Chinese Innovation Policy After 1978 in a Cultural Context

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Received: 12.12.2015, accepted: 01.02.2016

Abstract: The Chinese emphasize the importance of their innovation policy as a way of becoming a more powerful country. Generally, monetary resources and state policies were thought to be the leading factors that have contributed to China's growing number of patents and innovative projects. This paper discusses the role of cultural traits related to the China's innovation policy since the country started reforming its economy after 1978. A question arises whether culture has any impact on the achievements in the field of innovation, and whether those cultural attributes are positive or negative. Conclusions related to the question are derived from a process of deductive and reductive reasoning. The author finds that culture may both foster and stunt the creation of new ideas, and that culture does not play a crucial role, just an auxiliary one. Nonetheless, attention to cultural traits are important in understanding the driving forces of economic development of the People's Republic of China. Specific aspects of Chinese culture that are identified as having a positive influence on innovation are copying and modernizing, long-term orientation, the sociological concept of "face", the influence of the Chinese diaspora, and Chinese nationalism. All of these elements are intertwined to a degree, but are discussed separately. This work includes some fresh perspectives on a relatively narrow body of scholarly literature on the relationship between innovation in China and the nation's cultural traits. This relationship has just gained more attention recently.

Keywords: China, culture, national innovation system, Chinese economy

1. INTRODUCTION

China is currently the second largest economy in the world and it is only a matter of time when it will surpass the United States of America. One of the most significant factors of its economic growth is the innovation policy highly promoted by the government. This topic has been present in scholarly literature for a long time. However, the cultural roots of Chinese innovation have not been broadly discussed. The author of this paper finds this problem worth further study. It should be assumed that cultural aspects in innovation cannot explain all of the mechanisms of the Chinese economic policy. As a matter of fact, understanding these aspects would provide more clarity in understanding those mechanisms.

The thesis of this article is that culture has been a significant factor in Chinese innovation policy after 1978. The author underlines some chosen aspects in order to demonstrate this assertion. The importance of technological and scientific progress in driving economic growth cannot be understated. The country has increased its expenditures on research & development (R&D) in order to reach the strategic goal of creating a system of innovation designed to foster rapid results in modernizing the economy.

There are numerous sources covering the topic of the Chinese national innovation system, which is referred to as the NIS. The idea for the system was developed by the Chinese Academy of Sciences in 1998. From that moment the NIS has received the central

government's support and attention, and the system's results have reverberated around the world (Lu, 2001). According to Sun (2002), the Beijing government's focus on China's NIS has been characterized by the following points. First, there has been a much greater role of the government in terms of sponsored laboratories in the Middle Kingdom in comparison to those in the West. Second, again in comparison to Western countries, Chinese universities are quite less important in almost all activities concerning R&D. Third, the government plays a central role in creating and controlling the innovation system.

The problem of cultural aspects in China's innovation policy is not very vast in the literature. In the author's view the topic is underestimated but it is of great importance in China's case. In order to understand the relationship between this state's culture and the innovation system, several cultural aspects were studied. It should be noted, however, that there has always been a problem with combining such aspects with economic theory. Economists cannot incorporate them into their theories easily but further attempts are worth trying. The subject is important and it may be helpful in dealing with cultural relativism. This, in turn, could be useful, at least in theory, in transplanting some foreign cultural values that can support economic growth and innovation on to a familiar ground of any other country in need. It could also provoke discussion on this subject because a question may be raised whether culture plays any role in China's economic development through innovation.

2. LITERATURE REVIEW

The first researcher who used the term "national innovation system" was Lundvall (1992). However, there are also other authors who have addressed the concept, such as Freeman (1987) and Nelson and Rosenberg (1993). The topics of many studies since then that have focused on Chinese innovation include Chinese strategies for catching-up (Tang & Hussler, 2011), science and technology programs (Chen, 2003; Bao, Zhang, & Li, 2002; Huang et al., 2004), patent laws (Yueh, 2009; Hu & Jefferson, 2009), and clean technology (Tan, 2010; Kim & Lim, 1988).

