

# New Approaches to Building Markets in *Asia*

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Environmental Finance in Asia: Shifting Frontiers

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## **Environmental Finance in Asia: Shifting Frontiers**

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**ABSTRACT:** *Attempts to address climate change increasingly focus on market mechanisms, which price greenhouse gases as a means to cap them. In the wake of the financial crisis, the focus of the markets, which were originally developed in the United States and Europe, is shifting to Asian financial centers. The financial crisis served as a severing blow to negotiations at Copenhagen and has stalled legislation in the US Congress. In the absence of a strong response from the United States, Asian financial centers are seizing the initiative and developing carbon markets and other environmental financial services. At the latest negotiation of the United Nations Framework Convention on Climate Change (UNFCCC) the European Union announced an initiative to support carbon trading in eight Chinese cities. China has developed exchanges in Beijing, Shanghai and Tianjin to support this initiative.*

*In addition, environmental finance is taking root in other cities including Hong Kong, Singapore and Tokyo. The establishment of environmental markets in these cities is significant for several reasons. Once fully realised carbon markets are predicted to be larger than other commodity markets. First movers who are able to claim significant market share and institutionalise paths and mechanisms of finance will enjoy an advantage. Based on the size of its economy and the rate of industrialisation, China is a natural center for these markets. Furthermore, carbon markets are intended as demonstration markets. If negative externalities can be managed through market mechanisms, then so too can positive externalities including ecosystem services, environmental conservation and biodiversity. Indeed, the framework of carbon markets has already been modified to incorporate the trade of forest and biodiversity credits. Leaving aside environmental as well as ethical concerns, environmental markets represent an area of tremendous growth opportunity.*

*This paper explores the movement of environmental finance into Asian financial centers in the wake of the financial crisis, and comments on the significance of this movement as well as the potential of these centers. The growth of environmental finance in Asia represents simultaneously the institutionalisation of Western ideals, as well as a potential geopolitical shift of financial power from the West to the East in the wake of the recent financial crisis.*

*The paper proceeds in five sections. The next section discusses the institutional transfer of markets into new cultural context. The third section reviews the development of capitalism in China and survey financial reforms in the last 30 years. The fourth Section explores developing environmental policies and markets in China and Hong Kong. The conclusion comments on the ways in which environmental finance is being established in*

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*China and how this further links the region into nascent markets and modes of finance in the Europe and the United States.*

### **The institutional transfer of emissions markets**

The European Union (EU) had established one of the world's largest and most successful emissions trading schemes (for a more comprehensive review of the successes and failures of the EU Emission Trading System (ETS) see (Convery, 2009). Under the EU ETS, compliance parties must demonstrate emissions reductions or trade European Union Allowances (EUAs) to meet compliance (Watanabe & Robinson, 2005).<sup>3</sup> The EU ETS is linked through the Kyoto Protocol to two additional market based mechanisms: the Clean Development Mechanism (CDM) and Joint Implementation (JI). The CDM and JI allows countries with emission-reduction commitments (Annex 1 parties) under the Kyoto Protocol to offset some of their emissions from emissions reductions projects.

Carbon markets trade two main commodities, allowances and offsets. Both products are constructed purely from information. Allowances are essentially permits, which allow regulated entities to emit a certain amount of greenhouse gas emissions. Offsets are created through the establishment of a baseline or a projection of where the level of emissions will be at a future point if left unabated. Once that future point is reached the level of emissions of a point source or project is measured, and the reduction is established as the difference between actual emissions and the baseline (Bumpus & Liverman, 2008). Under a regulated cap and trade system, every unit (1 ton CO<sub>2</sub> equivalent) of greenhouse gas that is emitted must be canceled by an allowance or an offset. If a company reduces its emissions it will have excess allowances (excess value), which it can sell on to the market.

The existence of the value of allowances and offsets is a social construction. Offsets and allowances resembled derivatives and comparable financial instruments in that no material good is involved in their exchange. Excess allowances at best represent a social service—cleaner air, while offsets or reduction credits merely mark the absence of an emissions occurrence (Knox-Hayes, 2010a). The creation of the market requires social construction. Carbon markets must give reductions virtual existence and priced value. The emissions markets in the United States and Europe have been built through a combination of public and private initiatives (Knox-Hayes, 2009, 2010b). Specifically, the market institution is a combination of regulatory and political structures that establish the norms, rules, property rights, and institutions of markets and financial service structures that transact and operate the market (Knox-Hayes, 2010b). Regulatory agencies with advice from advisory firms establish the frameworks of trading and create the basic commodities. Financial service intermediaries develop the infrastructure of trading and further develop the financial instruments.

The emissions markets are regional in nature, and have been predominantly focused in Europe and the United States. Nevertheless, programs such as the CDM and JI have maintained regional connections to other geographies. China and India have been the largest providers of CDM credits (M. Carr & Chipman, 2010). The existence of these trading

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<sup>3</sup> It should be noted that the market for trading emissions is also growing in other areas such as Japan and Australia, and that UNFCCC CERs are produced through the Clean Development Mechanism (CDM) around the globe (C. Carr & Rosembuj, 2007). However, for reasons of scope, the focus of this article is the trade and financialisation of carbon emissions reduction credits in the United States and Europe.

initiatives has maintained links between the financial services of the markets across the Europe, the United States and Asia. In the wake of the financial crisis a number of firms began to move their operations (including in some cases corporate headquarters) into the financial service centers of Asia. Due to relaxed tax regimes and government subsidies and other incentives centers like Singapore and Hong Kong have become attractive hubs for developing carbon markets. Additionally the region is becoming increasingly important for both the production and consumption of energy, which heightens the need for dedicated financial services in the region. The combination of energy and CDM project production has especially favored the development of financial services centered around China.

The movement of market institutions established in Europe and the United States into Asia raises interesting questions about how institutions are transferred across social boundaries. Particularly what is the nature of the institutional infrastructure and how does the movement of affect the form and function of environmental finance?

