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China's Industrialization: Overview — Implications for Africa's Industrialization

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Executive summary

Within a span of some six decades, especially the three decades after reform and opening up, China has been basically transformed from a traditional agricultural country to a modern industrialized state. The share of the population employed in the secondary industry to the total population increased from 7.4 percent to 30.3 percent from 1952-2012. The share of manufactured production value to total GDP in 2013 reached 43.89%, and the production value share was 19.8% to total global manufacture production value in 2012. China's industrialization process should not just be examined from the time frame of the past six or three decades however, China's development is a continuation of Chinese civilization. One also needs to note that China's industrialization not only follows a universal path, but also has its own particularities in historical, political, cultural and social conditions. Despite this great achievement, China's industrialization process has also resulted in huge problems, including high energy consumption from extensive industrialization and environmental degradation such as worsening water quality and air pollution as well as land contamination and social inequality.

This report does not intend to describe and analyze China's industrialization process nor make comparisons between China and Africa systematically. Instead, it summarizes and introduces some of the factors that helped China industrialize its economy and which might also be important or relevant to African (we refer to Sub-Saharan Africa) conditions. It is intended to share those experiences with African countries to help better design their industrialization policies.

China's industrialization can be roughly divided into three stages. The first stage spans from 1953 to 1978 when China prioritized heavy industry through the centrally planned economy, with the intention of accomplishing a great leap forward and catching up with the developed world. The second stage, the period of 1979 to 1999, witnessed a more balanced development to promote light industries. The roles of the market and private businesses in promoting industrialization were emphasized and encouraged. The third stage starts from 2000 when China saw the reappearance of heavy industrialization and more knowledge intensive sectors. The process has reflected virtual interaction among the state, market and society.

China's rapid transformation from agrarian society to an industrialized one has taken place under its unique historical, political and social economic conditions. Its development oriented nationalist political agenda from the 1950s and the 1960s helped

China establish its national economy. De-developmentalized ideological and political agenda interrupted China's industrialization from the 1960s to 1970s. After the end of the 1970s, the Chinese Communist Party (CPC) shifted its political agenda to develop the country's economy to strength its legitimacy. Given its ruling position with a coalition of other political parties allowed by the constitution, the CPC has effectively utilized its political advantages to lead the consensus building for development through a consultative process. This has enabled various policy reforms to take place, for instance, the Rural Household Responsibility System, the township and village enterprises (TVEs) and the Special Economic Zones (SEZs).

Rapid agricultural growth spurred by these rural reforms provided surpluses, both in capital and labor for industrialization. Labor mobility and small and medium rural enterprises were immediately encouraged along with agricultural growth. Before 1984, the financial input to agriculture was more than that received from agriculture while, after 1985, the time when rural industries began to take off, more capital than received was taken out from agriculture. From 1985-1994, more than 432 billion RMB (approximately 70 billion \$US) had been taken from agriculture through agricultural taxes and fees. At the same time, around 70 million rural laborers out of a total of 285 million in 1995 moved to non-agricultural jobs. China's food crop centered agricultural growth pattern also helped to keep food prices low, thus keeping wages very low for a long time, which ultimately led China to utilize its comparative advantages to develop a labor-intensive manufacturing sector..

Different from previous urban based and heavy industry based strategy, China adopted the policy of promoting light and labor intensive industries in rural areas. From 1978-2006, the contribution from such rural enterprises to total industrial growth reached from 9.9% to 43.2%, and rural people employed in local state enterprises increased from 28, 27 million to 146.80 million. This industrialization path changed a distorted industrial structure from heavy capital intensive to a more balanced labor intensive structure, on the one hand, and on the other, it also avoided over-concentration of industries and population in cities. This process has been greatly promoted through steady privatization and encouraging millions of private entrepreneurs to lead local businesses.

China did not just stay on low value added sectors, but has been strategically upgrading its industrial structure by encouraging technology transfer accompanied by increasing FDI . At the same time, China has developed its long run strategy to promote science and technology development through strengthening its R&D capacity and leveling up its education system to catch up to the latest technological developments.

China's industrialization success carries many experiences, such as how to grasp the opportunities provided by globalization, how to develop infrastructure to eliminate the

bottleneck for industrialization, how to develop the SEZs to absorb foreign capital and technology etc. It has also provided negative lessons, for instance environmental damage and social inequality. However, we argue that China's industrialization does provide a reference for African countries (we refer to Sub-Saharan Africa) in their industrialization process.

Certainly Africa cannot follow China's industrialization path, but there is a lot that Africa can learn from the Chinese industrialization experience. The essence of China's industrialization success has been largely driven by the state-led industry policy, i.e. to use the role of the state to eliminate barriers at each stage of development so that the country's comparative advantage can be utilized. In this regard, African countries face the challenge of how to reshape the role of the state to better use the political advantages given that most African countries' have checks and balances based on competing politics to avoid short run, low political equilibrium. To have a consensus based development priority is essential to concentrate resources to let industrialization take place. For most African countries, to develop their agriculture is far the most important condition for industrialization because without a well-developed agricultural sector, industrialization cannot be sustainable. This does not suggest any development sequence, but rather to suggest that for agriculture-based economies, a broad-based development strategy that can link agriculture, industries as well as the services sector for labor employment and capital flow is critical. African agriculture has grown about 4-5% over the last decade, but this growth largely derives from area expansion, rather productivity improvement. Given Africa's high population growth, Africa needs to achieve higher agricultural growth rates to produce meaningful margins. Meanwhile, global industrialization transformation will provide a great opportunity for African countries to use their comparative advantages. This can be seen from the case of increasing cost of labor in the emerging countries, particularly China. It suggests that Africa's industrialization strategy should not only look at the conditions inside the continent, but also needs to see how their strategies can reflect how to engage with other emerging players.

Overall, to strength the role of the states and to promote agricultural development in order to lay down the foundation for taking a great opportunity to jump-start industrialization will be a challenge for African countries to move towards inclusive development.

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0. Introduction

Industrialization can be defined in three ways: first, as the production of all material goods not grown directly on the land, or second, as the economic sector comprising mining, manufacturing and energy, and third as a particular way of organizing production and assumes there is a constant process of technical and social change which continually increases society's capacity to produce a wide range of goods (Hewitt et al. 1992: p.3-6). "If you want to develop you must industrialize" (Kitching 1982: p.6) was commonplace amongst theorists and practitioners during the 1950 and 1960s. This view had been challenged on the grounds that industrialization and growth were not the same as development because they did not meet the basic needs of the population (Kiely 1998:p.7). The argument can be justified within global power structure and failed industrialization strategy that many countries adopted. China's industrialization success suggests that industrialization participated and benefited by the population can have positive impact on development.

Within a span of some six decades, especially the three decades after reform and opening up, China has been basically transformed from a traditional agricultural country to a modern industrialized state (Liu 1997; Dong 2009). China's industrialization process can be divided into three stages: during the first stage from 1953-1978, China adopted a planned economy and implemented an industrialization strategy that aimed to accomplish a great leap forward through prioritizing capital-intensive heavy industry (Lin 2004, p.29); in the second stage from 1979-1999, a market-oriented and balanced industrialization development strategy was implemented to address problems related to insufficient supply of consumption products and a heavily imbalanced economic structure (Ren 2010); in the third stage, from 2000 to the present, China once again entered into a new industrialization stage (Ye, 2014).

As a major driver of the overall economic growth, industrialization made great contributions to poverty reduction in China by absorbing the agricultural surplus labor force. The population employed in secondary industry increased from 15.31 million in 1952 to 232.41 million in 2012, with a net increase of 217.1 million within 60 years. The share of the population employed in the secondary industry to the total population also increased from 7.4 percent to 30.3 percent in the same period (National Bureau of Statistics, 2013). The decrease in the agricultural labor force helped to improve productivity of those who stayed in the agriculture sector and increased their income accordingly. The agricultural labor force who entered into industry also gained relatively higher income due to the difference of comparative advantages between the

(two industries? and agriculture. These two aspects contributed significantly to China's rural poverty reduction. China's industrialization process also promoted urbanization and the development of the tertiary sector, which further employed agricultural surplus labor and promoted poverty reduction.

China has accumulated a rich experience in the process of industrialization over the past six decades, especially the recent three decades. Some scholars consider "government in the driver's seat" as the key reason for the rapid industrialization (Shi 2011), others argue that China followed a development strategy that makes full use of its comparative advantage in the transformation process from an agricultural to an industrial economy (Lin 2004). Studies also showed that high technology and technical innovation played an important role in China's industrial development (Jin 2003). The industrialization of China's rural areas, especially the township and village enterprises (TVEs) was also regarded as a key factor in accelerating the industrialization process (Zhang 1999, Liu 1993). On the other hand, however, China's industrialization process also resulted in huge problems, including high energy consumption from extensive industrialization (Byrne et al. 1996) and environmental degradation such as worsening water quality and air pollution (Ebenstein 2012; Wang et al. 2008) as well as land contamination. Some scholars have also pointed out that rural industrialization had led to agricultural land loss (GAR-ON YEH & Li 1999), and exacerbated social inequality (Rozelle 1994). Nevertheless, China's experience of rapid industrialization still has attracted a lot of interest from the international development community and other developing countries. Prioritizing infrastructure development, attracting foreign investment, establishing special economic zones, and "crossing the river by touching the stones" have been frequently for describing China's development features and often been referred to as an alternative development approach. For many developing countries, China has become an example of rapid industrialization and social transformation.

It is important to note that China's industrialization process should not just be examined from the time frame of the past six or three decades. First, China's development is a continuation of Chinese civilization. Cultural relations reflected by the unification of multiple civilizations in China developed from the long process of Chinese civil history and was closely related to the special nation building endeavor that China has undertaken in modern times. China's development also cannot be separated from the world's history (Fei 2000). Second, China's development and industrialization not only follows a universal path, but also has its own particularities in historical, political, cultural and social conditions. China's industrialization process differs from that of the Western countries and possesses its own tradition and features (Qiong & Zhihong 2005) .