As a matter of fact, it was Liu and White (2001), among others, who first observed the institutional and organizational changes of the NIS in China. Their perspective is close to the one covered in this paper. However, there have recently appeared some works in which authors have attempted to correlate the Chinese approach to innovation with Chinese cultural traits. Kash (2010) asserted the importance of culture on the innovation of technological products and processes. He conducted interviews as part of case studies of innovation of 13 technology processes and products in China and five other countries. His findings seem to indicate the impact of different national cultures on innovation success in the various technology sectors, although further scientific research is needed as he suggests. Van Someren (2013) tried a different approach: looking at long-term strategic thinking that has caused China to "outgrow" mere imitation toward strategic innovation. According to Van Someren, one needs to know basic Chinese philosophy to understand where the country came from and where it is heading to. Therefore, he focuses on Confucianism and strategic thinking based on Sun Tzu's *The Art of War*. Van Someren's approach also considers national tradition, language, social customs, fairy tales, religion beliefs, literature, and modes of thinking, implying that the Chinese cultural context for innovation is completely different from one in other countries. This paper is therefore another attempt to cover this topic from a perspective including other aspects of cultural differences in the following paragraph.

3. CULTURAL ASPECTS OF THE CHINESE INNOVATION POLICY

3.1. Copying and Modernizing

It is obvious by now that the Chinese ability to innovate has been increased through government funding and state policy. Imitations are very common in the Chinese culture and although it has been stated in the literature many times that it is better to be an innovator, or pioneer, than an imitator. Shenkar's research (2010) appears to confirm that imitators manage at least as well as innovators and sometimes even better, arguing that 97.8 percent of the value generated by innovations goes to imitators. In certain conditions they look for interesting ideas, copy them and make them even better in terms of quality and price. This is the way the Chinese behave nowadays. They understand the advantages of such an approach. Those who follow have lower costs of research and development but also are not exposed to a high market risk of insufficient demand because the product already exists in the market.

It has been stated that imitation may be a more common strategy than innovation, but also a more profitable one (Golder & Tellis, 1993; Schnaars, 1994). It takes place in several degrees from sheer copying to modernizing, which is a kind of creativity. This very example is the main focus of the Chinese. It was not only Shenkar (2010) who has observed the advantages

of the imitation strategy. Cho et al. (1998) and Shankar et al. (1998) acknowledged the advantages of imitation strategies based on historical analysis and case studies. It turned out that latecomer strategies allow the imitators to grow faster, slow diffusion of the original innovators, and allow the imitators to finally overtake the innovators. However, those who just copy and are not creative enough meet a smaller market, lower repeat rates and their marketing is not so effective in comparison to innovators.

Imitation is a Chinese cultural characteristic. According to Confucius, one could become a noble man mostly by imitating the *xué* of the ancient sages. Later on this term *xué* became synonymous with learning. From ancient times learning did not lead to creating new things, but rather to imitating things and ideas that had already existed. This has had a profound effect on Chinese culture. On the other hand, innovators enjoyed a high profile in the society. Such a dichotomy does not have to be contradictory according to the Chinese.

This Confucian spirit is shared by countries that have been influenced by the civilization of the Middle Kingdom in their history. This is why Japan, Singapore and South Korea rank very high in the global innovation index. As a matter of fact, for a very long time the Chinese civilization was one of the leading innovators in the world. According to the British Sinologist Denis Twitchett, total technological inventions of China between 221 BC to 1644 accounted for approximately two-thirds of the world total (Shao, 2011). It was a set of internal and external factors that ended this period of innovative capacity (e.g. political unrest, the Opium Wars, the Taiping Rebellion).

Another reason why China got behind the Western countries, although it was at the same level of scientific development, could be that it felt superior over other cultures and it was such ethnocentrism that turned out to be harmful to its scientific development. The Chinese just did not pay attention to the science in the West. Moreover, the Qianlong Emperor (1711 - 1799) stated in a message to Britain's George III: "*We possess all things. There is therefore no need to import the manufactures of outside barbarians in exchange for our own produce*" (Micklethwait, Wooldridge, 2005: 7). On the other hand, Hsu (1981) links Chinese stereotypical thinking, uncreative behaviors and uncritical fatalism to collectivism.