Scholars in economic sociology have highlighted the ways in which markets systems are embedded in social institutions (Polanyi, 1944). The markets share dialectic relationships with the institutions and agents that shape them and are constituted by sets of political, social, legal and economic processes working in tandem. Institutions are systems of established and prevalent social rules that structure social interactions (Hodgson, 2006). It is necessary for institutional studies to account for the affects of time and culture through study of practices and beliefs embodied in language, organisations, technology, and practices (Hodgson, 2006; MacKenzie, 2009; North, 1994). Time is the dimension in which the learning process of human beings shapes the way institutions evolve (Michel Callon, 1998). The beliefs that individuals, groups and societies hold are a consequence of learning through time. Institutions represent “the learning embodied in individuals groups and societies that is cumulative through time, passed on intergenerationally by the culture of a society” (North, 1994, p. 360).

Culture in this respect helps to explain how financial institutions are diffused into new contexts. The transfer of organisations from the West to East Asia, organisational growth is best explained by domestic market and cultural factors, but the organisational structure that takes hold is better explained by authority patterns of incumbent firms and legitimisation strategies (Hamilton & Biggart, 1988). In other words, institutions are diffused along organisational lines (Torfason & Ingram, 2010).The diffusion of established financial logics from the West will contend with the operation of culturally unique financial practices. The interface of these dynamic tensions can lend considerable insight into how institutions are transferred and the effects of culture in shaping these transformations.

Markets systems are likewise embedded in social institutions. The markets share dialectic relationships with the institutions and agents that shape them and are constituted by sets of political, social, legal and economic processes working in tandem. The implications of such reconstitution are significant. Environmental markets have the potential to affect not only the mitigation of greenhouse gases, but to change the nature of market embeddedness and to introduce the market and its attendant economic processes to other spheres of social and environmental interaction. As the logics of these systems are transferred to other environmental problems, they become not just an acceptable solution to climate change, but more fundamentally the appropriate means of managing environmental systems. The aforementioned work suggests that markets are created by

established norms and standards; however, the mechanics under which agents and organisations develop environmental markets are not fully elaborated.

The financial systems that undergird emissions markets operates according to logics that have been established in large part in the West (Hodgson, 2007; Keown, 2004; North, 2009). These logics have an impact in shaping the relationship between finance and socio-economic productivity; witness for example the recent financial crisis, with its roots in the sub-prime housing market and its devastation spread across all other industries. The logics that direct financial systems have significance not only for these systems, but also for the socio-economic systems that underlie them. There is considerable performativity (development enacted by the performance of specific practices) in the construction of financial markets. Financial models matter not just in describing but also in shaping economic markets (M. Callon, 2007; MacKenzie, 2006; Muniesa & Callon, 2007). At the same time new markets bear very little innovation in the establishment of new products, services and organisational structures (Knox-Hayes, 2009).

For the sake of efficiency and operability and to give incumbent firms an edge, markets are poured into exiting molds, the new streams of finance siphoned into well-carved channels that traverse the global landscape (Ho, 2009; Meyer & Rowan, 1977; Zaloom, 2006). Nevertheless, there is an uneasy tension between traditional socio-economic organisation and Western finance in the East (Allen, et al., 2005; Hamilton & Biggart, 1988). Analysing the development of environmental financial markets in the East can lend insights to both dynamics: 1) how new financial markets are created when outside of traditional command centers (which aspects are innovated, and how much directly transferred), and 2) the dynamics that produce or reproduce established norms and ideals in new financial settings.

The article explores the drivers of the production of environmental finance, the impact of cultural legacy on institutional transfer, and what this implies for the region of Asia. The arguments provided in the article are informed by extensive literature reviews and with interviews conducted with individuals involved in developing environmental markets in Singapore, Hong Kong and China. In the Spring of 2011, 40 interviews with finance service professionals were conducted in Singapore and Hong Kong. For the sake of confidentiality, the interlocutors are anonymous but details about their titles and the type of firm in which they are employed are provided.

### **The importance of energy and the transfer of finance into Asia**

Energy is a natural source of high growth potential. Asia is a predominant source of energy and of forests. A study conducted by BP suggests that in the next 20 years 93% of primary energy use growth will come from non-OECD countries. Furthermore the contribution to energy growth of renewables (solar, wind, geothermal and biofuels) will to increase from 5% to 18% of energy production. The contribution of all non-fossil fuels to growth over the next twenty years (36%) is, for the first time, larger than that of any single fossil fuel (BP Energy Outlook 2030). Asia, and in particular China has become an important region for the development and operation of wind and solar markets.

Prior to the crisis, strong carbon finance teams were developing in Europe and the United States. The financial crisis has lead to the dismantling of these teams in the US and downsizing in Europe. After the crisis companies began moving their operations to Asia. The move was encouraged by two factors: 1) Asia is an increasingly important center for

energy production and energy finance 2) the CDM is supplied primarily from Asia, and 3) centers such as Singapore have actively recruited energy developers and environmental market makers. The development of environmental finance in Asia allows for the investigation of the issues of institutional transfer and financial function highlighted above. The movement of finance into Asia has focused on five prominent financial centers: Singapore, Hong Kong, Tokyo, Shanghai and Beijing.

Tokyo has long been one of the three command centers of the global economy (Sassen, 2001). However, for heretofore unexplained reasons the financial elite in Tokyo have been reticent to engage with forms of environmental finance such as carbon emissions markets. Although signatory to the Kyoto Protocol, Japan has only recently begun to establish voluntary trading markets (MUFG, 2006). Some evidence suggests that there is a strong-counter narrative to market absolutism in Japan, which would ultimately work against the development of environmental finance (Johnson, 1995). The case of Japan presents a well-established Asian financial center with a socio-economic identity embedded in a deep history and enmeshed culture.

