

China's Economic Growth from a Triple Helix Perspective

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The Triple Helix concept is controversial in China, with considerable research questioning its success. Since the opening-up policy in 1978, China has invested in research and development in its public institutions and universities for technological discoveries and industrial innovations. This investment began to deliver a financial return in the 1990s (Liang, Chen, Wu, & Yuan, 2012). Soon after, China implemented collaboration between universities and the industrial sector (Guan, Yam, & Mok, 2005). China's encouragement of these partnerships between research institutes and industries is significant. This collaboration is essential in building innovative systems and structures.

INTRODUCTION

Economic forecasts predict that China will become an economic superpower rivaling the United States by the year 2020 (Chow, 2002). China maintains a continuous and fast economic growth since the Cultural Revolution in 1950 due to the shift in its economic style from a central planning model into a more regional and local planning model. Power remains in the hands of the State, but it is less controlled allowing initiatives from different institutions and industries without the State's protection (Goodhart & Xu, 1996). The main focus of the Party shifted from States' control into the importance of knowledge and firms' individual competitiveness in creating economic growth. The belief was that universities should create a direct link with industries, where academia and the industries would integrate to maximize capital through knowledge and technology (Eun, Lee, & Wu, 2006). China's strategy since 1990 has shown to be successful, and has been putting the country in a continuous rise (Goodhart & Xu, 1996). The opening-up policy adopted in 1978, allowed financial return from technological investments, and was followed by the implementation of the Triple Helix concept defined as, collaboration between government, university, and industry to achieve economic growth and social transformation (Eun et al., 2006; Leydesdorff, 2000).

The Triple Helix concept is a controversial topic in China, and there is ample research questioning its success. It is a complicated concept that has only been implemented in developed countries, and its success is doubtful in developing countries (Eun et al., 2006). In addition to that, there is a lack of

evidence in the literature that supports the failure or success of this concept in a country like China (Liu & Jiang, 2001). This paper discusses the success or failure of Triple Helix in China. It further elaborates on how China was able to overcome controversies, and prove that developing countries can achieve economic growth and social transformation through this approach.

TRIPLE HELIX IN CHINA: A CONTROVERSY

The main idea behind Triple Helix is the collaboration between industry, university, and government (Leydesdorff, 2000). It is a concept that was first applied in developed countries that are pioneers in supporting the emergence of technology-oriented industries where the nature of knowledge is different from traditional industries. According to some scholars (Eun et al., 2006), this concept has a limited applicability in developing countries because the main industries are not the newly emerging nor technology oriented. Other researchers, who are less radical about the failure of Triple Helix in developing countries, argue that when it comes to the case of China, this approach should be watched carefully due to the extensive cooperation and collaboration the government is expected to have with higher education institutions and industries. Extensive government involvement in the case of China eventually leads to extensive collaboration among the three players. However, this cooperation is still a challenge for China due to the control of power by one ruling Party (Jun & Gui-sheng, 2006). For this reason, the State is implementing specific strategies of action between government, industry and universities, which have shown to be successful in permitting less control from the government and allowing more initiatives from research institutes and industries; however, this collaboration has also shown to be dependent on the region (Liu & Jiang, 2001; Wang, Wu, Pan, Ma, & Rousseau, 2005). Covering a vast area, different regions have different patterns of collaboration on the economic, technological and scientific levels (Wang et al, 2005), which may not necessarily be easy to recognized from a western perspective. In addition, the fact that many university professors are also practitioners in their respective fields has fueled the effective and efficient collaborative linkages. This adds value because it helps in connecting ideas in industries with research developed in institutions, facilitating innovation and new discoveries (Wang & Lu, 2007).

Implementation

China has invested research and development resources in its public institutions and universities for technological discoveries and industrial innovations since the opening-up policy adopted in 1978, but it was not until the economical transition of 1990's that it started getting fiscal return out of these innovations (Liang, Chen, Wu, & Yuan, 2012). After 1990, China started implementing collaboration between universities and the industrial sector in order to get financial return from these resources (Guan, Yam, & Mok, 2005). Guan et al. found that the more industry and university collaborate, more innovation is accomplished; however, when it comes to financial return, net profit, and stimulating innovation, the collaboration was not as efficient. From their point of view, this is due to the lack of confidence between the parties involved, and lack of appropriate economic initiatives and strategic decision making to achieve maximum profit from technological innovations. Another study found that in addition to good collaboration between university and industry, which already has shown to be strong, the achievement of innovative activities primarily falls on the enterprises; especially foreign and private owned enterprises because they are supposed to have more capital to invest in technology and thus innovation (Lei, Zhao, Zhang, Chen, Huang, & Zhao, 2012).

On the other hand Liu and Jiang (2001) suggest that in order to increase the effectiveness of technology transfers from universities to industries with the support of the government, there should be strategic implications for the three players. In their research, they designed a framework of specific determinants that can be considered behind the success of Triple Helix in China. The determinants included the economic system, government policies and initiatives, and constraints and impetus. Liu and Jiang's conclusion from the study is that China already became a major source of new technology, even

though research has been poor in investigating how China is getting there despite all controversies and government conditions.