3.2. Long-term Orientation

According to Hofstede and Hofstede (2007) China takes first place among 39 countries and regions in the world in terms of long-term orientation (LTO). Michael Bond called this feature Confucian dynamism (Chinese Culture Connection, 1987). This kind of orientation emphasizes developing virtues that may be viable or profitable in the future. It has already been proved that there is a positive correlation between LTO and economic growth and particular values instrumental in that were also specified. These are especially frugality, prudence and perseverance (Hofstede, 2007).

Long-term orientation, present in Chinese innovation policy, has proven to be beneficial as part of China's incremental attempts to regain a position as a great power in international politics. This process has been taking place since 1978. The Chinese make use of great amounts of low-cost labor and capital in many innovation opportunities. A premise very characteristic of Chinese innovation policy, which is also found in India and Brazil, is that valuable discoveries can be found among so many ideas from a huge number of talented members of the society. Companies therefore very often establish long-lasting relationships with institutions that can provide such a pool of human resources; institutions such as universities, trade associations, or venture incubators. Chinese state policy is fundamental in triggering and propping up LTO behaviors. There have been already five National Science and Technology conferences since 1978 which have been instrumental in developing China's national innovation system (Table 1).

Eloquent of long-term orientation in Chinese culture, is China's drive for clean technology, which began approximately 14 years ago. It became obvious then that the traditional way of economic development and becoming the world's factory, would bring disastrous effects of pollution on the natural environment. Increasing energy consumption has also been a substantial factor in making the country the world's largest gross emitter of greenhouse gases.

With the long-term orientation the Beijing government treats investment in clean technology especially renewable energy, as an effective way of dealing with the air pollution as well a remedy for a potential energy crisis. China's National People's Congress approved in 2011 (14th March) a new five-year national development programme through 2015. Its 12th Five-Year Plan stresses "higher quality growth" because the sustainable development problem has become of paramount importance (Table 2). The country faces resource depletion, expanding intensive energy use, and has to spend an increasing amount of money on dealing with the natural environment degradation.

Table 1. Chinese National Science and Technology Conferences

Time	Name of the conference	Important issues
March, 1978	National Science Conference	Deng Xiaoping stated that science and technology are a productive force; intellectuals are a part of the working class and S&T is fundamental to the four modernizations.
March, 1985	National Science and Technology Work Conference	Deng Xiaoping gave a speech entitled "The Reform of the S&T System is for the Liberation of Productive Forces". He also announced some decisions regarding reform of the S&T system. From this moment, China started its reform of the nation's NIS to enhance its economic orientation.
May, 1995	National Science and Technology Conference	The "Strategy for Revitalizing China through Science and Education" was promulgated by the government. Guidance and policies regarding acceleration of S&T development were issued. It was decided that economic development should rely on the progress of S&T.
August, 1999	National Technology Innovation Conference	The government unveiled the "Decision on Strengthening the Technological Innovation: Developing the High Technology and Realizing Industrialization". This policy called for the creation of a NIS and stated to accelerate the industrialization of S&T production.
January, 2006	National Science and Technology Conference	The government issued a new innovation strategy as well as the "Medium-to-Long-term Plan Outline for Development of National Science and Technology (2006-2020)". This plan set the goal for China to become an innovation-oriented country by 2020.

Source: OECD (2008: 381-393)

Table 2. China's 12th Five-Year Plan: Seven Priority Industries and Key Non-economic Targets

Priority number	General guidelines	Specific means
1	New energy	Nuclear, wind and solar power
2	Energy conservation and environmental protection	Energy reduction targets
3	Biotechnology	Drugs and medical devices
4	New materials	Rare earths and high-end semiconductors
5	New IT	Broadband networks, internet security infrastructure, network convergence
6	High-end equipment manufacturing	Aerospace and telecom equipment
7	Clean energy vehicles	-

Key Non-economic Targets

1	Increase in non-fossil fuel use to 11.4%
2	Reduction of energy use per unit of GDP: 16%
3	Reduction of CO_2 emissions per unit of GDP: 17%
4	Increase forest coverage by 21.66%
5	Decrease pollutants COD and sulfur dioxide by 8% each

Source: Based on KPMG (2011).