China has engaged with Western finance on its own terms (Redding, 1993). While such resistance to Western finance has been criticised for slowing economic growth in Asia, it has allowed for the evolution of uniquely Chinese financial systems—what has been called hybrid capitalism (H. Yeung, 2004). Beijing and Shanghai exemplify these dynamics. They are increasingly important financial centers for the region of Asia, and yet they work within a uniquely Chinese culture. In particular, they rely on social (familial) relationships, government control and limited private ownership. Given these conditions it should be difficult for Shanghai and Beijing to operate environmental finance outside of China. Yet they are the primary ports of entry into the Chinese economy and cannot be underestimated (Crawford, 2000). China has announced the development of a new 8-city emissions trading system, which will be managed (politically) from Beijing and (financially) from Shanghai. China additionally has significant domestic environmental resources to manage and is one of the largest receivers of environmental finance from Europe in the form of Clean Development Mechanism projects (Schroeder, 2009). Shanghai and Beijing present cases of deeply embedded financial centers with significant restriction on the transfer and innovation of financial products. In sum, the five cities that have been selected for the analysis sit at an important cultural and geographic nexus that spans socio-economic, cultural and political systems boundaries. Understanding their operation and development is important to understanding the function and future prospects of environmental finance.

Singapore in contrast is a relatively new but increasingly significant financial center for the region of Asia. The government has taken significant actions including providing subsidies and tax incentives to recruit Western financial firms and to make it the carbon hub of Asia. Its rise has been predicated on a willingness to adopt foreign business models and modes of development (Tan, 2005). It presents a good case of a country that readily accepts Western finance, and is likely to engage deeply with environmental finance, even though it has few domestic environmental resources. Furthermore its geographic proximity (5 hour flight to anywhere in Asia) and proximity to environmental resource hotspots of Indonesia and Malaysia gives it a natural advantage for the management of developing energy and environmental markets across Asia.

Hong Kong is likewise a relatively recent but rising financial center in Asia that has been influenced by a range of cultures including British and Chinese (Young, 1992). Its socio-economic identity is more difficult to classify and its finance tends to be a mixture Eastern and Western logics (M. Carney & Gedajlovic, 2002; F. Li, et al., 1995). As a result of this flexibility and its geographic situation it is well suited to be a dominant financial center in Asia. It will likely play a significant role in the evolution of environmental finance in Asia. A number of carbon organisations have moved their operation to Hong Kong, and aviation leaders such as Cathay Pacific are drawing business to environmental finance through their compliance initiatives in response to the inclusion of EU ETS aviation post 2012.

This article explores the developing environmental markets in China with support from financial services in Hong Kong. To understand the development of environmental finance in these centers it is necessary to understand the underlying differences in predominant systems of finance. Hong Kong shares in Western models of finance due to the influence of the British. However China has had a unique path of development. The current financial system cannot be properly understood without reflection of the evolution of China's hybrid capitalism and mixed finance models.

## **The evolution of China's financial system**

### *1. Capitalism with Chinese characteristics*

Article 7 of China's Constitution provides an explanation of the characteristics of Chinese economy: "the state economy is the sector of socialist economy under ownership by the whole people; it is the leading force in the national economy. The state ensures the consolidation and growth of the state economy" (National People's Congress, 1982).

Breslin (2004) argues the economic reform policy in China is actually "an embedded socialist compromise:" a compromise between the embedded residual socialist system and the increasing importance of market liberalisation or a compromise between the desire for rapid economic growth and the concern with social and political stability.

Capitalism with Chinese characteristics is "an economic system where the state creates the space for the private sector to dominate and regulates the market to ensure that the new bourgeoisie can appropriate surplus value thanks to the bourgeoisie's close relationship with the party state" (Breslin, 2004).

Yeung (2004) identifies four key attributes of Chinese capitalism. First, Chinese capitalism is usually represented by the Chinese family firm, which has operated largely outside mainland China until recent decades. Although family business is not unique to Chinese capitalism, it serves as the key organisational platform for the wealth accumulation by ethnic Chinese families (Wijaya, 2008). Therefore, the complex webs of family networks and personal relationships play an essential role in the effectiveness and efficiency of Chinese capitalism, especially in rural China (Whyte, 1995). Second, Chinese capitalism is not bound within specific territorial boundaries of countries; rather it should be conceived as a supra-national mode of economic organisation. As such the operation of business within China is easily accommodated in centers outside of mainland China like Hong Kong and Singapore. Third, Yeung (2004) argues that centuries of distinctive cultural practices and social organisation originating from imperial China serve as the underlying logic for the economic behavior and social action in Chinese capitalism. This suggests that Chinese

capitalism has achieved some degree of structural coherence and rationality. Fourth, the geopolitical anxiety of overseas Chinese has led to a large reliance on family-based actors rather than institutions in host-country to coordinate their social and economic activities. Chinese capitalism is therefore actor-centered rather than institution-specific. Yeung (2004) argues that the participation of Chinese businesses in the globalisation process has greatly influenced the way they organise economic and social activities.

## *2. Financial reforms*

Between 1978 and 1999 China experienced a gradual liberalisation of both domestic and foreign finance policy as a result of the initiatives of Chairman Deng Xiaoping (Laurenceson & Chai, 2003). Deng Xiaoping's 'economic reform without political reform' changed China's ownership system, and created a hybrid economy that is unique in history. The economic reforms instituted by Deng Xiaoping have been economically successful. The real per capita GDP experienced a 7.2% increase annually from 1978 to 1990, and the national income increased from 301 billion yuan in 1978 to 1153 billion yuan in 1988 (Fewsmith, 1994; Shirk, 1993).

Under Chairman Xiaoping's leadership China followed a gradualist reform strategy in the 1980s. Huang (2008) points out that the most laissez-fair phase of the Chinese economy was during the 1980s, when the market developed and expanded spontaneously and there was little bureaucratic interference. However, many of the effective reform policies were reversed in the 1990s, such as fiscal decentralisation and private-sector financing Huang (2008). In the 1990s, the economy was characterised by politically connected entrepreneurs and was backed by the government (Huang, 2008). This state-led capitalism didn't transfer the fast GDP growth into fast growth of personal income (Huang, 2008). Chinese capitalism today is arguably a commanding-heights economy, with high corruption and increasing Gini coefficient as GDP increases. Compared to China's economy, other eastern Asian economies are far more privately owned and have less government intervention (Huang, 2008). As a consequence, China's financial system remains dominated by SOE and heavily bank driven. It is similar to Japan and Germany but different from the US and UK where the stock market plays an important role in governing resources (Laurenceson & Chai, 2003).