Africa (hereafter refers to Sub-Saharan Africa) has rich natural resources, but its

industrialization process has been slow. Up until now, Africa's exports still largely concentrate on agricultural and mineral raw materials as well as other primary products. The global share of industrial output value from Sub-Saharan Africa only accounts for about 0.7 percent or 0.5 percent, excluding that of South Africa. The contribution of manufacturing industry to gross domestic product (GDP) is less than 15 percent in most African states and even less than 5 percent in some countries¹. From 1990 to 2002, the global share of industrial output of Sub-Saharan Africa declined from 0.79 percent to 0.74 percent, when South Africa is excluded². African countries adopted several models of industrialization in different periods, including Import Substitution Industrialization (ISI), Integrated Rural Development (IRD) and Structural Adjustment Programs (SAPs) (Harvey 1996). None of them had led Africa's industrialization successful.

There are many reasons for the slow growth of African industries. The first one is historical. Starting from the early 1960s when most African countries gained their independence, they were not been able to establish their own complete industrial system for lack of necessary capital and technology, despite their strenuous efforts to industrialize. After decolonization, most African countries continued to implement the previous economic policy focusing on extracting raw materials and export-oriented agricultural production. As a result, economic structures in African countries became unbalanced and most export products were resource-concentrated and had little added value. The colonial economic structure continuously affected economic and political performance of African countries and further impeded their efforts to accumulate domestic capital and seek their independent development trajectories (Mumo Nzau, 2010). Secondly, policy failures also seriously slowed down Africa's industrialization process. African countries at independence were yearning for rapid development of their national economy to catch up with the developed world. During that period, the modernization theory, which was popular during the time and emphasized a change of deformed economic structure left over from the colonial period through import substitution industrialization, was commonly adopted by many African countries. In the two decades following, African countries established factories and the share of industry in GDP once rapidly increased. However, the optimistic growth rate did not remain longer. Factories often stopped running or ran at low capacity due to shortages of capital, limited domestic markets and lack of management capacity. As a result, many countries suffered many set-backs in this period and none of them experienced successful industrialization. By the 1980s, African countries had to accept the structural adjustment programs proposed by the World Bank and the International Monetary Fund (IMF) and adopted the neo-liberal policies that followed. However, due to various reasons and lack of consideration of Africa's specific context, including their

¹"Africa's Industrialization Expected to Develop Rapidly", People's Daily, August, 5, 2014, available at http://wap.ce.cn/sy/gj/201408/05/t20140805_3294455.html

² <http://www.mofcom.gov.cn/article/i/jyjl/k/201311/20131100401162.shtml>

institutional weaknesses and cultural particularities. The results were also unsatisfactory (Heidhues 2011). Social diversity, corruption, lack of labor discipline, lack of the proper capacity for planning and management, limited foreign financial flows, as well as low levels of saving and investment all contributed to the failure (Ake 2001, p.1).

Can Africa follow China's industrialization path? The simple answer is "No", but there is a lot that Sub-Sahara Africa can learn from the Chinese industrialization experience³. This report does not intend to describe and analyze China's industrialization process or make comparisons between China and Africa. Instead, it intends to summarize and introduce some basic factors that helped China industrialize its economy and share those experiences with African countries to better design their industrialization policy. We do not consider that African countries can copy China's industrialization model or that of any other countries. However, we do think China's experiences and lessons can provide useful references for African countries with the opportunities Africa now has under a new global context. It is Furthermore with current political and social-economic conditions in Africa; we argue that many experiences from China's industrialization such as the role of the state, linkages between industry and agriculture, creation of an industrialization-enabling environment and nurturing of local entrepreneurs, and infrastructure development etc are relevant to African conditions. However, we only address some of these issues that we feel basic as well as more practical to Africa conditions. This assumption carries our bias and ignorance when we tried to relate to Africa situations. The report intended to introduce the perspectives of Chinese scholars by citing more their work; however, this does not necessarily imply any rejection to the arguments of scholars from abroad.

The report consists of six parts. The first part introduces historical process, development status and existing problems regarding China's industrialization. The second part discusses institutional aspects focusing on unique developmental politics in China. The third part introduces the role of agriculture as well private sectors in industrialization. The fourth part examines the important roles of rural industries played in China's industrialization process. The fifth part discusses the major contributions of technical innovation and human resources. The last part discusses what lessons Africa might draw from China's industrialization.

References

- Ake C. (2001), *Democracy and Development in Africa*, Brookings Institution Press.
Bei, J (2003), "The Position and Role of High-tech in China's Industrial Development", *China Industrial Economy*, vol. 12.

³ http://www.huffingtonpost.com/marcelo-giugale/can-africa-follow-chinas_b_4033251.html

- Byrne J, Shen B, Li X (1996), "The Challenge of Sustainability: Balancing China's Energy, Economic and Environmental Goals". *Energy Policy*, vol. 24, no. 5, pp. 455-462.
- Dong, Zhi (2009), "Pathways and Achievements of New China's Industrialization", *Research of History of the Chinese Communist Party*, vol. 9, no.3.
- Ebenstein A. (2012), "The Consequences of Industrialization: Evidence from Water Pollution and Digestive Cancers in China", *Review of Economics and Statistics*, vo. 94, no.1, pp.186-201.
- Fei, X. (2000), "Social Change in China over the Past Century and 'Cultural Consciousness'—Speech at "Academic Workshop of International Anthropology on Human Existence and Development in the 21st Century", *Academic Journal of Xiamen University (Philosophy and Social Sciences)*, vol.4, p.10.
- GAR-ON YEH A, Li X. (1999), "Economic Development and Agricultural Land Loss in the Pearl River Delta, China". *Habitat international*, vol.23, no. 3, pp. 373-390.
- Harvey C. (1996), *Constraints on the Success of Structural Adjustment Programmes in Africa*. Macmillan Press Ltd.,.
- Heidhues, F. & Obare, G. (2011), "Lessons from Structural Adjustment Programs and Their Effects in Africa". *Quarterly Journal of International Agriculture*, vo. 50, no.1.
- Hewitt, T., H. Johnson & D.Wield (eds) (1992), *Industrialization and Development*. Oxford: Oxford University Press
- Kiely, R. (1998), *Industrialization and development A comparative analysis*. New York: Routledge
- Kitching ,G. (1982), *Development and underdevelopment in historical perspective*. London: Mecheun
- Lin, Y. (2004), *Development Strategies and Economic Development*, Beijing University Press.
- Lin, Y. & Liu, M. (2004), "Economic Development Strategies and China's Industrialization", *Research on Economy*, vol. 7, pp.48-58.
- Liu, G., Mei, F (1993), "Township and Village Enterprises and Industrialization Road with Chinese Characteristics", *Theory Monthly*, vo.2, p.3
- Liu, W (1997), "Development Trends and Features of Social Transformation in Modern China", *Academic Journal of Central China Normal University*, vol.1, pp. 42-48.
- Mumo, N. (2010), "Africa's Industrialization Debate: A Critical Analysis". *The Journal of Language, Technology & Entrepreneurship in Africa*, vo.1, no.2.
- Qiong X, Zhihong W. (2005), "Historical Choice of New Road of China's Industrialization". *Journal of Zibo University*, vol. 1, no. 4.
- Ren, B (2010), "Six-Decade Industrialization Evolution of New China and its Modern Transformation", *Academic Journal of Shaanxi Normal University*, vol.1, pp.139-146.
- Rozelle S. (1994), "Rural Industrialization and Increasing Inequality: Emerging Patterns in China's Reforming Economy". *Journal of Comparative Economics*, vol.19, no.3. pp. 362-391.

- Shi, L., Yang, D (2011), "Government-led Industrialization: 'Chinese Model' of Economic Development", *Jiangsu Social Sciences*, vol.4, pp.33-40.
- Wang M, Webber M, Finlayson B, et al. (2008), "Rural Industries and Water Pollution in China". *Journal of Environmental Management*, vol.86, no.4, pp. 648-659.
- Ye, L., Yu, J. (2014), "Progress, New Situation and Successful Realization of China's Industrialization", *Academic Journal of Wuhan University (Philosophy and Social Science)*, vol. 2, pp.117-125.
- Zhang Z. (1999), "Rural industrialization in China: From Backyard Furnaces to Township and Village Enterprises". *East Asia*, vol. 17, no.3, pp.61-87.

1. China's Industrialization Process

China was completely an agrarian society before the 20th century, with 90 percent of its population living in the rural areas (King 2013). China started its industrialization process in the early 1900s. From 1912 to 1936, China's industries increased by 8 to 9 percent annually (Chang 1969). This process was interrupted by the long-term wars in the following years. China then undertook a special industrialization path in the years following the founding of the People's Republic of China in 1949. Different strategies were adopted at different stages since then, including prioritizing heavy industry, balancing development of heavy and light industries, and re-prioritizing heavy industry. Though China suffered from setbacks and multiple problems in this process, it basically fulfilled the transformation from an agricultural economy to an industrialization one.

1.1 Achievements of China's Industrialization

China's achievements in industrialization over the past six decades can be demonstrated in the following aspects. First, China has established a complete industrial system that is independent, large-scale and technology-concentrated. In 2010, China overtook the U.S. and became the world's top manufacturing nation. In 2012, China accounted for 19.8 percent of the world's manufacturing output. In effect, China has earned the reputation of being the "world's factory".

Second, sixty years of massive industrialization has brought China rapid economic growth. The Chinese economy has witnessed profound transition and growth since 1978 when China moved away from a centrally planned economy. The resulting growth has persisted for the last 35 years; China's GDP increased from 58.7 billion U.S. dollars in 1978 to 9.17 trillion U.S. dollars in 2013, an average annual growth rate of 10 percent, making China's economy the world's second-largest, just after that of the United States. China's GDP per capita also increased from less than 300 U.S. dollars before reform and opening up to 6,807 U.S. dollars in 2013 (World Bank)⁴. China's GDP is broadly based on three broad sectors or industries—primary industry (agriculture), secondary industry (construction and manufacturing) and tertiary industry (the service sector). As per the official 2013 data, secondary industry (manufacturing) accounted for 43.89 percent of the total GDP (National Bureau of Statistics of China, 2013). Overall, the manufacturing sector has made a great contribution to China's sustained economic growth. It has held its dominance and seen minimal change in its percentage composition in the overall GDP over the years (See Figure 2). The share of secondary industries as part of GDP in China is greater than in

⁴ <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD>

countries such as India, Japan, the U.S.A and Brazil⁵.