Furthermore, a study by Balzer and Askonas (2016) compared China and Russia when it comes to their success of using the Triple Helix model for economic development. According the authors, China has been successful in facilitating a collaborative environment between academia, business, and government, because the role of the State has encouraged and provided incentives to develop. China has been able to spend on research and development using a diverse pool of funds (Balzer & Askonas, 2016) and provides incentives to be globally competitive. These incentives, along with an open mind-set to collaborate internationally, have been beneficial in local economies. This bottom-up approach has worked effectively, compared to a top to bottom approach that other developing countries use.

Triple Helix and Economic Growth in China

The success of China in technology transfer is in part due to the rise of university-based research. The institutional changes within universities in addition to policy changes in the government have given universities more autonomy and competency on the national and global levels that have permitted more business engagement and technological innovations that allow commercializing academic research (Wang & Lu, 2007). As a consequence there is an increased number of published articles that are co-authored with enterprise and university scientists, with increased sharing, citations and downloads locally, nationally, and internationally (Liang et al., 2012).

Triple Helix represents a way for China to integrate technology and innovative financial structures and re-emerge as an important power in the world economy. It still faces challenges in achieving knowledge based innovation in firms, academics, government agencies and policy makers (Lu & Etzkowitz, 2008), but it has shown to successfully implement the Triple Helix framework in its three dimensions: control of norms through government, wealth generation through industry, and innovative production through universities and public research institutions. All this is possible because of the willingness of the three actors to face challenges, undergo institutional interactions, and transformational processes to create a knowledge economy (Lu, 2008). An example of this is the launch of a journal in 2009 named *Knowledge Based Innovation in China*, which addresses the challenges facing China when transitioning to a market driven economy. This journal represents a platform for new ideas and research on knowledge-based- innovation, and a way for all parties to take part in achieving economic growth (Lu & Etzkowitz, 2008). More recently, China has signed an agreement with the United Kingdom to put 53 million pounds jointly to strengthen the research and development on projects with urgencies, such as climate change, energy, and human diseases (Shaw, 2014). The Guardian further reports that “high quality science and innovation and their application are essential for identifying long-term solutions” and that “by working together, the UK and China's ability to produce higher quality research and create opportunities to develop and commercialize new innovative technologies are greatly increased” (Shaw, 2014, p.1).

There has been structural adjustment and educational restructuring in China that has made the implementation of the Triple Helix possible for economic growth, especially when it comes to universities and the changes in governance policies that allowed universities to become more competitive in the international market. These transformations in the higher education model and government policies puts the Chinese government as more an activist state of innovation and growth rather than diminishing its capacity as the controller of the power in the country (Mok, 2005).

DISCUSSION AND CONCLUSION

China has sustained rapid economic growth over the last decades as the most important manufacturer of goods and services for global markets, largely due to low wage and employment intensive manufacturing as its main enterprise; however, competition by emerging nation states across Asia affect this status. Therefore, China is promoting transformative innovation through its universities as the dynamic power for changes in global political and economic areas. As the Triple Helix Model

demonstrates, “This is called the third mission of university and the core of the mission is capitalization of knowledge” (Etzkowitz, 2008, p. 27). Even though formal structural collaborative networks among the university, industry and government are not officially established, there is a significant push towards a knowledge-based economy, with the universities at the center.

The application of the Triple Helix model as a state-led model, is the representation of the persistent interaction among the three spheres in different development stages and under different conditions. With significant involvement from the government, China is demonstrating a successful model of collaboration, which is rather confusing to the western world. Within Triple Helix the roles and responsibilities of the three players should be equal. However, China uses such western models with a strong understanding of the context with its weaving of the political, social, educational, and cultural dimensions of the nation. Perhaps, in the Chinese context, it has proved to be distinct as a state led model rather than a statist model in the past or Triple Helix in the supreme model. In fact, the strategic manipulation of the government is largely considered as a key factor and an important characteristic to achieve the great success in Chinese regional innovation systems. It is the integration of Triple Helix with different cultural and political traditions that make China successful.

With the innovative networks rapidly unfolding, more developed countries are turning to China to understand how in a state-led economy, these networks are proving to be effective in transforming society. Higher education in China is preparing the next group of world leaders with specific emphasis in innovation with the all three spheres collaborating in a quick fashion. Though public awareness in socialist philosophy is absent, China’s political leaders recognize that sustained economic growth is essential to preserving their own power; their focus on development is therefore intense.

Based on the transformative rise of nations, such as Brazil, Russia, India and China (the BRIC nations), China is most likely to arise as a global high-tech industrial superpower and abrupt contender of the global political and economic arena. With the increased emphasis on growing its domestic high-tech workforce, China is destined to be the leading nation in high-tech output. This is not a coincidence: “In China, 31 percent of its undergraduates leave with degrees in engineering; in the United States, the figure is just 5 percent” (Foreign Policy, February 6, 2014). Developed nations are having a difficult time understanding and accepting the efficient Chinese way of economic development and social transformation. The Chinese Communist Party’s encouragement of research and development activities with research institutes and industries is significant. This collaboration is essential in building innovative systems and structures, in which the Chinese government is investing the resources and easing control over such initiatives.

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