The reform of the financial sector in China has lagged behind many other sectors in the economic system, especially the trade sector (Laurenceson & Chai, 2003; McKibbin & Tang, 2000). State-owned enterprises still play an important role in Chinese economy, although they have long been criticised for their non-competitiveness and poor management (R. W. Carney, 2009). Lin and Zhu (2001) identify three major obstacles to the reform. First, China's socialist market economy has defined that the state needs to have a controlling interest in the economy. There is increasing concern that ownership restructuring of SOEs may lead to an erosion of public ownership. Second, the ownership reform may significantly affect the interests of the state bureaucracy, who used to control the resources and revenues of SOEs. Third, the reform also requires a thorough assessment of SOEs' financial and personnel liabilities, and negotiations among multiple stakeholders.

The institutional reforms for financial sectors in China have generated a mixed public-private ownership structure for the banking system, while the state is still the major owners of many largest banks (Yeung, 2009b). Yeung (2009b) uses the term "hybrid property" to refer to the blurring of boundaries between public and private property rights

in Chinese banking industry. He points out that the banking reforms in China are Chinese government's response to the public-private initiatives of "hybrid property"- a compromise between the pressure to improve competitiveness and the need for political, social and economic stability.

China's banking system is often seen as incapable of taking the role of financial intermediation in the increasingly market-oriented economy (Pei, 1998). The decision-making and reform of the banking system largely depend on government intervention and the performance of the state sector (R. W. Carney, 2009; McKibbin & Tang, 2000; Pei, 1998). State-owned enterprises (SOEs) in prioritised sectors and large-scale SOEs are most likely to bypass the official assessment criteria of banks' lending decisions, and a set of unofficial assessment criteria, including ownership, firm size and the industrial sector of borrowers, are particularly important factors considered in lending decisions (Yeung, 2009a). About 20 percent of the outstanding loans held by the big four banks in China are non-performing loans to inefficient SOEs and planned projects, reforming the banking sector poses a great threat to the survival of SOEs (R. W. Carney, 2009; McKibbin & Tang, 2000; Nehru, et al., 1997).

Although there has been no fundamental reform in the banking system, incremental changes have been introduced since 1979 (Pei, 1998). From 1979 to 1984, four specialised state banks were established: the Agricultural Bank of China (ABC), the Bank of China (BOC), the People's Construction Bank (PCB), and the Industrial and Commercial Bank (ICB). The People's Bank of China (PBOC) formally became the country's central bank in 1984. These five banks were the dominant players in the banking system. During the second stage, which started from the late 1980s, the monobank system gradually evolved into a more diverse banking system. There were a growing number of national and regional commercial banks owned by joint-stock ventures and SOEs. Meanwhile, some non-bank financial institutions also emerged, such as rural and urban credit cooperatives, trust and investment companies, finance firms, leasing firms, insurance companies and securities firms. After the early 1990s, the expansion of the banking sector continued. In 1995, the first private bank, Min Sheng Bank was established.

The Commercial Bank Law promulgated in 1995 provided the legal basis for transforming the four specialised state banks into state-owned commercial banks, and also promoted new standards for bank operation and management that were designed to adapt to international practices (Kudrna, 2007). The Asian Financial Crisis in 1998 had led to a huge spike in state's investment in financial sector, however, it had not changed the status much (Kudrna, 2007). State-owned Banks (SOBs) mainly lend out money to government projects and state-owned enterprises (SOEs), and the interest rates are controlled by central bank, PBOC (Laurenceson & Chai, 2003). As of 1995, 84% of their loans was made to SOEs while only 5% went to non-state firms (Pei, 1998).

An OECD report commented that "the financial quality of State-owned Banks, is rather poor, with low earnings, inadequate capital, and high levels of non-performing assets" (OECD, 2005). Laurenceson and Chai (2003) argue that China's state-owned banks (SOBs) are a hybrid of commercial and development bank, since they were created to facilitate the implementation of government's economic and development plans. It is important to take into consideration of their impacts on social and economic development, rather than evaluating their performance using only commercial criteria (Laurenceson & Chai, 2003).

### *3. Non-bank financial institutions and informal financing*

Non-bank financial institutions (NBFIs) including Rural Credit Cooperative (RCCs), Urban Credit Cooperative (UCCs) and Trust and Investment Company (TICs), have played an important role in China's economic development (Laurenceson & Chai, 2003). The loans provided by NBFIs increased from 2.4% in 1978 to 18.2% in 1996 of the total loans provided by all financial institutions (Laurenceson & Chai, 2003). Ayyagari et al. (2007) refer to informal finance as "the entire gamut of non-market institutions such as credit cooperatives, moneylenders, informal credit and insurance, rotating savings and credit associations, etc. that do not rely on formal contractual obligations enforced through a codified legal system". They find that 20% of firms in the sample use bank financing, most of which are larger firms, or firms in the coastal and southwest regions in China (Ayyagari, et al., 2008). Their results also show that firms using formal finance have higher growth rate, higher profit-reinvestment rates, and productivity growth no less than that of firms financed by non-bank sources. The role of informal financing in promoting the growth of private sector firms in China is limited and unlikely to substitute formal financing channels (Ayyagari, et al., 2008).

Similarly Cheng and Degryse (2010) use dataset between 1995 and 2003 to investigate the impact of financial development of banks and non-bank financial institutions on growth. They find banks provide loans mainly to large- and medium-sized firms, and they contribute significantly to local growth (Cheng & Degryse, 2010). This impact is more evident in provinces with foreign entry in the banking sector (Cheng & Degryse, 2010). On the other hand, non-bank financial institutions often provide loans to small- and medium-sized enterprises, which have very limited impact on local growth (Cheng & Degryse, 2010). They conclude that bank financial institutions which benefit more from reforms have greater correlation with growth than non-bank financial institutions (Cheng & Degryse, 2010).