Figure 1.1: GDP Composition (Contribution to GDP of the Three Industries/Sectors

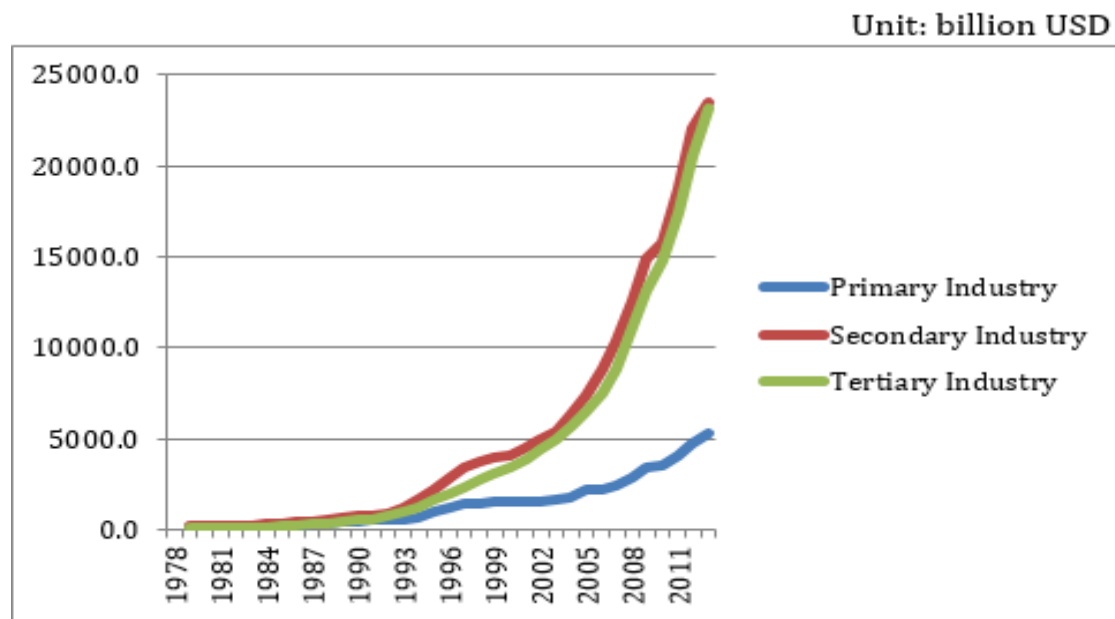
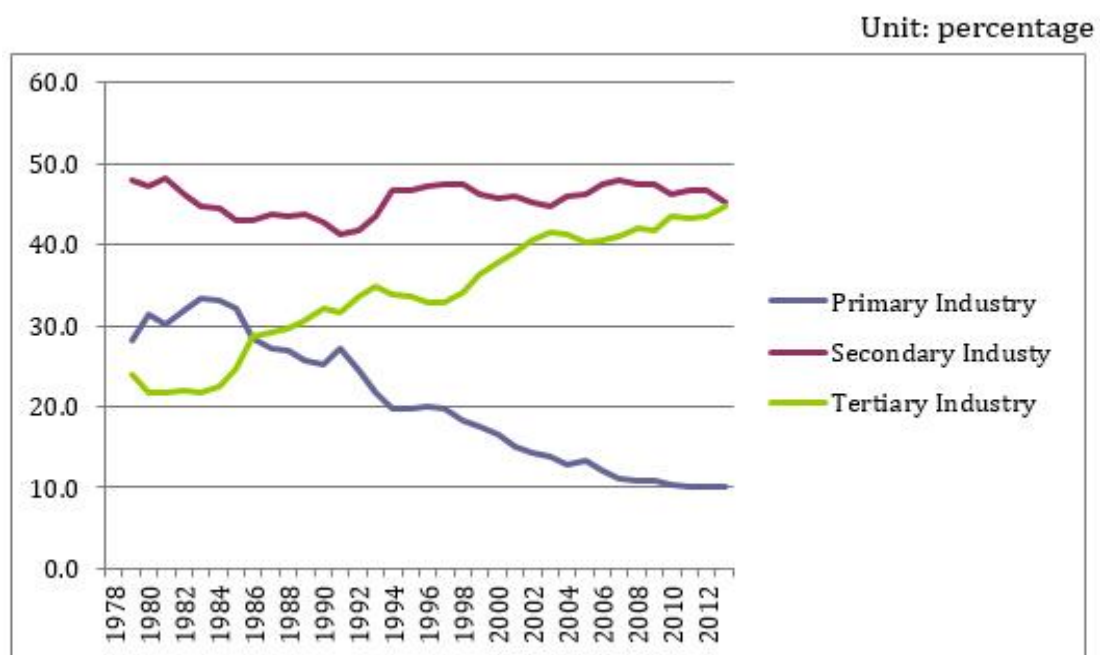


Figure 1.1: Share of the Three Sectors with Overall GDP



Data Source: 2013 National Bureau of Statistics of China

Third, China's industrialization created more employment opportunities for rural people to move out of agriculture. China's totally employed population grew from 400 million in 1978 to 7,600 million in 2012, with an average annual increase of 1.9

⁵ <http://www.investopedia.com/articles/investing/103114/chinas-gdp-examined?-service> sector-surge.asp

percent. The employed population in secondary industry reached 2,300 million, accounting for 30.3 percent of the total employed population (National Bureau of Statistics of China, 2013).

Last but not least, China's industrialization greatly contributes to global economic growth. As China increasingly integrates into the international economy, it has driven the economic development of other countries and regions in the world, as China's share of the world economic output increased from 1.8 percent in 1978 to 11.5 percent in 2012. China even became the largest contributor to the global economic increment in place of the U.S. after the global financial crisis, reaching more than 20 percent on average from 2008 to 2012 (National Bureau of Statistics 2013). The development of China has a strong positive overflow effect to other countries and regions.

1.2 Development Stages of China's Industrialization

China's industrialization can be roughly divided into three stages. The first stage spans from 1953 to 1978 when China prioritized heavy industry through the centrally planned economy, with the intention of accomplishing a great leap forward and catching up with the developed world (Lin 2004). This stage can be further divided into four periods. The first period corresponded to "the first five-year plan" (1953-1957) when China focused its efforts on the construction of 694 large and medium-sized industrial projects, including 156 supported by the Soviet Union (Wu 1999). Through these considerable efforts, China laid the primary foundations for industrialization to provide material and technological support to restore/build the national economy.

During the second period, from 1958 to 1960, China implemented a "great leap forward" industrialization strategy. The Chinese government mobilized massive amounts of investment funds and manpower to support industrial development, which emphasized heavy industry in general, and the iron and steel industry in particular. The hope was to industrialize by making use of the huge supply of cheap labor and avoid having to import heavy machinery. For various reasons, the years of the Great Leap Forward in fact saw economic decline and material shortages.

These policy failures promoted the government to re-think and adjust its policies from 1961 to 1965. During this period, China began to adopt a development strategy of coordinated and balanced development of agriculture, light industry and heavy industry. The imbalanced economic structure that resulted from the great leap forward was gradually improved and China's economic output greatly increased.

During the fourth period or the "Cultural Revolution" from 1966 to 1978, China had implemented a strategy of "three-front" construction. The country was divided into three fronts, roughly corresponding to the three regions: coastal, central and western. As

most new industrial projects were located in the third-front areas, the industrial build-up in these areas has been known as the third front program. Though it centered on heavy industry, the entire third-front build-up was dictated by considerations of military strategy rather than economic efficiency. About 95 percent of China's basics construction investment funds were allocated to construction of defense-oriented industries. The share of heavy industry increased from 51 percent to 55.8 percent within this period. However, this policy resulted in further differences between light and heavy industry in the total economic structure and regional imbalances in industrial distribution and production.

The second stage, the period of 1979 to 1999, witnessed a more balanced development of China's industries. In 1979, China adopted the opening up policy and started to adjust the strategy of prioritizing industrial development. The roles of the market and private businesses in promoting industrialization were emphasized and encouraged. China also paid special attention to balanced and coordinated development of different industries, with more focus on light industry. Great efforts were made in attracting foreign investment and importing advanced technologies and management experiences to tap the potential of late-starting and comparative advantages. Foreign direct investment (FDI) in China increased from about 19.6 billion U.S. dollars in 1991 to 52 billion U.S. dollars in 1999.

The third stage starts from 2000 when China saw the reappearance of heavy industrialization. The Chinese economy has moved back into a development phase of industrialization through heavy industry (Ye & Yu 2014). Many local governments have pooled physical and financial resources for the launch of large-scale projects in an attempt to drive economic growth. From 2000 to 2012, heavy industry in China grew much faster than light industry. The proportion of heavy industry increased from 53.8 percent in 1999 to 71.8 percent in 2012, while that of the light industry fell to 30 percent. The contribution rate of heavy industry to total industrial profits reached more than 72 percent in 2012. It can be seen that industrial growth during this phase largely relied on heavy industrialization.

1.3 Negative Impacts of China's Industrialization on Resources and Environment

China currently is still in the middle stage of industrialization. Though China has sustained rapid economic growth through industrialization, it is important to note that the process has also brought a series of negative impacts, especially on resource consumption and ecological environment.

China's high speed economic growth is at the cost of the huge consumption of fossil

energy and the resulting untold damage to the environment, known as “high energy consumption, high pollution and low production”. The energy efficiency ratio in China is about 30-40 percent lower than in developed countries, while the ratio of recycling use of water resources is 50 percent lower. Energy consumption per capita GDP was about twice of the average global rate, or more than four times than in developed countries such as the U.S.A and Japan. Such enormous energy consumption not only exhausted scarce natural resources, but has also brought serious environmental problems.

