggest a low economic efficiency. There are some anecdotal evidences that show that for newly-built power plants, if it is done by private investment, the cost per kWh could be 20% lower than average.

Table 1: The Technical Efficiency of Power Plants by Ownership in Guangdong Province

Type	No.	Electricity Billion KWH	Coal consumption gram/KWH
Central SOE	15	79	315
Local SOE	44	131	311
Local Captive	23	5.4	454
Foreign-funded	17	27.4	341
Private	9	8.5	485

Source: authors' own calculation.

Table 2: The Technical Efficiency of Power Plants by Ownership in Shandong Province

Type	No.	Electricity Billion KWH	Coal consumption gram/KWH
Central SOE	38	216	328
Local SOE	13	16	349
Local SOE(local grid)	140	13.4	375
Local captive SOE	113	33.9	391
Foreign-funded(local grid)	5	0.6	351
Foreign-funded captive	3	0.2	313
Private(local grid)	13	0.6	396
Private captive	22	7.8	393

Source: authors' own calculation.

4. Identifying Barriers to the Participation of Foreign and Private Investors in China's Electricity Sector

The last round of reform basically lay down a legal framework allowing the foreign and private sectors to invest more freely in China's electricity industry. But, paradoxically, as demonstrated earlier, foreign and private sectors have been leaving rather than arriving in this sector after the reform. Although the change in market conditions, the great improvement of electricity supply in China, and the emergence of electricity shortages in host countries like the US, can explain somewhat this

reversing flow, a deeper analysis reveals that domestic barriers are more to be blamed. Barriers are not only originating from electricity sector regulation, but also from wider institutional arrangements.

4.1. Inadequate Electricity Regulatory System

The electricity regulatory system in China is very fragmented. China's Electricity Regulatory Commission, created in 2004's reform, has only limited functions, for example, responsibility for licensing. Other important regulatory functions are controlled by line ministries. The Pricing Department of NDRC and its provincial offices determine the electricity tariff rates, and the Energy Bureau of NDRC and its provincial offices issue investment permits. The range of business activities is subject to the approval of the General Bureau of Industry and Commerce. The Finance Ministry sets the rule for cost and accounting standards. The State-owned Asset Supervision and Administration Commission is responsible for the reorganization of the state-owned electricity company, which still dominates this sector. The fragmentation of the regulatory system is not only burdensome, but also more often than not, uncoordinated, resulting in very high levels of compliance costs for investors. To make things worse, the regulatory system is not rule-based, which gives too much discretion to the regulators. This creates lots of uncertainties for investors as they have to face unpredictable policy changes. For example, the central government issued a three year embargo on all coal-fired power plant projects in 1998 and stopped 9 million kW in ongoing projects in 2004. Regulatory capture is another problem. In China, most investment permits in the electricity sector are issued by local governments who also serve as conduits for the submission of application of projects which are subjected to central government approval, creating opportunities for rent-seeking. Lack of local connection and the intimacy of local governments with local SOEs in China may explain to some extent the decline in foreign investment in the electricity sector.

Pricing regulation is another important factor impeding the entry of foreign and private investment. The 2002 reform set the goal to build a competitive electricity

market which would determine the electricity price. However, reform stopped at separating power generation and transmission due to political and technical difficulties in establishing a competitive market, leaving the price still in the control of the government. The government basically uses the cost markup to set the price, to allow investors to recover their investment. However, due to a lack of reliable cost information and supervision, the price is more the result of negotiation and needs to be renewed every year, creating uncertainty (Liu, 2011). Complicating pricing decisions, the Development and Reform Commission (DRC) at each level also assumes the role of maintaining stability of general price levels. In an environment of high inflation, the DRC may be reluctant to factor in the cost of rising electricity prices. An example of this has been the government's suspension of the linkage mechanism between the coal price and electricity price in 2008 in fear that the mechanism may have fueled inflation further. This resulted in a record loss in the power generation sector in recent years. The unpredictability of China's electricity price greatly discourages investors, especially foreign and private, who are more sensitive to risks with uncertainty affecting the financial result of their investment.