Many foreign banks closed their operation in China in 1949 with the establishment of the Communist Party and were not allowed to enter China again until after the economic reform in 1979 (Leung, et al., 2003). Foreign banks were initially given the right to set up representative offices to facilitate foreign trade and direct investment. The banks were further allowed to operate branches in the Special Economy Zones (SEZs) in 1985, and Shanghai in 1990 (Leung, et al., 2003). The first national banking law which regulates the entry and scope of businesses of foreign banks in China came into effect in 1994 (Leung, et al., 2003). By the end of 1996, there were 64 foreign banks with branches and 72 with representative offices in China, most of which located in Shenzhen and Shanghai (Leung, et al., 2003). The total number of foreign bank branches increased to 192 by April 2004, most of which located in large coastal cities (L. He & Fan, 2004). The most important motive for foreign banks to enter the Chinese market is to "follow customers in trade and in investment" (Leung, et al., 2003).

He and Yeung (Forthcoming) use conditional logit model to simulate the location distribution of foreign banks in China. The results show that larger foreign banks tend to mimic the location choices of their competitors and select cities with large potential banking opportunities because of ownership advantages; while with fewer ownership

advantages and higher levels of risk aversion, small foreign banks tend to pursue the “follow the customer” strategy (C. He & Yeung, Forthcoming). Similar to the United States and Europe, these banks (both foreign and domestic) are establishing operations in financial service centers like Shanghai, Shenzhen and Beijing (although the draw of Beijing is predominantly political).

In 1996, 62.5% of the banks with at least one branch in China were from Asia. Other non-Asian banks, such as HSBC and Standard Chartered often adopt a multi-branch strategy in China (Leung, et al., 2003). Before 1997, foreign banks mainly focused on loans to joint ventures and to Chinese enterprises, project financing, trade financing and guarantee services (Leung, et al., 2003). From March 1997, foreign banks were allowed to engage in RMB transactions in Shanghai and Shenzhen, with restrictions to only joint ventures (Leung, et al., 2003). By the end of 1999, 24 foreign bank branches in Shanghai and 8 foreign bank branches in Shenzhen were opened to RMB operations (Leung, et al., 2003).

According to agreements reached between China and US, China and the EU during the WTO negotiation, foreign banks will be allowed to conduct RMB businesses with Chinese firms within two years after joining WTO, and with private citizens within five years after entry; geographical restrictions will also be lifted (Leung, et al., 2003). By 2004, 88 foreign banks were allowed to conduct RMB business, and they have been very active in several areas including retail marketing, corporate banking, cross-selling of investment and insurance products, financial derivatives marketing, and credit card banking (L. He & Fan, 2004). In general, foreign banks from Asia are more interested in the expansion of their branch network in China, while banks from the US and Europe often show strong interest in acquiring equities of Chinese banks (L. He & Fan, 2004).

Foreign equity acquisition in Chinese banks is governed by “The Administrative Rules Governing the Equity Investment in Chinese Financial Institutions by Overseas Financial Institutions” which was promulgated on Dec 8th, 2003 (L. He & Fan, 2004). The equity investment in a Chinese financial institution is restricted to 20 percent (CBRC, 2003). Despite the policy restriction and complications, foreign stakes in Chinese banks are increasing and foreign equity acquisition can be found in almost all types of Chinese banks, including large state-owned comprehensive commercial banks, semi-national shareholding commercial banks, and city-based commercial banks (L. He & Fan, 2004). Foreign banks are also trying to influence the management and development of Chinese banks (L. He & Fan, 2004).

Similar to the Securities and Exchange Commission (SEC) the China Banking Regulatory Commission (CBRC) was founded in 2002 to implement deeper reform plans adopted in the National Financial Work Conference of the State Council (Kudrna, 2007). Similar to the Securities and Exchange Commission (SEC), the main functions of the CBRC are to formulate supervisory rules and regulations, to authorise the establishment, changes, termination and business scope of the banking institutions, and to conduct on-site examination and off-site surveillance of the banking institutions (CBRC, 2010).

#### *4. Capital Markets*

China's stock markets have gone through several stages of development (Laurenceson & Chai, 2003). In the first stage (1984-1990), SOEs began to secure funds from the emerging capital market other than solely relying on the fiscal funds and loans from banks (Xu & Oh, 2010). In the second stage (1991-1996), the Shanghai stock exchange and Shenzhen stock exchange commenced electronic trading, and the IPO system was introduced. The exchanges in Shanghai and Shenzhen linked many regional security trading centers and greatly facilitated the development of China's stock market (Laurenceson & Chai, 2003). Yet, government regulations on stock market were still underdeveloped in this stage.

A Chinese 'B share market' designated for foreign investors was established in 1992 (Lardy, 1995). During the third stage (1997-1999) the Chinese government imposed strict regulations and supervision in response to the Asian financial crisis. The fourth stage (1999-2001) was characterised by a rapid expansion of the stock market, a large number of corporatised SOEs, and IPO acceleration. During the fifth stage (2002-2005), institutional investors became increasingly important in the market, and the government managed to reduce state holdings in public listed companies (Xu & Oh, 2010). These movements have seen a gradual development of Chinese equity capitalism that is comparable to the West. In particular, since 2005 the price to earning ceiling for the IPO system has been abolished. Additionally, the ChiNext, a Nasdaq-style index, was launched in 2009 (Xu & Oh, 2010).

At the start of the financial crisis in October 2008, the Chinese stock market suffered a nearly 71% loss from its peak in October 2007. The Chinese government has employed many approaches to bolster the stock market. Some of the measures include: (1) stamp tax reduction for stock transactions from 0.35% to 0.1%; (2) stock repurchase by listed companies, especially by larger SOEs; (3) tougher standards to regulate the conversion of non-tradable shares into tradable ones; (4) a cut in key interest rates by 1.8% and reserve requirement ratios by 1-2%; and (5) a temporary ban on IPOs (Xu & Oh, 2010).