China’s environmental degradation has been getting worse, resulting in huge economic losses and posing serious environmental or eco-health risks. According to the 2011 Annual Report on Environment Statistics issued by China’s Ministry of Environmental Protection, industrial emissions of sulphur dioxide (SO₂) accounted for 91 percent of the total emissions of SO₂ in China. The persistent smog since 2012 across different regions in China is also a result of rapid industrialization (Du et al. 2014). According to World Bank statistics, annual losses caused by environment pollution were equal to 6 to 8 percent of China’s GDP. Estimates from Chinese official sources also concluded that losses, including property and health, caused by environment pollution ranged from 378.7 billion to 454.5 billion U.S. dollars in 2011, about 5-6 percent of the GDP that year. Environmental pollution has also posed huge health risks, including cancer, respiratory diseases, and cardiovascular diseases.

The African economy has been developing rapidly over recent years, with an annual increase rate of about 5 percent after 2000 and exceeding that of many other developing countries. In 2012, the GDP growth rate of Sub-Saharan Africa (excluding South Africa) reached 5.8 percent. Economic growth in the region continues to rise from 4.7 percent in 2013 to a forecasted 5.2 percent in 2014⁶. However, Africa’s economic output was just more than 2 trillion USD dollars in 2012 and the economic growth rate has largely relied on the extractive sector and the service sector. Though Africa has been making hard efforts to develop industries, it has not been able to establish its own complete industrial system. This is thought to be due to many reasons. In 2012, the global share of the industrial output from Sub-Saharan Africa was 0.7 percent or 0.5 percent if South Africa is excluded⁷.

The industrial sector contributed less than 10 percent to Africa’s GDP and employs even fewer than that percentage.

Figure 3 below shows that the share of manufacturing in total value added has declined over the past two decades, showing an average fall from 14 percent in 1990-1999 to 11 percent in 2000-2011. Furthermore, the services sector is now dominant in African

⁶<http://www.worldbank.org/en/news/press-release/2014/04/07/Africas-growth-set-to-reach-5?2-percent-in-2014-with-strong-investment-growth-and-household-spending>

⁷ "African Industrialization is Expected to Accelerate", *People's Daily*, available at http://intl.ce.cn/sjjj/qy/201408/05/t20140805_3294433.shtml

economies. Its share of total value added in 2000-2011 was about 47 percent, compared to 37 percent for industry and 16 percent for agriculture. In terms of dynamics, over the same period the services sector had an average growth rate of 5.2 percent while the agriculture sector had 5.1 percent and industry, 3.5 percent. This pattern of structural change in Africa is unexpected given that the continent remains at an early stage of development. It is unusual for the services sector to play such a dominant role in an economy in the early stages of its development⁸.

Figure 1. 3: Growth Rates and Shares in Africa's Total Value Added per Sector (1990-2011)



(Data Source: Economic Development in Africa Report 2014)

Various industrialization strategies have been pursued to achieve economic development in Africa. Ever since independence in the 1960s and 1970s, most African countries relied on exports of mainly primary commodities and natural resources. Most governments then embarked on a path to rapid industrialization and pursued a strategy referred as “catch-up industrialization” for import substitution. The strategy eventually failed as it over-emphasized state-owned industry and capital-intensive enterprises and ignored the development of small and medium enterprises (SMEs). During the 1980s and 1990s, African countries began to implement the structure adjustment programs (SAPs) to restore internal and external macroeconomic stability, which instead resulted in huge external debts and “de-industrialization”. For example, the Economic commission for Africa reports that from 1980 to 2009 “the share of manufacturing value in Sub-Saharan Africa fell from 16.6 percent to 12.7 percent” From the 1990s onwards, globalization and export-oriented industrialization became the new paradigm for Africa’s economic development, where countries opened up to free trade. Nevertheless, there has been little progress in Africa’s level of industrialization

⁸ <http://unctad.org/en/pages/PressRelease.aspx??OriginalVersionID=197>

(NKongolo 2008).

Gĩthĩnji and Adesida (2011) pointed out there were four cores but interrelated issues at the root of the failure of the states in Africa to industrialize? The first one is a crisis of confidence. African countries may have lost confidence in development after long-term colonial rule and state failures, and most African countries seem content exporting their primary products. The second reason is “the inherited colonial state” that most African countries did very little to dismantle, but used the control apparatus of this state to ensure continued domination control of the country. The third one lies in “the outsourcing of development. Africa relies on exports and foreign aid and does not have their own development initiatives. The fourth one is taking “aid as development”. A key element of Africa’s problem is that aid has become a substitute for real development, which is detrimental and deprives African countries of their initiative and ownership of the process of economic transformation. Aid was initiated not for development, but for ideological purposes during the Cold War and often distorts policies and encourages unsustainable development. Many governments are developing and implementing programs not because they fit within an overarching national vision and agenda but because it is a way to obtain resources from donors.

The industrial development of a country usually starts from the production and export of primary products, moves to the production and export of technology-based capital and intermediate goods, before finally producing high-tech products. Although this does not mean that Africa will have to follow this path, it will need to develop the labor-intensive manufacturing industry given its challenges of joblessness and low economic output. Or, as declared by the African Development Bank in 2013, industrialization is a precondition for Africa’s economic transformation.

There are in fact unprecedented opportunities for Africa to embrace industrialization and solve its persistent and pervasive problem of joblessness and economic development. Labor costs in Asia, especially in China have become more and more expensive. Africa has a 1.2 billion population and has a relatively high population growth rate (4.8 percent in 2013)⁹. About 85 percent of its population was younger than 45 years in 2012¹⁰. The agriculture share of GDP is just 12 percent, according to OECD estimates, while it employs over 60 percent of the working age people¹¹. What this shows is that if agricultural production efficiency is to be improved, there is a great supply of labor for Africa’s industrialization.

References

Chang, JK (1969), *Industrial Development in pre-Communist China: A Quantitative Analysis*, Aldine Publication Company, .Chicago.

⁹ <http://www.stratfor.com/the-hub/population-growth-and-control-africa#axzz3I0LbFhpm>

¹⁰ <http://www.stratfor.com/the-hub/population-growth-and-control-africa#axzz3I0LbFhpm>

¹¹ http://www.huffingtonpost.com/obadias-ndaba/the-paradox-of-africas-gr_b_4741067.html

- Du, W., Zhu, S. and Zhang, P. (2014), “Impacts of China’s Industrialization and Urbanization on Environment and Solutions” (in Chinese), *Studies of Financial and Economic Issues*, no.5, pp. 22-29.
- Githinji, M. W and Adesida, O (2011), “Industrialization, Exports and the Developmental State in Africa :The Case for Transformation”, Working paper 2011-18, available at <https://www.umass.edu/economics/publications/2011-18.pdf>
- King, F. H. (2013), *Farmers of Forty Centuries: Organic Farming in China, Korea and Japan*, Dover Publications.
- Lin, Y. (2004), *Development Strategies and Economic Development* (in Chinese), Beijing University Press, Beijing.
- Nkongolo, E.J.D. (2008), “SMEs/SMIs centered industrialization for inclusive and sustainable growth in Africa”, [www.grips.ac.jp/forum/af-growth/seminar\(Jul.08\)/elumba\(summary\).pdf](http://www.grips.ac.jp/forum/af-growth/seminar(Jul.08)/elumba(summary).pdf)
- Wu. L. (1999), *Economic History of the People’s Republic of China* (in Chinese), China Economic Press, Beijing.
- Ye, L. and Yu, J. (2014), “Progress, New Situation and Successful Realization of China’s Industrialization” (in Chinese), *Academic Journal of Wuhan University*, no.2, pp.117-125.

2. Developmental Institutions: The Political Base of China's

Industrialization

Three main explanations were proposed to examine China's rapid industrialization process, the strong role of the State (Li 1999), market-oriented reform and the important roles of private enterprises (Garnaut 2012; Ren 2004), as well as marketization of Chinese enterprises led by the state (Huang 2000). Although China's industrialization, especially since the reform and opening up, has been stimulated by both strong state roles and market-oriented reform, it can be argued that the industry policy derived from its developmental politics has played a decisive role in China's industrialization.

Either for British industrialization, US industrialization or later capitalist industrializations like Japan, the state played a vital role in industrialization. Historical study on British industrialization by Frederick List suggested that manufacturing must be developed as part of the process of nation-building (cf. Kiely 1998: p.31). Contrary to popular myth, Britain had a strong state in the sense of a public administration that effectively extracted financial resources from society (Kiely 1998: p.26). The early stage of US industrialization also confirmed the role of the states as the first Secretary of the Treasury; Alexander Hamilton made a case for government assistance to manufacturing (cf. Kiely 1998: p.32). The theory of the developmental state to some extent provides explanations of the East Asian miracle. According to Chalmers Johnson, the developmental state is "shorthand for the seamless web of political, bureaucratic, and business influences that structures economic life in capitalist Northeast Asia" (Johnson 1982). In his book *MITI and the Japanese Miracle*, Johnson used this term when analyzing the process of the industrialization of Japan. The theory was then widely applied to explain the East Asian development model, including China. Empirically speaking, the Chinese way of development shares many characteristics with the Asian developmental state model, including state control over finance, a dual system of public and non-public ownership, high dependence on the export market and a high rate of domestic savings (Baek 2005). However, we do not fully agree that China's industrialization followed the developmental state model, because China is different from those case countries leading to the theory characterized by an authoritarian government accompanied by a market economy. Instead, we use "developmentization" to explain how China promoted industrialization through de-politicized and "developmentized" state apparatus. We argue that the success of China's industrialization and economic growth comes from a combination of several factors, including developmental politics, a process of consensus building through state planning, development campaigns among local governments and gradual reforms.