Tan (2010) claims that China is aware that the next phase of its S&T revolution will focus on clean energy. Therefore, it is determined to emerge as a global power in the development of science and technology. By becoming a pioneer in the clean energy revolution the Middle Kingdom hopes to change the label 'made in China' to 'created in China'. It is obviously another method of gaining face. It is China's Ministry of Science and Technology (MOST) that sets national S&T plans. There are two main programs instrumental in achieving these goals (Ibidem):

1. The 863 Program – known also as the State High-Tech Development Plan. It was founded in the third month of 1986 (hence the name) and was to stimulate creating and enhancing advanced technologies in order to let the country be independent of financial obligations for foreign technologies;
2. The 973 Program – known also as the National Basic Research Program. It was founded at the third meeting of the National Science and Technology Committee in 1997 (hence the name) and its focus was on energy, environmental protection and natural resources conservation.

Levine (2010) reports that there are two main reasons for China investing in clean technology and energy and they are compatible with what has been said earlier. These are: aspirations for a less oil-dependent world and for a more prosperous one. They are reflected in a global drive for a more advanced battery. It will change electric car industry and will position it on a par with the pharmaceutical industry by 2030.

3.3. Face

This term may be defined in several ways. Goffman (1955: 213) stated that this concept may be defined "*as the positive social value a person effectively claims for himself by the line others assume he has taken during a particular contact. Face is an image of self-delineated in terms of approved social attributes*". Ho (1976: 883) finds that face "*is the respectability and/or deference which a person can claim for himself from others, by virtue of the relative position he occupies in his social network and the degree to which he is judged to have functioned adequately in that position as well as acceptably in his general conduct*". On the other hand, in the view of Huang (1987: 71) face "*is a sense of worth that comes from knowing one's status and reflects concern with the congruency between one's performance or appearance and one's real worth*". Whatever the definition, it should be noted that the concept of face concerns mostly individuals, though it may be more broadly applied to a macro scale and cover whole societies and even states.

Understanding face concerns leads to a better understanding of conflict styles between the collectivist and individualist cultures, but also between China and the rest of the world. It is crucial to note that China's history is full of moments when it suffered humiliation at the hands of other powers. In this respect the drive for innovation may be seen as a peaceful way of building Chinese power. According to Bond and Hwang (1986), behaviours for saving and enhancing one's face in the Chinese society can be classified in terms of the target of the face behaviour. There are six categories:

1) enhancing one's own face;

2) enhancing another's face;

3) losing one's own face;

4) hurting another's face;

5) saving one's own face;

6) saving another's face.

Bond and Hwang add that "*one's face is more interconnected with that of others, and its protection and enhancement more disciplined by concerns about hierarchical order in Chinese culture than in more individualistic egalitarian cultures*" (Ibidem: 249).

When it comes to macro scale and investment in innovation, enhancing face of the Chinese nation and also its saving face behaviour seem to be proper in this context. First, it is a matter of particular qualities that are cherished by other countries. China tries to enhance its status in the international arena by showing off qualities that count, that is, innovation among others. Second, losing face is a historical experience that China wants to avoid. Therefore, it develops areas that can lead it to a more powerful economic position, which then can improve its defence capabilities.

3.4. Diaspora Influence and Nationalism

The Chinese diaspora is an important source of social capital and it is instrumental to a degree in the economic development of China. There is an increasing abundance of scholarly papers confirming that social ties are important in gaining new markets (Johanson & Vahle, 1992; Chen & Chen, 1998; Zhao & Hsu, 2007). There is a main problem in defining the term and estimating the size of the diaspora. In view of the fact that the majority of foreign direct investment

in China comes from Hong Kong, Macau and Taiwan, which are inhabited by ethnic Chinese, it is easy to realise the significance of the diaspora.

Social networks allow information to move faster and cross borders of the states. They also make various investments easier, especially in the field of information and communication technologies. What counts here is trust and it is reflected among the Chinese in the form of *guānxi*. It is particularly useful in the face of underdeveloped legal infrastructure in the emerging markets. Such networks in the form of *guānxi make doing business a lot easier but they have no direct equivalent in the West. They are far more important for the Chinese and their depth is usually much greater. Guānxi has often been present due to lack of trust in law allowing for creation of trust in business and personal matters.*

Members of the diaspora are also instrumental in exchanging ideas and making connections between people (*The Economist*, 2011). Many of them are graduates from Western universities. When they come back to their homeland they possess abundant knowledge and social networks outside of China. The technology industry in the Middle Kingdom has been dominated by those who lived overseas and came back home (Ibidem).