The dominant state ownership of listing companies indicates that China's stock market is successful in terms of raising funds for listing SOEs and thus can have an impact on the reform of SOEs (Laurenceson & Chai, 2003). However, China's stock market isn't an ideal place for fund raising for non-state owned firms; the total amount of funds raised on the stock market is relatively small compared to the aggregate amount of savings (Laurenceson & Chai, 2003). Furthermore, the Chinese stock market is highly volatile, due to the predominance of individual investors and their speculative and short-term orientation. However, considering China's economic, social and political contexts, China's stock market has been adaptive and effective if its emergence and development are understood as "an endogenous adjustment process of financial development in response to both the demands of economic growth and changes in political constraints" (Xu & Oh, 2010). In some ways the stock market is crucial to China's economic development, because it provides capital for Chinese companies to achieve higher growth rates, leads to a separation of ownership and management in SOEs, relieves state-owned banks' non-performing loans and diversifies savers' investment options and credit risks (Xu & Oh, 2010). China's stock market has become a source of foreign investment and capital liberalisation within the country, which facilitates the operation and linkage to Western-style finance.

##### *5. External financial liberalisation*

External financial liberalisation (EFL), removing barriers to the free flow of capital between countries, is often seen as an effective means to achieve economic development (Laurenceson & Chai, 2003). China has undertaken rapid EFL since 1978. However, the EFL has been restricted to capital flows such as inward FDI and foreign loans. Most other types of international capital flows are still tightly controlled (Laurenceson & Chai, 2003). Foreign loans dominated the foreign capital inflows in the 1980s, but fell behind foreign direct investment (FDI) during the 1990s. China's FDI increased from 429.9 million dollars in 1982 to 40715.0 million dollars in 2000 (Laurenceson & Chai, 2003).

The FDI liberalisation measures taken by the government include decentralisation of decision making power of FDI, relaxing ownership restrictions with the FDI inflows, increasing managerial autonomy of FDIs, positive incentives to attract FDIs, and relaxing the control over economic sectors related to FDIs (Laurenceson & Chai, 2003). For instance, local branches of the State Administration of Foreign Exchange (SAFE) and PBC were authorised to manage foreign loans; foreign commercial banks were allowed to operate directly in China; and an increasing number of Chinese assets were allowed for foreign purchase (Laurenceson & Chai, 2003).

Policies were also designed to encourage export and transform China's foreign trade system to adapt to international practices. Some examples include decentralisation of foreign trading authority, reduction in the degree to which the official exchange rate overvalued the domestic currency and direct import subsidies, tax rebate on exported goods, and a loose monopoly control over the allocation of foreign exchange (Lardy, 1993). In 1979, China established four Special Economic Zones (SEZ) in Guangdong and Fujian, which were given special privileges to design their own economic policies (Lardy, 1995). Provisions such as special tax concessions and liberalised land leasing were made more widely available in late 1980s (Lardy, 1995). In 1984, 14 Opened Coastal Cities (OCCs) were added to the list, including Dalian, Beihai, Tianji, and Shanghai.

These cities were designed to increase shipping and exports. In the early 1990s, the property market in the provinces on the coast line was opened to foreign firms, which led to significant FDI inflows toward the development of residential housing, retail complexes and other projects (Lardy, 1995). Keuh (1992) argues that the distribution of FDI shifts from the south along the coast to the northern frontiers, rather than to inland provinces. He also highlights the importance of Shenzhen, a neighbor city of Hong Kong, which attracts no less FDI than any other single province or municipality, including Shanghai and Beijing (Kueh, 1992). Not surprisingly, these regions have also become important for the development of wind and solar technologies and link activities with other centers like Hong Kong.

## **Environmental policies and finance**

### **China**

#### *1. Institutional development*

Li and Zhang (2000) examine factors that drive institutional change towards capitalism in China, and conclude that cross-regional competition is the main driving force. Their results show that Chinese economic reform began with decentralisation, which consisted of a fiscal revenue-sharing system and a delegation of state enterprises to local governments (S. Li & Zhang, 2000). Hasan et al. (2009) find that institutional development is strongly associated with economic growth. Capital market depth has a strong impact on economic growth. The development of legal environment, awareness and protection of property rights and political pluralism are associated with stronger growth (Hasan, et al., 2009). For example, China has accepted both the generally applicable WTO rules and special rule obligations, as well as agreed to forgo much of the special treatment that WTO grants to developing country members (Qin, 2007). Qin (2007) points out that Chinese government accepted this discriminatory and unfair treatment because the accession to WTO is a critical step in China's economic reform process and the Chinese government wants to utilise external pressure to overcome domestic barriers and further the reform. WTO accession has also played an important role in developing the intellectual property rights and improving domestic governance in China (Qin, 2007).

In terms of foreign trade, China has liberalised trading rights and gradually functioned as a regulator in the market place; it has reduced its tariff and non-tariff barriers and established a trade remedy regime; but China's attempt to develop and use its own technical and health standards has raised increasing concern among its trading partners (Qin, 2007). In terms of foreign investment, China has eased entry restrictions in many industries such as distribution, construction, transportation, communication, financial services, and automobile industry; it has also agreed to eliminate performance requirements associated with foreign investment and give foreign investors national treatment (Qin, 2007). However, in recent years, the concern about foreign domination in key industries, disappearance of domestic brands, and slow technology transfer has led to an increase in protectionism, which tightens government control over foreign acquisition of domestic companies (Qin, 2007).

The Chinese government has also directly encouraged investments in clean energy. As a legal service advisor working in the country explains:

The Chinese government has something called the catalogue for foreign investment. It is the first thing you look at when you want to invest in China, to see which category your...It is a document published by the ministry of commerce, which is responsible for foreign investment, published once every year. It separates investments into three categories and a fourth category is unnamed because it is the default category of the bill. One is prohibited industries like defense, restricted, industries where there is some sensitivity but foreign investment is limited. That could be like media and stuff like that. The last category is and they are a separating investments into three categories. One is prohibited industries, restricted industries, not prohibited but foreign investment is limited to certain levels that

could be like media and stuff like that. The last categories is Encouraged. They encourage you, give you incentives sometimes like tax breaks and so forth to invest in green technologies and green energies. Green energies falls squarely into that. --- Environment Partner, Legal Services Firm, March 7, 2011.