2.1 Developmental Politics

China's political system to a large extent reduces political risks derived from reform mistakes by the ruling party. Multi-party cooperation and political consultation under the leadership of the Chinese Communist Party (CPC) is a basic political system in China. The system means that the CPC is the central force in coordination of multi-party participation in the discussion and management of state affairs. China's political system is consensual rather than competitive. Under the leadership of the CPC, the system can build consensus even when there are many different opinions. This allows opinions to be expressed, although within political tolerance on the one hand, but mostly ensures consensus. This system also helps any reform to take place without worrying about losing power for the ruling party due to any mistake, although the party's legitimacy still remains constantly challenged.

Legitimacy is the primary condition for any ruling party to effectively manage the state apparatus and deal with state affairs. To maintain its legitimacy, a ruling party has to adapt to changes and reconstruct its legitimacy sources (Sang 2012). The CPC experienced two major changes of its political agendas in order to seek and maintain its legitimacy sources. The first change happened in 1978 when the party's political agenda shifted from ideology and moral incentives to economic performance and material enticements. The second change occurred in the 1990s when the legitimacy base was oriented towards economic growth, stability and nationalism (Liu 2012).

After the serious economic crisis due to the leftwing Cultural Revolution, to maintain its legitimacy, CPC decided to de-politicize itself by placing development at the core of its agenda in order to maintain its political goals. This was far the most important factor given the party's dominant ruling role in China's political life. For example, the "three representatives" idea emphasized that the party not only represents the interests of workers, but those of the whole people. The "three representatives" and later the "human-centered development" proposed under President Hu Jintao's era demonstrated that the CPC went beyond its traditional class-struggle thinking and was capable of making necessary adaptations to the constantly changing political and economic environment (Wang & Xu 2006). The follow-up "scientific outlook on development" further put development in a scientific mode as one of the parties's guiding principles. All these show that the CPC tried to developmentize the party's agenda, making modernization the goal of the party's policies. The CPC improved its ruling legitimacy through strategically combining the party's agenda with public interest which was framed into "development".

The second relied in the promotion and training of party cadres and a unified ideology

among party officials at different levels. The cadre training system not only successfully helped the CPC shift from a revolutionary party to a ruling party, but also ensured a sound implementation of national development strategies in a top-down manner. According to the CPC's Constitution, the CPC is "the vanguard both of the Chinese working class and of the Chinese people and the Chinese nation". In fact, CPC is an elite organization with more than 85 million members and many of them are top talents from all walks of life. To improve and maintain the administrative quality and capacity of these elite party members, especially their follow-up with the party's agenda, the CPC developed a systematic cadre training system to conduct political and cultural education as well as managerial skills. In the 1980s, the number of party schools and training centers reached 8,800 in China, the highest in history. In the 1990s, there were about 3000 party schools and administration academies across the country, employing more than 80,000 people. China established the National School of Administration in 1994 and after 2002; China established three executive leadership academies in Pudong, Jinggangshan and Yan'an and inaugurated a National School for Senior Managers in Dalian to educate the CPC officials and leaders of major state-owned enterprises. Currently, there are about 5,000 party schools, administration schools and cadre training institutes in the country (Yu 2014). Various training programs not only acquaint officials at various levels with the guidelines and blueprints of the Party and Party theories, but also improve their administrative capacities and understanding of national development strategies. In addition, the CPC has a strictly hierarchal system which extends from the central to the village level. This system can help ensure consistency between policy making and implementation at various levels (Li 2010). As Wu (2007) argued, training of party members and government officials at various levels was one of the most important reasons for the country's success in implementing industrialization and other economic policies.

2.2. The Formulation of "Five-year Plans": A Process of Consensus Building

China's economic reform was not simply about introducing the market economy to replace the planning system. Instead, China employed an economic model of socialist market economy, characterized by the dominance of the state-owned sector and an open-market economy. Though the market was incorporated into the economy system to play a basic role in allocating resources, planning was still an important instrument of economic development. In fact, it has been argued that the high growth rates of the Chinese economy were maintained partly due to the Five-Year Plans (Hu 2012). China has promulgated five-year plans since 1953, which became a comprehensive and guiding road map for national economic and social development and a strategic blueprint for modernization with Chinese characteristics. Five-Year Plans usually outlined major construction projects, sectoral distribution and the government's strategic policy priorities over a multi-year time horizon and set targets and directions

for national economic development. China has altogether formulated 10 “Five-Year Plans (*Ji-hua*)” and two ‘Five-Year Projections (*Gui-hua*)’¹². The 12th Five-Year Plan is currently under implementation.

“Five-Year Plan” in China is not just a policy document that is formulated in a closed-door manner. In fact, there are continuous interactions and consultations between the central government, local governments and other stakeholders in different planning stages such as drafting, piloting, evaluation and adjustment. The planning mechanism facilitates the formation of a huge network among policy makers from different sectors and at various levels. This process produces countless documents, guides or interventions for economic activities that shapes and constrains the behaviors of governments at different levels. Planning is enabled through the hierarchical administration system, but its efficiency depends on the performance review of party cadres. This feature defines China’s difference from other East Asian developmental states and goes beyond Western mainstream analytical frameworks (Heilmann & Melton 2013).

The formulation of China’s Five-Year Plan is based on systematic research conducted by various think tanks, including those affiliated with the party system, the State Council and its various ministries as well as research institutes and universities. This ensures that perspectives at both macro- and micro-level are fully taken into consideration. Take the “12th Five-Year Plan” as an example. Its formulation was a long-term and complicated process with the participation of many stakeholders. It included at least nine key steps. The first step was to review the progress of the “11th Five-Year Plan”, including a mid-term evaluation jointly conducted by the Center for China Studies at Tsinghua University, the State Council Development Research Center and the World Bank Beijing Office entrusted by the National Development and Reform Committee (NDRC) in the second half of 2008. The second step, initiated at the end of 2008, when NDRC selected more than 20 issues related to social and economic development and people’s major concerns such as policies on attracting foreign investment and the reform of the income distribution system, and then organized consultation meetings with experts, scholars and entrepreneurs. Thousands of political and economic experts were involved for an entire year to explore strategies to develop China’s economy and society. The third step was to determine basic guidelines by the national leadership based on the research and consultation results. A consultative draft for the plan was then formulated to provide basis for a special expert committee to deliberate and comment for further revisions. The fifth step was a discussion of the revised consultative draft at the Fifth Plenary Session of the 17th Central Committee of the CPC in October 2010. More opinions and advice were collected during the meeting. After that, the final plan was drafted in early 2011 (the sixth step). The seventh step

¹² Starting from the beginning with the 11th Five-Year Plan, its Chinese name has changed from “*ji-hua*” (plan) to “*gui-hua*” (program or projection) in order to highlight its indicative nature.

involved discussions on details of the draft in January 2011 by the special expert committee, followed by the eighth step of a public opinion collection/assessment process) conducted by the Prime Minister during January to February of 2011. The ninth or the final step was to submit the draft plan to the National People's Congress (NPC) for deliberation and discussion. After the draft was approved by the NPC, the State Council promulgated and then implemented the plan. The formulation of the "12th Five-Year Plan" was thus a process of building consensus about China's future through coordinating different interests, visions and opinions (Hu 2011).

In addition, the State Council also develops special plans and regional plans, which together with the "Five-Year Plans" (also known as overall plans) serve as the guidelines for provincial, municipal and county governments in making their own development plans. This planning system, known as "three levels and three types" (the three levels include national, provincial and city/county; and the three types include overall, special and regional), is in fact a huge network that connects policy makers from the central government and the many local governments. Under the development framework decided by the central government and in coordination with national and upper-level development policies, local governments at various levels can determine their own development priorities and objectives in their own jurisdictions (Cheng 2004). Therefore, it can be seen that the planning system was in fact a process of building consensus, and development plans were formulated and put into practice only when there had been wide discussions and deliberations.

2.3 Development Competitions at Local Levels

In addition to developmentized politics and state planning, local governments and the competitions in development among them are also important driving forces of China's economic growth. For example, Zhang (2007) has argued that competition among local governments had a decisive impact on China's economic growth. The activeness of local governments in pushing forward local economic development was largely the result of two factors: administrative and fiscal decentralization and the country's performance appraisal and management system.

Starting from the 1980s, the central government began to implement administrative and fiscal decentralization. Local governments began to assume primary responsibilities for economic development in their jurisdictions and enjoyed a wide range of authority devolved from the central government. Local governments have thus gradually become economic agents with independent interests and economic policymaking rights. They promoted economic development through building infrastructures and attracting investment. For example, in each location, special project offices were set up to attract external investments and funds.

At the same time, China also introduced de facto fiscal federalism through the “fiscal contracting system”. This was based on the principle of “dividing revenue and expenditure with each level of government responsible for balancing its own budget”, which is mainly characterized by a system including central taxes, local taxes, and central-local sharing of taxes. Central taxes would go into the central coffers, and local taxes into local budgets. As for shared taxes, they were to be divided between the central and provincial governments according to some established formulas. Fiscal decentralization has actually caused tax revenues to shift from the central government to local governments and put more incentives on economic performance as local governments could have more savings when they had higher financial revenues.

The second interrelated factor was the country’s performance appraisal and management system. While administrative and fiscal decentralization granted local governments more power and incentives in developing their local economies, it was further strengthened by the country’s performance system which put more weight on economic growth indicators in reviewing the performance of local governments. The GDP growth rate was closely connected with the promotion of local government officials. Programs like selection of “the strongest 100 counties” were also put in place to set examples and encourage competition among local governments. This definitely shaped the development orientations of local governments. In the past three decades, local governments acted like regional companies. Despite continuous promotion and changes of “company managers” (local leaders), GDP and revenues maintained a high growth rate. This was characterized by some Chinese scholars as a “promotion-tournament governance model” and was regarded as a major driver of China’s economic miracle (Zhou 2007).

It is important to note that development competitions among local governments resulting from decentralization did not lead to complete localism. The central government could still exert influence on local government behaviors through the appointment and dismissal of government officials, the formulation and implementation of national Five-Year Plans, and using national laws and regulations to remove regional barriers.