Multinational corporations which are active in the PRC often make use of middlemen who lessen the risk by knowing the business environment, and having access to local politicians. The Chinese from the diaspora play this role perfectly. Their presence makes economic agents change their strategies in such a way that the agents utilize their contacts. This has been common since 1978. Not only are multinationals interested in members of the Chinese diaspora, but so is the Chinese state. Biao (2008) identified that majority of over 50 Chinese laws and regulations related to capital transfers, taxes, etc. and implemented between 1978 and 1990, were in fact, specifically designed to encourage citizens of the PRC living and working abroad to return to the PRC.

According to a report published by the Chinese Academy of Sciences dated from 2007, 1.06 million Chinese went abroad to study between 1978-2006. What was most striking was that only 30 percent came back home. When it comes to engineering and the natural sciences, among the key fields of the modern economy, it turned out that approximately 90 percent of the graduates stayed in the United States (Tung, 2008). The report indicates the following reasons: (1) higher incomes abroad; (2) better prospects for employment; (3) better working conditions; (4) a higher standard of living and a better quality of life; and (6) superior R&D facilities. The brain drain increased with expanded Chinese government funding of studies outside of China during the 1980s and 1990s. At present, it is increasingly more common for the Chinese to pay for studying in a foreign country, and as a consequence, there is no obligation to come back to China (Ibidem).

The PRC has taken prompt action in the face of this phenomenon. The country with its long-term orientation started dealing with it in a specific way. It did not want to fight it. Instead, it started to change its policy. At the very beginning the graduates staying abroad were being criticized, but later on they were being encouraged to come back to their homeland. A law was passed in 1991 that encouraged Chinese living and working overseas by giving them privileges after their return, such as preferential tax rates and protection from remittances. Apart from these administrative steps the state tries to foster strong ties between the homeland and Chinese throughout the whole world. Beijing's message is that they are part of the Chinese family inherently bound to the Chinese land irrespective of the date of their emigration or their place of residence. The authorities underline emotional ties with the country through programmes; examples include a programme which enables ethnic Chinese to discover their ancestral roots, while another facilitates overseas Chinese to attend summer language courses (Kinglun, Cheng, & Cheng, 2004). In the course of globalization and reforms the government has tried to gain access to the financial assets of the diaspora by binding their members emotionally with the country and giving them face (Hsu, 2000).

Smart and Hsu (2004) claim that the PRC focuses on developing state-of-the-art technologies and that it acknowledges the important role the disapora plays. Citizens of the PRC or people of ethnic Chinese origin outside of the PRC are encouraged to "serve the country" and shades of nationalism are used by the authorities. The Beijing government offers generous incentives to attract and make use of the many experienced and talented Chinese outside of the homeland. There are over 53 science parks or industry parks created by the central government and by the municipal governments to foster the development of advanced technologies and innovation (Ibidem). The government sees emigrants not as a sign of brain drain and a loss, but as a resource kept beyond the borders of the state. This human resource is for future use. One indication of this is the large number of Chinese scientists working abroad who support China by teaching in a foreign country while organising joint research. There

Table 3. Reasons Selected by Overseas Mainland Academics (living in the USA and Canada) for Cooperating with China

Reason for cooperation	Score
promote the quality of research in China	225
make China stronger	102
establish personal relationships	80
attract good graduate students	70
high quality of collaborators	48
costs are cheaper	36
I conduct research in China, so I need to cooperate.	29
I want to be visible in the mainland.	18
access to research money	13
Total	621

Notes: N=94 for the USA, N=59 for Canada. First choices were given 5 points, second choices were given 3 points, and third choices were given 1 point.
Source: Zweig, Fung, & Han (2008: 26)

are many programmes of scientific exchange which draw a strong response from Chinese of the diaspora . The reasons for them are shown in Table 3. It should be noted that a nationalist trait is also present there and ranked second.