4.2. Less Favorable Access to the Fuel, Grid and Financing by Foreign and Private Sectors

The opening of the market is only the first step in the liberalization of the electricity market. The operational environment is equally important, if not more important, in impacting entry decisions of investors. In this regard, we find that foreign and private operators are still in a less favorable position compared to the state-owned competitors. This is especially true in foreign private operators' ability to access fuel, grid and financing, the key resources required for power producers to grow.

4.2.1. Less Secure Coal Supply for the Non-State Sector.

Eighty two percent (82%) of Chinese electricity comes from coal-fired power plants, and 40-50% of railway and ferry transportation is used for moving the coal from north to south. The importance of access to coal for a power operator cannot

be overstated. The Chinese coal market has largely been liberalized since 2005, the price being decided by the market. Responding to rising demand and crude oil prices, the coal price has rapidly increased since 2005. In some cases power plants have had to cease operation due to shortages in the supply of coal. To deal with this situation, the government has encouraged power plants and coal enterprises to sign an annual contract to secure the supply of the coal and to smooth the coal price. Because many large coal producers are also state-owned and state-owned power plants are larger buyers, it is easier for state-owned power plants to secure a supply contract to secure better terms. State-owned power plants also enjoy privileged access to the state-owned railway system which is increasingly causing bottlenecks in the coal supply chain. Furthermore, the state-owned power company can secure the supply of the coal by vertical integration. The Big Five state-owned power groups have quickly moved into the upstream industry, investing heavily in coal mines. By 2009, the coal production of the Big Five groups reached 128 million tons, accounting for 9.16% of total coal used for electricity generation. Huaneng, one of the Big Five companies, began its own coal mine projects in Inner Mongolia, Shanxi, Gansu and Xinjiang concurrently. Now the Huaneng company controls 40 billion ton of reserve, and annual production of coal is as high as 44.1 million tons (Zunfa, 2010). Moving to upstream industry not only helps secure the supply of the fuel but also cushions the shock brought by rising coal prices. The state-owned plants did lose money from state power generation business, but some of that loss has been recovered from profitable coal business. The foreign and private investors, on the other hand, are constrained in achieving similar vertical integration, partly due to their small size and political barriers, leaving them more vulnerable to shortages of coal supply and rising coal prices. This situation gives state-owned power plants an advantage over foreign and private investors.

4.2.2. Less Access to Transmission

Access to transmission is another key development factor for the power generation subsector. China has not yet established a competitive electricity market. Without a competitive market, and a relatively balanced supply and demand of

electricity, power plants are placed at the mercy of the grid controllers in regard to how much electricity can be transmitted, and then produced. Due to the importance of big state-owned power plants, it is of no surprise that the state-owned plants have easy access to transmissions. Where transmission capacity is not sufficient or limited by technical reasons, for instance wind farms, ability to access the grid could be the single most important factor deciding the viability of a project. This is why, in the renewable sector, the non-state sector finds itself increasingly in a difficult position to compete with the state-owned sector.

4.2.3. Less Access to Financing by the Private Sector.

Power generation is a capital intensive sector. Adequate access to financing is very important to the development of business. Private investors in the electricity sector suffer from dual disadvantages in this front arising from ownership and size. China's financial system is largely dominated by state-owned big banks. Although the government no longer directs banks to issue loans, banks are still more comfortable making deals with state owned companies, which are politically safe and economically cost-efficient. The chance of direct financing, such as raising funds in the stock and bond market, is also largely reserved for the state-owned sector, evidenced by that fact that most listed companies have a stake in state ownership. This situation makes it difficult for the private sector to compete with incumbent state giants.