2.4 Gradual Reforms

China has taken a steady and gradual approach to the implementation of economic reforms rather than using the “shock therapy” tactics of the former Soviet Union countries. China’s reform was conducted in a “bottom-up” manner and followed an “easy-to hard sequence”. From 1978 to the 1990s, China’s many reform initiatives came from farmers and workers in rural and urban areas, which were adopted in their localities and then by the central government to diffuse throughout the country when there were successful results. The Chinese government also piloted many of its reform

initiatives in certain locations first before spreading them to other places. Gradual economic reforms and “proceeding from point to surface” (models tested regionally and then adopted nationally if successful), though unable to achieve large-scale effects in a short time, ensured that losses from economic reforms were immediate and enabled correction and the successful implementation without major disruption (Ma 2008).

Take the opening-up policy for example. China first established special economic zones in Shenzhen, Zhuhai, Shantou and Xiamen in the early 1980s, which was then extended to 14 other coastal cities in the middle 1980s. China then set the Pearl River Delta, Yangtze River Delta, Jiaodong Peninsula and Liaodong Peninsula as open economic zones. In the early 1990s, China made the policy of opening up Pudong district in Shanghai. Following that, opening up zones were further extended to inland and border cities. China now has a development landscape composed of “special economic zones, open coastal cities, coastal economic zones and inland cities”.

The opening up process does not stop at the cities. Local governments also set up economic development zones in accordance with national policies. Starting from 2008, the State Council started to formulate benchmarks and upgrade provincial economic development zones. By 2011, there are 131 national economic and technical development zones, among which 66 are located in the eastern areas, 38 in the middle and 27 in the western. The number of national economic and technical development zones reached 215 in 2014. Widely distributed across the country, these zones have become important poles for economic and social development. In addition, municipal and county governments also established industrial development parks, where transportation, electricity and water infrastructures are installed and taxes are preferential, to attract external funds or large enterprises to invest there. Therefore, it can be seen that China’s opening-up process was conducted in a gradualist manner, proceeding from big cities to small and medium cities, and from the eastern and middle part to the western areas of China..

The central government also allows and encourages local governments to take different initiatives to develop their own economies based on their local contexts. Different development models have emerged along the years, including: the “Wenzhou Model” that features household industries and specialized markets; the “Sunan Model” that uses local farmers and talents to develop township and village enterprises; the “Quanzhou Model” that has strong private enterprises and an industrial concentration of light industry; and the “Pearl River Model” where the rapid industrialization is export-oriented and led by local government through utilizing its geographic advantages. These different initiatives showed that there was no one single model that can fully describe or explain China’s industrialization and economic development. Instead, China’s development relies on multiple ways that take into consideration the local contexts and comparative advantages.

China's gradual economic transition accumulated rich reform experiences. However, we consider that at the core of the success is the development model of "market economy plus socialism". Here we can consider three aspects. The first is to gradually introduce 'the market' into the original planned economy and improve market economies in the process of economic growth. The market is used to allocate resources and to create incentives for competition. Secondly, socialism is maintained and developed in the process. Socialist principles are used to constrain and resist free-market fundamentalism and the negative impacts of liberal competition and laissez-faire economy. As demonstrated above, the Chinese government has continuously improved its capacity to regulate markets and assure social justice and common prosperity through its cadre training system. The third point is to combine the market economy with socialism in an organic way and to tap their respective advantages. While the market is used to promote liberal competition among individuals and other market entities, the government plays the role of concentrating resources to accomplish major projects (Li and Zhang 2008).

As most African countries still have an underdeveloped market and private entrepreneurship, the role of the government becomes extremely important in promoting industrialization. However, as Githinji and Adesida (2011) point out, Africa's political system is inherited from the colonial state after independence, which was created for colonial rule rather than Africa's own development. Though many African countries followed the experience of a socialist planned economy in the immediate period after independence, the Western model gained dominance again after the onset of structural adjustment programs (SAPS) and the neo-liberal ideology on the continent. Currently, the political system in Africa is akin to Western representative democracy based on different interest groups, but with Africa's own political traditions included. In the context of multi-party elections where political parties are not necessarily ideological vehicles, but more likely simple instruments to achieve power, the political system becomes problematic as changes in regime may mean a desire to pick a different set of winners and losers among the representatives and more aligned with the new regime. Therefore, though most African countries have their own development planning, they differ greatly from China because the governments and the civil societies often do not share common agendas or initiatives. Discussions on development priorities can easily fall prey to conflicts among different parties rather than forming consensus. For industrialization to occur, political elites in African countries will need to agree on a long term commitment to creating industry regardless of who is in power.

References

Baek, S. W. (2005), "Does China follow 'the East Asian Development Model'", *Journal of Contemporary Asia*, vol. 35, no. 4, pp. 485-498.

- Brautigam, D. (2009), *The Dragon's Gift: The Real Story of China in Africa*, Oxford University Press.
- Cheng, S. (2004), "On Development Planning under the Chinese Socialism Market Economy" (in Chinese), *Academic Journal of Public Administration*, vol.1, no.2, pp.4-12.
- Garnaut R., Song, L., Yao, Y. and Wang, X. (2012), *Private Enterprise in China*, ANU E Press, Canberra.
- Githinji, M. W and Adesida, O (2011), "Industrialization, Exports and the Developmental State in Africa :The Case for Transformation", Working paper 2011-18, available at <https://www.umass.edu/economics/publications/2011-18.pdf>
- Heilmann, S. and Melton, O. (2013), "The Reinvention of Development Planning in China, 1993-2012", *Modern China*, vol. 39, no. 6.
- Hu, A. (2011), "Democratic Process of Planning", *China Daily*, available at http://www.chinadaily.com.cn/opinion/2011-03/10/content_12146877.htm
- Hu, A. (2013), "China's Special Five-Year Plan Transition" (in Chinese), *Journal of Opening-up Times*, vol. 6, p.4.
- Huang, S. (2000), "Three Hypothesis on Institutional Change and Their Testing" (in Chinese), *Journal of Chinese Social Sciences*, vol.4, pp.37-49.
- Johnson, C. (1982), *MITI and the Japanese Miracle; The Growth of Industrial Policy 1925-1975*, Stanford University Press.
- Leftwich, A. (1995), "Bringing Politics back in: Towards a Model of the Developmental State", *Journal of Development Studies*, vol. 31, no. 3, pp. 400-427.
- Li, W. (1999), "The Forming and Shifting of the East Asian Government-led Development Model" (in Chinese), *Journal of Contemporary Asia Pacific*, vol. 7, pp.32-37.
- Li, X. (2010), *Development and Poverty Reduction in China and Africa: a Comparison of Multiple Perspectives* (in Chinese), China Fiscal and Economic Press, Beijing.
- Li. W, and Zhang, Z. (2008), "An Exploration of Experiences of China's Gradual Transition and Its Development Path"(in Chinese), *Research of History of the Communist Party of China*, no.3, p.4.
- Liu, G. (2012), "Views of Foreign Scholars on Construction of the Communist Party of China" (in Chinese), *Study Times*, Beijing.
- Ma. X. (2008), "Gradual Reforms over Three Decades: Experience and Future", *China Reform*, no. 9, pp.12-15.
- Ren, B. and Hong, Y. (2004), "New-type Industrialization Road: Transition of China's Industrialization Path in the 21st Century" (in Chinese), *Humanitarian Magazine*, vol.1, pp.60-66.
- Sang, L. (2012), "Thoughts on Reconstructing Legitimacy of the Communist Party of China during Transition" (in Chinese), *Academic Journal of Hubei Provincial School of Administration*, vo.1, p.6.
- Wang, H. and Xu, Y. (2006), "De-politicized Politics and the Publicness of Mass Media—Interviews with Professor Wang Hui" (in Chinese), *Journal of Gansu Social Sciences*, vol.4, pp.235-248.

- Wu, J. (2007), “Cadre Training Comes into Focus”, *China Daily*, October 17, 2007, available at http://www.chinadaily.com.cn/china/2007-10/17/content_6182443.htm
- Yao, Y. (2009), “Neutral Government: An Explanation of China’s Economic Success during Transition” (in Chinese), *Economic Comments*, no. 3, pp.5-13.
- Yu, K. (2014), “Cadre Education of the Communist Party of China and National Governance” (in Chinese), *Academic Journal of Zhejiang Provincial Party School*, no.3, pp.5-11.
- Zhang, J. (2007), “Decentralization and Growth: China’s Story” (in Chinese), *Economics* (Quarterly), no. 1.

3. Agricultural Development: Economic base of China's

Industrialization

Agriculture is commonly the main source of resources that can be captured for industrial development. Classical industrialization theory regards agriculture as having many irreplaceable roles in industrial development, including delivering food for domestic consumption; providing labor to meet industrial demands; expanding markets for industrial products; increasing supply of domestic savings; and earning foreign exchanges (Bruce & John 1961). These five roles are also referred as product contribution, factor contribution, market contribution (Kuznets 1964), and foreign exchange contribution. Within a span of some six decades, China has basically transformed from a traditional agricultural country to a modern industrial state. China's industrial development, both before and after the reform and opening up, was largely built on the base of agriculture.