The Chinese diaspora continues to be a very important component in the PRC's attempts at accelerating innovation. They are very active in industrial espionage obtaining information that enables the government and economy of China to advance by leaps and bounds. This topic has not been researched in detail due to obvious reasons. It is mainly present in the news or various reports in the Western countries, e.g. by The Office of the National Counterintelligence Executive (2011) in the USA or by *The Economist* (2012a). On the one hand, it is nothing new, while the Chinese act like now-developed countries did during the Industrial Revolution and later.

Their government's aim is to save the means (or any resources in general) spent on research and development by copying the essential information regarding specific applications. What arouses its interest are technologies helpful in obtaining technological advantage but not only this. Cases of theft are also common in agriculture (new seeds and grains), advances in paint, science or other areas (*The Economist*, 2010 and 2010a). On the other hand, the new phenomenon is that China has adopted its military cyber espionage strategies for business purposes and they are being used extensively (Rogin, 2010).

4. CONCLUSION

Chinese innovation policy after 1978 has been led by strict objectives in the minds of the country's rulers. Some cultural aspects in the formulation and implementation of this policy can be observed. The development and pursuit of science and technology in China has not been only a matter of money and policy. Although state capitalism works well to a degree, some limitations or disadvantages are also visible. A distinctive characteristic of the Chinese economic system up until the present has been the copying and adapting of other people's ideas. Fong (2011) states that Chinese companies are masters of second-generation production and process innovation. There are problems of separation of innovation and the economy while companies lack sustained interest in involving national educational institutions in research and development (Cao, Simon, & Suttmeier, 2009). It seems that indigenous cultural aspects indeed spur as well as stunt the Chinese system of innovation. A very crucial premise of innovation is to allow people to engage in different ways of thinking. Many Chinese scientists have relative freedom of speech and thought. However, within China there is no real autonomy of thought, nor is there free access to the

global information flow. When it comes to any dissent, scientific or political, they are not tolerated (Ibidem).

It has been attempted in this paper to underscore other-than-economic foundations of innovation development in one of the fastest developing countries in the world. The number of Chinese patents has been increasing substantially every year. China can justifiably claim to have a distinctive and successful, albeit non-liberal, model of economic development. In the opinion of the author the factors for Chinese success, are in large measure, cultural in origin. A question may arise about the relative hierarchy of the factors briefly reviewed in this article. Regardless of the degree of importance of the aforementioned cultural factors, however, it is the total impact of these very Chinese elements that contribute to Chinese success. Beyond the rubric of money or political will, the Chinese cultural environment appears to provide for a smoother implementation of economic policy guidelines.

Innovation requires some risk taking, which in China means going beyond the borders of Chinese culture, a cultural legacy that rewards obedience and harmony in the society. New concepts may make people feel uneasy. One solution to this problem could be to give more space for experimentation and allow investors to risk money on some ideas and bear all the consequences. However, more solid evidence is required in further studies to support this proposition. The position of the government in Beijing will surely evolve in order to give its citizens more freedom in order to enhance the state's innovation capacity.

REFERENCES:

Bao, Yukun; Zhang, Jinlong; & Li, Xinnan (2002, September). Evaluating government-sponsored science and technology projects in China. *Evaluation Journal of Australasia*, Vol. 2, No. 1, 16-19.

Biao, Xiang (2008). A Ritual Economy of 'Talent': China and Overseas Chinese Professionals (*Working Paper No. 60*). Oxford: Centre on Migration, Policy and Society, Oxford University.

Bond, Michael H.; & Hwang, Kwang-Kuo (1986). The Social Psychology of Chinese People. In: Michael H. Bond (Ed.), *The Psychology of the Chinese People*. Hong Kong: The Chinese University Press, 213-266.

Cao, Cong; Simon, Denis F.; & Suttmeier, Richard P. (2009, August). Commentary. China's innovation challenge. *Innovation: Management, Policy & Practice*, Vol. 11, No. 2, 253-259.

Chen, Homin; & Chen, Tain Jy (1998, July). Network Linkages and Location Choice in Foreign Direct Investment. *Journal of International Business Studies*, Vol. 29, No. 3, 445-468.