4.3. Unlimited Expansion of Big State-Owned Groups Suffocate the Foreign and Private Players

One important strategy of Chinese SOE reform is the reorganization of the state owned sector to make it more efficient. State council's State Asset Supervision and Administration Commission (SASAC) orchestrates the reorganization by letting small and slow-growing companies be taken over by bigger and faster growing companies. So the number of companies under its administration constantly declines, for example, from 200 companies several years ago to 120 companies presently. This policy has created a strong incentive for big group to grow bigger and faster;

otherwise they would be a prey of others. In recent years, the electricity sector witnessed a frenzy expansion of state-owned big groups. The Big Five have gained the franchise of the development of all Chinese major rivers, leaving almost no room for the foreign and private sector to build big scale hydraulic power stations. The expansion of the Big Five in the renewable sector is also astonishing. According to SERC (2011), central and local SOEs are the main investors of wind farms. The top ten accounted for more than three quarters of total capacity. The leading players are Guodian, Huaneng and Datang. China adopted a tendering system to award the project to the bidder who offered the lowest electricity price in the renewable energy sector. State-owned sector undercuts their private rivals by a very low bid price. One reason for the state-owned sector doing this is because of the quota system for renewable energy. China's national, middle, and long term renewable development plans imposes 8% of renewable electricity quotas for power generation companies with an installed capacity of more than 5 million KW. If that requirement is not met, no new thermal plant could be allowed. The rapid expansion is mainly supported by debt increase. In the past seven years, the debt ratio has increased by 20 percentage points. By the end of 2009, the asset-debt ratio of the Big Five reached 85.94%, above the upper limit set by SASAC and highest amongst all SASAC administrated big groups.

5. Overcome Market Entry Barriers: Policy Option for Further Reform

As the barriers do not arise from one single cause and extend far beyond the electricity sector, it is necessary to take an holistic approach to deal with this issue.

5.1. Build a Competitive Electricity Market

A competitive electricity market is essential to permitting the participation of the private player in the market to grow. In this market, the electricity producer and user

can directly negotiate deals. The grid will no longer be the arbitrator of the deal, but should become a more independent system operator. This impartial role of the grid will eliminate the ground for favoritism towards state power plants and create a level playing field in which the private sector will be encouraged to compete. The establishment of a competitive electricity market will also result in less regulation by the government of the on-grid electricity price, reducing uncertainty caused by policy change at the discretion of government.

5.2. Reform the Electricity Pricing Regulation

Correct price is the most important incentive guiding the investment of the foreign and private sector. Electricity price regulation in China is inadequate in imposing controls on prices in a competitive power generation sector while there is no regulation in the monopolistic transmission and distribution sector (Liu, 2011). The mispricing has clearly discouraged the entry of private investors. China needs to move quickly to establish a pricing mechanism for the transmission and distribution business in order to allow the competitive market to operate by permitting the market to determine the electricity price. China also needs to allow electricity price regulation to operate independently from the mandate of maintaining general price stability. The general price stability should be achieved by macroeconomic policy, rather than via the distorted stated mechanism, a practice that will weaken the rule-based system and shake the confidence of investors.

5.3. Set Right Incentive for State-Owned Sector

It is a progress that State-owned power generators actively pursue growth. However, pursuing expansion at any cost will be a problem. This practice will not only suffocate private investors but will also lead to over investment and inefficient investment that in turn, in the middle and long terms, will endanger the financial sustainability of the sector and will draw the bank and other creditors into trouble. So, the SACACS needs to set correct incentives for the state-owned sector and act more reasonably, not only by watching size but also watching balance sheets more

carefully to deter risk accumulation. For the sake of readjusting the whole state-owned sector, the SAACS also need to consider the right size of state-asset in this highly competitive sector. To withdraw state-assets from this sector will not only create room for private actors to develop, but will also strengthen the role of government in the fields in which government should assume more responsibilities, such as social security, innovation and education.