## **Environment Legislations and Regulations**

China has become increasingly concerned with air and water quality controls as a result of fears over civil unrest in the country. As one interlocutor explained:

The biggest sort of concern in China is making sure that people don't, I mean you look at the communist government and they came to power on the back of the popular peasant uprising and people feeling that they were ahh...So they are very very much that left wing philosophy and they do realize that their legitimacy comes from being seen to govern fairly and to produce results. On that ground they have done pretty well for the last ten years. -Partner, Legal Services Firm, March 7, 2011 Hong Kong

Chinese environmental legislations have developed with a focus on command and control policies; however, some market-based policies have been tested with pilot projects (Chow, 2010). The National Development and Reform Commission (NDRC) has been working on the guidelines for the development of low-carbon economy, and has launched several small-scale carbon trading pilot programs in specific industries and regions (Chow, 2010). With the assistance of the U.S. Environmental Protection Agency, and NGOs, two phases of emission trading pilot projects were carried out: the first was in six cities between 1990 and 1994, and the second was in four provinces, three cities (including Shanghai) and one utility company between 2002 and 2003 (Tao & Mah, 2009). The pilot projects were characterised with administrative-led transactions, discretionary trading arrangements, thin markets with a small number of potential buyers and sellers, an absence of informative prices, high transaction costs, and an absence of liquidity suppliers. Tao and Ma (2009) argue that a well-functioning emission trading system will require the Chinese government to strengthen its governing capacity by improving the rule of law, independent regulation, information disclosure, and public accountability. One interlocutor commented in a similar vein:

I think up to now it is a big problem because of the capital control. This is one thing. The other thing is that in terms of the credit standard, China is the major supplier of CERs but they already have officially set up the market price they will accept credits. So you wonder if they will have an open market. An open market means they will allow room for speculation. That is something the authorities may not want to see. Vice President Derivatives Market, Stock Exchange, March 10, 20011.

Nevertheless, these initial pilot projects represent movement on environmental policy. China has incorporated a number of environmental and energy efficiency initiatives

into its 12<sup>th</sup> 5-year plan. It is now developing an eight city emissions trading program to be implemented in Tianjin, Chongqing, Shenzhen, Xiamen, Hangzhou, Nanchang, Guiyang, and Baoding.

## *2. Energy projects building from the CDM*

Although the CDM is not the main market for the EU ETS it has directly influenced the development of clean energy in China and neighboring financial centers. Singapore has established a clean tech research and development center, and linked it to the operation of its financial center. China has capitalised on the wind and solar energy markets and acquired significant market share. For example, China's wind energy market has grown rapidly during the last five years and is expected to reach 158 GW by 2016 with a CAGR of 20% over the next five years. China has leapfrogged Denmark, Germany, Spain and the US to become the largest producer of wind turbines. Various factors have driven the wind energy market in China. Government backing and generation-based incentives for renewable energy sources, rising electricity demand, and Clean Development Mechanism support from the UN have boosted China's wind market.

I have been a venture capital lawyer since 2003 and have worked in a number of investments in China. It is interesting to see how the investments have morphed. Most of the investments in the early 2000s were in the internet and the media and advertising companies. There are three or four areas that VCs they invest in. One is retail business in China; any sort of good retail store because of the rise of the Chinese consumer, the other one is healthcare because with increased money there will be a more spending on healthcare. Retail healthcare and renewable energy is the third one. That is a big big focus for the Chinese government. Highly concentrated population in, you have got four or five times the density. You have a land mass the same size and a population 4 times. --Partner, Legal Firm March 7, 2011

As a result of clean energy projects and incentives created by the government in response to the CDM, China has also accelerated its development of solar energy. China has captured a lead market share in solar production: 40% of the world's market in solar in 2010 up from almost 0% in 2005. As a consequence, China has leapfrogged Denmark, Germany, Spain and the US to become the largest producer of wind turbines. Since the implementation of the CDM, China's solar industry has become the largest in the world with 5 of the biggest Solar Panel Manufacturers.

The CDM has lead China and other Asian financial centers such as Singapore to emphasise the link between clean energy and climate finance. However, a pressing concern at the moment is that the regulatory provisions of CDM expire with the Kyoto Protocol in 2012. As the primary source of demand for CDM credits the European Union will have a The fate of the post 2012 CDM is still undetermined, however the EU has issued some guidance suggesting it will push for sector-wide rather than project standards. Additionally Europe may significantly shift the geography of CDM project, by accepting only credits produced post 2012 from least developed countries (LDCs).

Additionally, the CDM programs are likely to evolve into more directly involved environmental programs with linkages to programs such as Reducing Emissions from Deforestation and Degradation (REDD+). However, for this program to develop it needs clearer standards and frameworks:

At the moment I mean if you look at the risks associated with...you know why would you invest in REDD there are just so many risks, policy risks, we don't know what the framework looks like. You know, you don't know what you are going to be selling your asset for. There are too many question marks, too many risks. The risk adjusted return just looks ridiculous. So you know, you will get...the framework hasn't evolved so policy risk, just every type of risk you can imagine. Is in there. But at the same time people accept it is a low cost abatement compared to offsets in the EUETS. REDD are between 2 and 10 dollars. They are selling in the voluntary market but illiquid and wide range in terms of prices. --Director of Carbon Finance, NGO March 7, 2011.

Nevertheless, Asia is a predominant source of energy/forestry resources, which suggests that the finance of such programs will be managed through centers like Singapore, Hong Kong, and as it continues to liberalise, China. Several carbon brokerages and investment banks have already moved teams to financial centers within the region, and have indicated that they will develop energy rather than emissions projects in preparation for post 2012 CDM changes.