Chen, Zhaoying (2003). *The continuing evolution of China's S&T program*. http://jiju.gmu.edu/departments/law/6.1_ Continuing_Evolution_of_Chinas_S&T_ Program.pdf [14.12.2011].

Chinese Culture Connection (1987). Chinese values and the search for culture-free dimensions of culture. *Journal of Cross-Cultural Psychology*, Vol. 18, No. 2, 143-164.

Cho, Dong-Sung; Kim, Dong-Jae; & Rhee, Dong-Kee (1998, July-August). Latecomer Strategies: Evidence from the Semiconductor Industry in Japan and Korea. *Organization Science*, Vol. 9, No. 4, 489-505.

Fong, April. (2011, August 24-27). Next generation. *Enterprise China*.

Freeman, Christopher (1987). *Technology Policy and Economic Performance: Lessons from Japan*. London: Pinter.

Goffman, Erving. (1955, August). On Face-work: An Analysis of Ritual Elements of Social Interaction, *Psychiatry. Journal for the Study of Interpersonal Processes*, Vol. 18, No. 3, 213-231.

Golder, Peter N.; & Tellis, Gerard J. (1993, May). Pioneer Advantage: Marketing Logic or Marketing Legend? *Journal of Marketing Research*, Vol. 30, No. 2, 158-170.

Ho, David Yau-fai (1976, January). On the Concept of Face. *American Journal of Sociology*, Vol. 81, No. 4, 867-884.

Hofstede, Geert; Hofstede, Gert J. (2007). *Kultury i organizacje. Zaprogramowanie umysłu* [Culture and organizations. Programming the mind]. Warszawa:PWE.

Hsu, Francis L. K. (1981). *American and Chinese: Passage to differences*. Honolulu: University of Hawaii Press.

Hsu, Madeline Y. (2000, May). Migration and Native Place: Qiaokan and the Imagined Community of Taishan County, Guangdong, 1893-1993. *The Journal of Asian Studies*, Vol. 59, No. 2, 307-331.

Hu, Albert Guangzhou; & Jefferson, Gary H. (2009, September). A great wall of patents: What is behind China's recent patent explosion? *Journal of Development Economics*, Vol. 90, No. 1, 57-68.

Huang, Can; Amorim, Celeste; Spinoglio, Mark; Gouveia, Borges; & Medina, Augusto. (2004, September). Organization, programme and structure: an analysis of the Chinese innovation policy framework. *Research & Development Management*, Vol. 34, No. 4, 367-387.

Huang, Shuanfan (1987). Two studies of prototype semantics: *xiao* 'filial piety' and *mei mianzi* 'loss of face'. *Journal of Chinese Linguistics*, Vol. 15, No. 1, 55-89.

Johanson, Jan; & Vahle, Jan-E. (1992). Management of Foreign Market Entry. *Scandinavian International Business Review*, Vol. 1, No. 3, 9-27.

Kash, Don E. (2010, July 16-23). Technological innovation and culture: research needed for China and other countries. *Journal of Science and Technology Policy in China*, Vol. 1, No. 2, 100-115.

Kim, Linsu; & Lim, Yooncheol (1988, December). Environment, generic strategies, and performance in a rapidly developing country: A taxonomic approach. *The Academy of Management Journal*, Vol. 31, No. 4, 802-827.

Kinglun, Ngok; Cheng, Joseph Y. S.; & Cheng, Philip Y. K. (2004, March). China's Overseas Policy in the Globalization Era: Challenges and Responses. *The Journal of Comparative Asian Development*, Vol. 3, Issue 1, 157-182.

KPMG (Klynveld, Peat, Main, & Goerdeler) (2011). *China's 12th Five-Year Plan: Overview*, http://www.kpmg.com/cn/en/ issuesandinsights/ articlespublications/publicationseries/5-years-plan/ pages/default.aspx [04.09.2012];

Levine, Steve (2010, November). The Great Battery Race. *Foreign Policy*, No. 182.

Liu, Xielin; & White, Steven (2001). Comparing innovation systems: a framework and application to China's transitional context. *Research Policy*, Vol. 30, Issue 7, 1091-1114.