3.1 From 1949 to 1978: agricultural accumulation to support the development of heavy industry.

From 1949 when the People's Republic of China was founded, to 1978 before the implementation of the reform and opening up policy, China adopted a strategy of prioritizing the development of heavy industry in order rapidly to establish an industrial base. Back then China was a poor and backward agricultural country, and did not have surplus capital or access to large amounts of foreign investments for industrialization. In order to become an industrial nation, China had little choice but to rely on agricultural surpluses to initiate the industrialization. To ensure that the primitive accumulation of agricultural wealth could enter into the industrial sector, China used a "command economy" strategy to directly allocate resources. Under the overall guideline of "taking agriculture as the foundation and industry as the dominant sector of the national economy", China introduced agriculture collectivization and the system of state monopoly on the purchase and marketing of agricultural products. While the latter was used to control most of the surplus agricultural products at a low price and to accumulate sufficient capital for industrialization through the "price scissors" in the exchange of industrial products for agricultural products, the former was implemented to provide an important institutional safeguard for the latter's implementation. According to estimates, in the first several years of the founding of the Republic, agricultural taxes accounted for about 40 percent of national revenues (Li & Qi 2010). During the 25 years of planned economy from 1953 to 1978, "the price scissors" in the

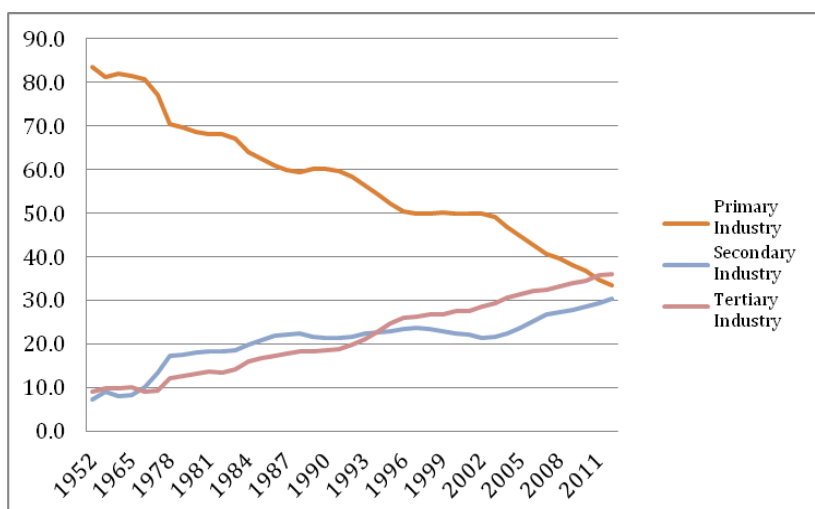
exchange of industrial products for agricultural products totaled 600 to 800 billion RMB (when China's industrial fixed assets were only about 900 billion RMB in 1978). These institutional arrangements also helped increase China's gross industrial capital formation with an annual average rate of 10.4 percent from 1952 to 1978. By 1978, secondary industry accounted for 48 percent of China's GDP (Nordon 2011). However, this changed the country's economy but did not transform the country.

3.2 The reform and opening up era: agriculture promoted labor intensive light industry.

3.2.1 Agriculture provided sufficient and high-quality labor force to the development of China's light industry.

After 1978, China shifted from the previous focus on heavy industry to the development of light industry. One of the main reasons for the subsequent rapid development of the labor-intensive light industry sector was the ample supply of labor from the agriculture sector. According to estimates, the employed population in the secondary industry increased from 15.31 million in 1952 to 232 million in 2012, a net increase of 216.69 million over the span of six decades. The share ratio of those employed in the secondary sector also increased from 7.4 percent to 30.3 percent in the same period, while the share ratio of those employed in the primary sector continued to decline, from 83.5 percent to 33.6 percent for the same period (see Figure 1). It can be seen that the agricultural sector provided a substantial labor supply to the industrial development in China.

Figure 2.1: Share Ratio of Employed Population among the Three Sectors from 1952 to 2012 (percentage)



(Data Source: China Statistical Yearbook 2013)

Additionally, the labor force from the agricultural sector was of high quality. As a result of consistent attention to education and the sound implementation of the nine-year compulsory education policy across the country by the Chinese government, illiteracy and semi-illiteracy ratios among the rural labor force in China declined from 27.87 percent in 1985 to 4.08 percent in 2010. In 2013, the gross ratio of high school enrolment in China reached 86 percent. These educated laborers entered into the industrial sector in China's industrialization process and created (massive values?) In 2009, the GDP created by every migrant worker was 23,000 RMB per annum and the total GDP created by the 200 million migrant workers reached 5.7 trillion RMB (Li and Qi 2010).

3.2.2 Agricultural capital provided ample financial support to the development of light industry in China.

Though China gradually removed the "price scissors" in the exchange of agricultural products for industrial products after 1978, agricultural capital still played an important role in supporting China's industrial development in the form of township and village enterprises (TVEs) and the "price scissors" in land exchanges.

TVEs, a special entity in China's industrial development, originated and developed in rural areas. TVEs were usually collectively owned and operated by village communities, who were responsible for their profits and losses. Rural land constituted the major source of investment in TVEs as factories were largely built by farmers. Though state-owned banks offered preferential loans to TVEs, much of the initial investment in construction came from the agricultural sector with limited national support. TVEs were then able to use their profits to expand production and import advanced equipment through development and self-accumulation. During later years, most TVEs then became private businesses and raised more support from the agricultural sector. Therefore, agricultural capital from rural areas was the major supporting source for TVE development in China.

In the meantime, industrial development gained a lot of financial support from the "price scissors" in the exchange of rural land, which was collectively owned. In China, the state monopolies were the primary market for transferring rural collective land into urban state-owned land. Starting from the 1980s, demand for land increased along with China's urbanization and industrialization processes. Rural land then gradually became marketable, but its price was controlled by the state which usually was very low.. As a result, the "price scissors" in rural land exchange flowed to cities and industries and thus became a major contribution from the agricultural sector to China's industrialization. From 1980 to 1999, total 2000 billion RMB (close to 323 billion \$US) had been appropriated from rural area through land transaction for industrialization and

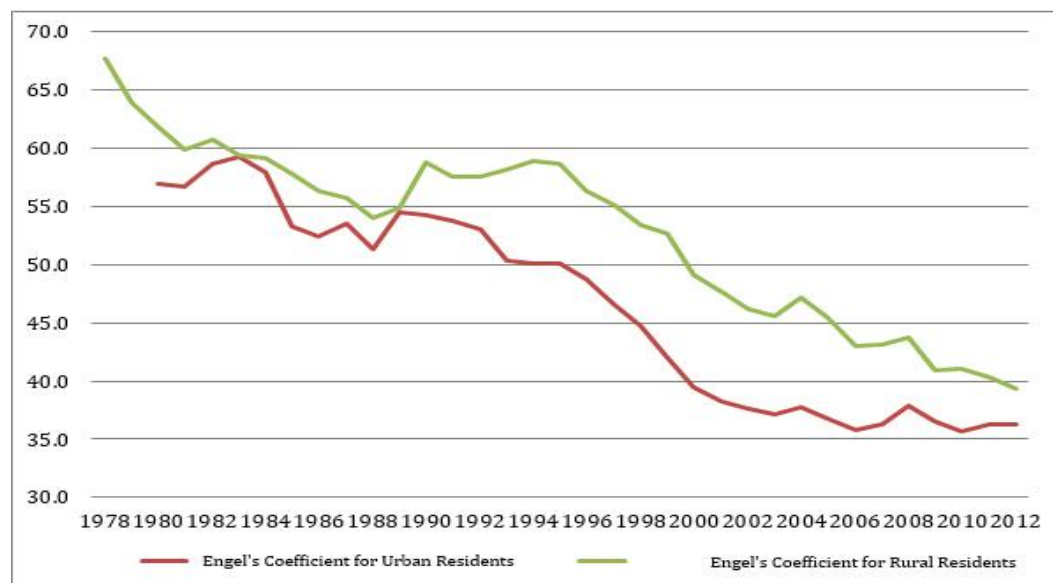
urbanization (Liu 2001). According to the monitoring data of China's Ministry of Land Resources, revenues from land transactions increased quickly from 1999, reaching 700 billion RMB in 2006, 1300 billion RMB in 2007 and 960 billion in 2008 respectively. Most of these revenues came from the "price scissors" in exchanging rural collective land and were then invested in industrialization and urbanization. In addition, in order to attract more investment in their localities, local governments usually charged very low costs in leasing out land to domestic and foreign enterprises (Research Team on China's Land Policy Reform 2006).

3.3 Relatively sufficient supply of food enabled low food price to keep low wages from the industrial sector

There was a relatively ample supply of grains resulted from the implementation of household contract responsibility system and the development and application of agricultural technology. During the end of 1970s and early 1980s, the per capita amount of grain reached more than 285 kilograms and maintained 300 kilograms after that except for the year of 2003 which was 286 kilograms. From 2004, the self-sufficiency ratio of grain in China was kept above 95 percent and exceeded 97 percent in 2013 when the yields of grain were 601.94 million tons (China Bureau of Statistics 2013).

The Chinese government also used other policies to stabilize grain prices. Before reform and opening-up, China adopted the command economy to allocate food. Private business was also excluded from purchasing and marketing agricultural products to maintain price and market stability and enable a supply of grains to urban people at a low price. After 1978, the state had strict control of purchasing and marketing of grains through the establishment of a grain reserve system at central and local levels. China also administered imports and exports of grains through the quota system. All these measures sustained the stability of grain's prices in China. Over the years, though food price of food was increasing in China, it was kept at a low level when compared with people's income. As shown in Figure 2, the Engel's coefficients for both urban and rural residents were declining and were both below 40 percent by 2012.

Figure 2.2: Engel's Coefficient for Urban and Rural Chinese Residents



(Data Source: China Statistical Yearbook 2013)

3.4 The Chinese government supported agricultural development

To some extent, agriculture has been submitted to industrialization in China from Chinese government's strategic perspective. It does not mean that agriculture is not important. On the contrary, to promote agriculture has been always the priority of the country's development strategy. China not only institutionalized agriculture as the foundation of national economic development through laws and regulations, but also issued many different policies over the years. For example, the "equalization of land rights", the most equitable land reform across the country in Chinese history, was implemented after the founding of the new Republic. A series of measures were also initiated to restore and increase agricultural production, including relieving farmers' burden, improving irrigation infrastructure and spreading agricultural technologies. By 1952 when the land reform was completed, agriculture yields increased 48.5 percent from 1949, with grain output increasing by 44.8 percent, cotton by 1.93 times and oil seeds by 60 percent (Zhang 1991). Yields of other agricultural crops also greatly improved.