5.4. Transparent and Modern Regulatory System

The Chinese electricity regulatory system is fragmented and uncoordinated, creating excessive high compliance costs for the private sector. China needs to reorganize the regulatory structure in order to empower the independent regulator with major regulation functionality so as to improve the efficiency of regulation. The regulatory system needs also to be more rule-based and more transparent, to reduce the discretion and rent-seeking of regulators.

5.5. Improve Access of Private Sector to Financing and Transportation

Equal access to financing is essential to permitting the private sector to compete with the state-owned sector at an equal footing. China's state-owned big bank dominated financial system needs to be reformed to allow small and private financial institutions to play a greater role, in order to improve the financial service to the private sector. It also needs to be more open to direct financing chances from the private sector in the transformation from indirect financing to direct financing.

Access to transportation, other infrastructure, and public service is also very important for the private sector. The effort should coincide with reforms in other sectors, for example, railway reform. Market orientation reform will better serve equal access to public services. To this end, China needs to speed up its market reform on all fronts. Such reform will not only benefit the private investor in the electricity sector but will also provide benefits economy-wide.

6. China's Lesson and Policy Implications for EMI

China's situation, unfinished reform and the lack of a comprehensive package to foster private investment in the electricity sector, is not unique in the region. For example, in most ASEAN countries, such as Singapore, Thailand, Indonesia, Philippines, Malaysia and Cambodia, regulatory and structural reforms are delayed due to problems associated with the various crises post 1997 (Porter, *et al*. 2005). With this similarity, the countries in the region can draw several lessons from China's experience. First, the PPA based-super-national treatment only motivated private sector temporarily in the context of supply shortage. The inevitable transformation to the rule-based regulatory system, as a result of electricity sector reform and conformity to the WTO rule, undid much of what had been achieved, and this has had long-lasting negative effects on willingness of participation of the private sector. In a market condition with relatively balanced demand and supply, the commitment for investment return and sale volume of electricity, usually a key component of PPA, is hard to honor. Second, the unfinished reform discourages the participation of the private sector by failing to provide a predictable regulatory framework and leaves the electricity price in the control of the government. Third, electricity sector reform alone could not deliver the expected benefits on motivating the private sector. China's experience demonstrated that the private sector is crippled by the limited access to transmission, fuel and financing. Therefore, until these problems are adequately addressed, the participation of the private sector can not be realized. Fourth, unchecked growth of incumbents, who usually enjoy many advantages due to their connection to the regulatory authority or purely due to big size, will also stifle competition by suffocating private players. Where the policy responses are concerned, we believe that the policies proposed for China in this paper are also relevant for other countries in the region. The adoption of these policies in the region would contribute to the better preparation of EMI. The implementation of the policy will help push for the establishment of a competitive market, harmonization of

the regulatory system, and improve access to the key resources for business development. However, it is also needed to bear in mind that each country has its own challenges. SOE reform in the electricity sector is extremely important but difficult in China.

7. Conclusion

There has been big fluctuation of private and foreign investment in China's electricity sector. The initial boom of private investment, especially foreign investment was induced by government incentive schemes. The major reform introduced in 2002 set the legal framework for private participation and made competition possible by unbundling the vertically integrated state power companies. However, on the other hand, the reform scrapped PPA that gave the super-national treatment to the foreign investors. The reform therefore remains unfinished due to technical and political difficulties, leaving the private investor uncertain. The private sector is also troubled by electric tariff regulation that is not only unpredictable but also often succumbs to other government policy objectives. The limited access of private sector to fuel, transmission and financing, and the key resources required to permit power producers to grow constitute further barriers to entry. Last, but not least, the unlimited expansion of big SOEs has suffocated the private sector. As the barriers multiply and extend far beyond the electricity sector, it is necessary to take a holistic approach to deal with this issue. Electricity reform needs to be continued so that a competitive electricity market can take over price-setting from the government. Electricity sector reform should be accompanied by the further reforms of SOEs, the financial system, energy markets and infrastructural service. These reforms would encourage the private sector to play a role in the electricity sector.

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