Lu, Yongxiang (2001, October). Construction of the Chinese national S&T innovation system, and the latest advancements in science and technology in China. *Current Science*, Vol. 81, No. 8, 930-935.

Lundvall, Bengt-Å. (Ed.). (1992). *National Systems of Innovation: Toward a Theory of Innovation and Interactive Learning*. London: Pinter Publishers Ltd.

Micklethwait, John; & Wooldridge Adrian (2005). *The Company: A Short History of a Revolutionary Idea*, Modern Library Chronicles, Modern Library.

Nelson, R. R., Rosenberg, N. (1993). Technical Innovation and National Systems. In: Richard R. Nelson (Ed.), *National Innovation Systems: A Comparative Analysis*, Oxford: Oxford University Press.

Office of the National Counterintelligence Executive (2011). *Foreign Spies Stealing US Economic Secrets in Cyberspace. Report to Congress on Foreign Economic Collection and Industrial Espionage 2009-2011*. www.ncsc.gov/publications/reports/fecie_all/Foreign_ Economic_Collection_2011.pdf [03.03.2016].

Organization for Economic Co-operation and Development (OECD) (2008), *OECD Reviews of Innovation Policy: China*. Paris: OECD.

Rogin, Josh (2010). China's expansion of economic espionage boils over. *Foreign Policy*, January 14.

Schnaars, Steven. P. (1994). *Managing Imitation Strategies: How Later Entrants Seize Markets from Pioneers*. New York: The Free Press.

Shankar, Venkatesh; Carpenter, Gregory S.; & Krishnamurthi, Lakshman. (1998, February). Late mover advantage: How innovative late entrants outsell pioneers. *Journal of Marketing Research*, Vol. 35, No. 1, 54-70.

Shao, Ken (2011, January 6). Innovative spirit rooted in Chinese cultural DNA. *Global Times*. http://www.globaltimes.cn http://china.org.cn/ opinion/2011-01/06/content_21683899.htm [08.12.2012].

Shenkar, Oded (2010). *Copycats: How Smart Companies Use Imitation to Gain a Strategic Edge.* Boston: Harvard Business School Publishing.

Smart, Alan; & Hsu, Jinn-Yuh (2004, Summer). The Chinese Diaspora, Foreign Investment and Economic Development in China. *The Review of International Affairs*, Vol. 3, No. 4, 544-566.

Sun, Yifei (2002). China's National Innovation System in Transition. *Eurasia Geography and Economics*, Vol. 43, No. 6, 476-492.

Tan, Xiaomei (2010, June). Clean technology R&D and innovation in emerging countries – Experience from China. *Energy Policy*, Vol. 38, Issue 6, 2916-2926.

Tang, Mingfeng; & Hussler, Caroline (2011, February-May). Betting on indigenous innovation or relying on FDI: The Chinese strategy for catching-up. *Technology in Society*, Vol. 33, Issues 1-2, 23-35.

The Economist (2010, July 22). Replicating success.

The Economist (2010a, October 7). Scientists behaving badly.

The Economist (2011, November 19). The magic of diasporas.

The Economist (2012, March 10). From brawn to brain.

The Economist (2012a, August 4). Who's afraid of Huawei?

Tung, Rosalie L. (2008, October). Brain circulation, diaspora, and international competitiveness. *European Management Journal*, Vol. 26, Issue 5, 298-304.

Van Someren, Taco C. R. (2013). Chinese Culture, Strategy, and Innovation. In: Taco C. R. van Someren, Shuhua van Someren-Wang, (Eds.), *Innovative China: Innovation Race Between East and West*, Berlin: Springer.

Yueh, Linda Y. (2009, June). Patent laws and innovation in China. *International Review of Law and Economics*, Vol. 29, Issue 2, 304-313.

Zhao, Hongxin; & Hsu, Chin-Chin (2007, December). Local Ties and Foreign Market Entry: An Empirical Inquiry. *Management International Review*, Vol. 47, No. 6, 815-830.

Zweig, David; Fung, Chung Siu; & Han, Donglin (2008, May). Redefining the Brain Drain: China's Diaspora Option. *Science Technology & Society*, Vol. 13, No. 1, 1-33.