## **Hong Kong**

Hong Kong, as a traditional Western-style financial center and a city embedded with Chinese culture and ideologies, presents an interesting case to examine the interaction of global and regional economies. Crawford (2001) identifies two reasons why Hong Kong maintains its status as a crucial financial center. First, Hong Kong provides a familiar and stable investment climate for foreign investors. Its well-designed institutional system, advanced infrastructure and technical capacity, and government's strong favor towards free market approach have all contributed to its competitiveness in global financial market. Second, Hong Kong's access to mainland China and capitals in Southeast Asian is unique and important for investors from western countries (Crawford, 2001). Hong Kong provides foreign investors access to markets in mainland China, while Chinese banks and companies also raise substantial capital to finance projects in the mainland. Ethnic Chinese firms in Southeast and East Asian treat Hong Kong as an important platform to spearhead their regional and global strategies. As one legal advisor suggested in an interview:

Hong Kong is a regional hub of service commodities, most of what we do here, most of what other law firms, investment banks, financial services firms, accounting firms and other sorts of advisors do here is advise people on business elsewhere. There are only seven million people here. There is business here, but it is overwhelmingly focused elsewhere. And China is the 800lb gorilla in the neighborhood. Most everyone is focused there. --Partner, Legal Services Advisory Firm, March 4, 2011

Yet, Hong Kong is still enmeshed in traditional “a functional hybrid where the institutions, technologies and norms of global finance are interwoven with guanxi, extensive kinship networks and secretive, family-based financial management structures”, and that “financial centers that service large emerging markets in the early stages of integration with the global economy...are likely to operate within the logic and norms of their regional business culture” (Crawford, 2001). Guanxi, which is the sub-ethnic relationship between Chinese businessmen, is usually rooted in clan or regional connections (Guthrie, 1998)(Yang, 1994). Chinese businessmen often invest in small and medium-sized enterprises with extensive networks because of the limited size of the family firm and the Chinese traditional custom of dividing the father’s estate equally among each son (Crawford, 2000). The extensive network tends to increase the business’ flexibility and adaptability to changes and opportunities. Its deep root in family and kin relationship also make the stability of Chinese business less dependent on external factors such as political and legal changes (Crawford, 2000). Finally, quanxi connects business operations in Hong Kong closely to extended networks in China.

Given these connections it is unsurprising that Hong Kong is also becoming an important center for REDD financing. One interlocutor explained the type of stakeholder engagements that are brought together in these centers:

It was all about essentially the viabilities of the forest bonds. So if you accept the fact there is a big financing gap in climate finance generally and REDD specifically, you look at credit spreads all around Europe and climate change finances are really strained so we obviously need private sector cash at some point. And the biggest single slug is investment rate debt. So can we create a product that looks like investment rate debt that will raise money for REDD. What we did is get some asset managers in the room. Is there demand for this product and if so what does it look like. Is it 10 year triple A debt? What are the institutional bottlenecks on your side? Is it a lack of capacity? Is it a need for real standards?... Does the issue lie on the fiduciary duty of an insurance company to maximize financial return? So that was just asking is there demand. And then we had a bunch of investment bankers in the room. We said, right you have heard what the demand looks like, can you create that product. If not why not? We knew what the answers were, but we wanted everyone in the room to want to speak the same language. ...So coming out of this workshop the idea was is there demand, what does the demand look like and then get the investment bankers and ask can you create products. And they go well we could but we need a 20-year price on carbon, we need to MIGA increase the capacity for political risk, we need better commercial risk insurance. We need governments to subsidize otherwise it is just not financially viable. It is perceived to be a big problem in the context of REDD. If you are investing in the Congo Basin or in Papua New Guinea, what do you do about expropriation or currency valuation, these kinds of things. So then the focus was on them to say what can they offer, what are their problems, where do they see the synergies. Then we had a couple of guys from Brazil. So the idea for them was if we can raise this cash can you use it. People in REDD talk about the absorptive capacity, can you actually spend this money. -- Carbon Finance Manager, NGO, March 7, 2011

Meetings are held in Hong Kong because predominant financiers and other actors can be brought together to make the program more viable. The physical proximity of centers like Hong Kong to the forest resources as well as the social proximity to the business and conservation interests make them suitable places for the development of environmental finance.

The process of creating the systems of finance is also very hands on. Much of the expertise is drawn from Europe. As a result it is not surprising that environmental markets are developing as complements of nascent markets in the United States and Europe. Indeed the nascent logics of these financial structures carry considerable inertia. The process of developing these markets is in part a process of negotiating and reconciling Western logics of finance with traditional Chinese perspectives and business expectations. .

## **Conclusion**

With energy consumption projected to grow by 40% in the next twenty years and particularly through economic development in Asia, the region is critical to the geopolitics of energy production and consumption and to developing markets for environmental finance. One of the interesting questions to be addressed is how the markets will be shaped while sitting at the nexus of Western and Eastern models of finance in these high growth industries. The Chinese government has indicated strong signals of financial liberalisation and has also indicated the emphasis it will place on energy and environmental finance in coming decades. The development of the financial markets may further strengthen the ties between China, Europe and the United States and strengthen the relative financial power of China in the global economy.

Indeed, in looking at emissions and energy markets for the broader significance as indicators of financial health and development, China has already taken considerable measures to bolster its position as a leader of developing clean tech industries (especially wind and solar) in coming decades. Additionally, preliminary evidence suggests that there may be reluctance in China to engage with more speculative forms of finance. Such reluctance could still cultivate an independent financial culture in Asia and may ultimately contribute to shifts not only in the global power of the financial centers, but also in the modes of finance used to govern environmental resources.

Specifically, China has become a leader in clean energy production because it has emphasised material value gains, rather than securitisation and derivative finance. The emphasis on materiality of value is critical to the Chinese approach and in some ways further differentiates the Chinese model of finance. As energy sources begin to transition from fossil fuels towards renewables and as China begins to reap the benefits of its positioning, other regions may begin to follow suit. Unfortunately, given the strength of the Chinese economy and its relative position in clean energy markets, in the case of the United States and Europe, initiatives may be too little too late.

The institutional development of environmental finance in Asia opens multiple avenues of research and opportunities to explore institutional transfer at the heart of emerging markets. The importance and predominance of these markets should not be underestimated in coming decades. Furthermore, the issue of materiality should be at the heart of the investigations of these developments. The financial crisis in the United States and Europe has played a role in propagating environmental markets in Asia. However the

different methods of managing credit finance used are also inherent to explaining why Asia has fared better in the aftermath of the crisis. Materiality is a critical issue in energy production and is integral to understanding how financial centers are developing and around which sources of production.

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