The "agriculture and rural cooperatives", established in the middle 1950s to address the shortage of factors of production, further promoted the rapid development of agriculture for a certain time. For example, gross output value of agriculture grew by 27.8 percent in 1958 when compared with that of 1952. Per capita consumption of grains also increased from 288 kilograms in 1952 to 306 kilograms in 1958.

The Chinese government also provided investment and subsidies to promote the

vigorous and healthy development of the agriculture sector. Financial input for agriculture was about 9 to 12 percent of the national fiscal expenditures before the adoption of the reform and opening up policy. In 2012, the data of China's Ministry of Finance showed that financial input to "San Nong" (issues related to agriculture, farmers and rural areas) increased by 18 percent in 2011 and reached about 1.2 trillion RMB, or about 9.9 percent of total national fiscal expenditures. In 2013, the Chinese government further boosted input to "San Nong" and the expenditures totaled about 1.4 trillion RMB, another increase of 11.4 percent compared with 2012. These investments increased grain yields and other aspects of agricultural production.

One of the common features between China and most African countries is the dominance of the agricultural sector in the national economy. Agriculture was the major funding source for industrial development given the lack of industrial capital at the outset. However, since most African countries did not have similar cultivating traditions like China or Western countries and also due to a long-term colonial dominance together with the demands of capital in developing national industrial capacity, most African countries developed an agriculture structure that was dominated by cash crops. Since the production of cash crops like peanuts, coffee and cashew were mainly for exports; their prices were easily influenced by the fluctuation of international markets. Though exports of cash crops earned foreign exchange, due to underdeveloped food production sector, foreign exchange was mostly used to purchase grains to meet the needs of domestic consumption (Li 2010). In addition, the planting scale and scope of crops were further constrained as most of them were concentrated in plantations and based on foreign capital. As most African countries did not have a strategy of internalizing agricultural production, agriculture surpluses in Africa were very limited and could not provide effective primitive accumulation for industrial development (Li & Qi 2010). Therefore, although most African countries at independence prioritized industrialization and urbanization, the process was stalled for a long time.

Most African countries also had higher Engel's coefficient for a long time when compared with China and some countries were periodically on the brink of hunger. As the *Africa Human Development Report 2012* showed, about one quarter of the 856 million living in Africa were undernourished, including 40 percent of the children below five, and food insecurity was pervasive. For example, the Democratic Republic of Congo was said to have the potential to become the "African Barn", but 70 percent of its population suffered from malnutrition and 38 percent of the children living in the country were underweight. The country relied on food aid for most of the year (UNDP 2012).

References

- Bruce, J. and John, M. (1961), "The Role of Agriculture in Economic Development", *American Economic Review*, vo. 51, no.4, pp. 566-593.
- China Bureau of Statistics (2013), "Report of 2013 National Economic and Social

- Development” (in Chinese, available at: http://www.stats.gov.cn/tjsj/zxfb/201402/t20140224_514970.html)
- Guo, Z, Li, X. and Qi, G. (2012), “Comparative Analysis of Small Farming Household Production Organizations in China and Africa—based on Field research of Three Villages in Africa” (in Chinese), *Academic Journal of Guangxi University of Nationalities*, vol.2, pp.84-89.
- Kuznets, S. (1964), “Economic Growth and the Contribution of Agriculture: Notes on Measurement”, in Eicher, C. and Witt, L. (ed.), *Agriculture in Economic Development*, New York, McGraw-Hill.
- Li, X. (2010), *Development and Poverty Reduction in China and Africa: a Comparison of Multiple Perspectives* (in Chinese), China Fiscal and Economic Press, Beijing.
- Li, X. and Qi, G. (2010), *Agricultural Development based on Small Farmers: a Comparative Analysis of China and Africa* (in Chinese), Social Sciences Documentation Publishing, Beijing.
- Lin, Y. and Liu, M. (2004), “Strategies of Economic Development and China’s Industrialization” (in Chinese), *Economic Research*, vol. 7, pp. 48-58.
- Nordon, B. (2011), translated by An, J (2011), *Chinese Economy: Transition and Growth*, Shanghai People’s Publishing House, Shanghai.
- Research Team of China’s Land Policy Reform (2006), “China’s Land Policy Reform, a Holistic Action Framework” (in Chinese), *Reform*, vol.2, pp.5-18.
- UNDP (United Nations Development Programme) (2012), *Africa Human development Report, towards a Food Secure Future*, available at: <http://www.un.org/chinese/focus/wen/newsdetails.asp?newsID=17766>
- Walder, A. (2000).”Chinese Society”, Public Lecture for the Institute for International Studies Conference, Stanford University, May 19, 2000.
- Wen, T. (2000), *Research on China’s Rural Basic Economic System* (in Chinese), China Economy Publishing House.
- Zhang, F. (1991), *China’s Rural Economic Reform*, Beijing Publishing House, Beijing.

4. Rural Industries, Private Enterprises and Entrepreneurs in China's Industrialization Process

The classic economic development is the synchronized process of industrialization and urbanization, as happened in the history of England and the United States as well as in the many later industrialized countries. However, such scenario would be problematic for the most of the developing world as population often concentrated in rural areas. Rural industrialization has thus become a feasible alternative strategy for increasing rural income and creating employment. China is no exception. In 1949, the country had a very small modern industrial sector accounting for only 10 percent of the national economy. China was a typical agricultural country at that time. In order to promote industrialization, Chinese leaders opted for the growth strategy of rapid industrialization centered on heavy industry in cities and extraction of agricultural surplus from the peasantry. This strategy in turn required strong mechanisms to prevent a rural outmigration. The government then introduced measures to stem rural outflows, culminating in the promulgation of the *Household Registration (Hukou) Rules* in 1958 by the 91 sessions of the First NPC Standing Committee. The Hukou system, aimed to control population mobility by limiting access to work, food and services to people's registration place, was used to implement agricultural collectivism in rural China while rapidly industrializing urban China. By doing so, China in effect created two very different societies which enjoyed different accesses to resources and had different identities divided between urban and rural residents.

Negative impacts of the Hukou system prompted the Chinese government to try to develop rural industries at the same time. Rural industrialization was first mentioned in the party's document of *Decisions on Several Issues Related to the People's Commune* in 1958, which required the People's Communes to develop industries. At the Northern Farming Conference in 1970, the central government proposed a strategy of "developing industries by using agricultural resources". Commune- and brigade-run enterprises were then created to develop rural industries. In the years before 1978, however, the rural industries had only experienced limited development due to the twists and turns in national policies and the urban and rural dual structure. Since the late 1970s, China conducted rural reforms characterized by the implementation of a household contract responsibility system in agricultural production and liberalization of rural markets. The reforms increased farmers' income, boosted agricultural productivity and released a large number of rural labor forces, which thus provided a

necessary base for rural industries. It was not until this period that the commune- and brigade-run enterprises and later known as TVEs developed rapidly and became an important driving force of China's industrialization.

4.1 Review of the different phases of China's rural industrialization

China's rural industrialization process could roughly be divided into three phases based on the different national policies.

The first phase runs from 1949 to 1978 when China's rural industries had very limited development. As discussed before, China centered on the development of heavy industry in the urban areas while agriculture collectivization was implemented in the rural regions in the years before introducing the reform and opening up policy. However, this does not mean that industry did not exist in rural China. For example, many agricultural cooperatives were engaged in non-agricultural businesses to meet the needs of production and livelihood in the 1950s. In 1958, the CCP Central Committee also called for the development of rural industries to accelerate the industrialization process in China. Township- and commune-run enterprises were then established and their industrial output value reached 10 billion RMB one year later in 1959, accounting for 20.7 percent of the country's gross industrial production that year (He 2004). The subsequent large decrease of agricultural production led to the suspension of production in the commune-run enterprises. During the period of 1966 to 1976 when the urban industry was seriously interrupted by "cultural revolution", the commune-run enterprises once again developed. By 1978, the number of commune- and brigade-run enterprises totaled 1.52 million, with a gross output value of 49.3 billion RMB (Zhang 2004). The production of commune- and brigade-run enterprises accounted for about 30 percent of the gross output value in the rural areas. These enterprises also employed more than 28.36 billion farmers, or about 10 percent of the total rural labor force in China during that time (He 2004). Nevertheless, commune- and brigade- enterprises were largely small in number and scale, and low in output value.

The second phase, from 1978 to 1996, witnessed a rapid development of the rural industries in China. This is a period when the agricultural cooperatives were abolished and the household contract responsibility system was widely implemented. The opening of markets of most agricultural products enabled TVEs to access to production materials. Constraints of private businesses were also loosened. After realizing that non-agricultural sectors could help raise farmers' income and realize full employment, the Chinese government encouraged the development of various industrial and service businesses in the rural areas. As a result, the rural industries developed quickly in this period. From 1978 to 1996, the population employed in the rural industries increased from 28.27 million to 130.58 million; the added value of the rural industries increased from 20.8 billion RMB to 1.766 trillion RMB; total profits from the rural industries

increased from 9.6 billion RMB to 435.1 billion; and taxes paid by the rural industries increased from 2.2 billion RMB to 130.7 billion RMB (Xu 2009).

The third phase is from and after 1996 when the property rights reform of TVEs was initiated and deepened and most TVEs were privatized. Despite their rapid growth, China's TVEs faced persistent difficulties. TVEs invested without regard to market needs or possible returns, leading to over investment. There were performance and incentive problems resulted from poorly defined property rights. Many TVEs also suffered from poor management, high debt, poor quality and low efficiency. It became clear that TVEs could not continue to sustain rural industrialization. Given such context, many TVEs were sold, annexed or transformed into shareholding cooperative companies after 1996 (Liu 2003). Individual and private enterprises thus gained a rapid pace of development and became dominant in production. By the end of 2000, there were more than 20 million individual and private enterprises, accounting for 96 percent of the enterprises located in townships and villages. The employed population in these enterprises reached 80.96 million, or about 70 percent of those employed in the TVEs. The present value of total output from these enterprises was about 65 percent of the gross output value (Zhang 2004). Individual and private enterprises have since become the pillars of rural industries in China.

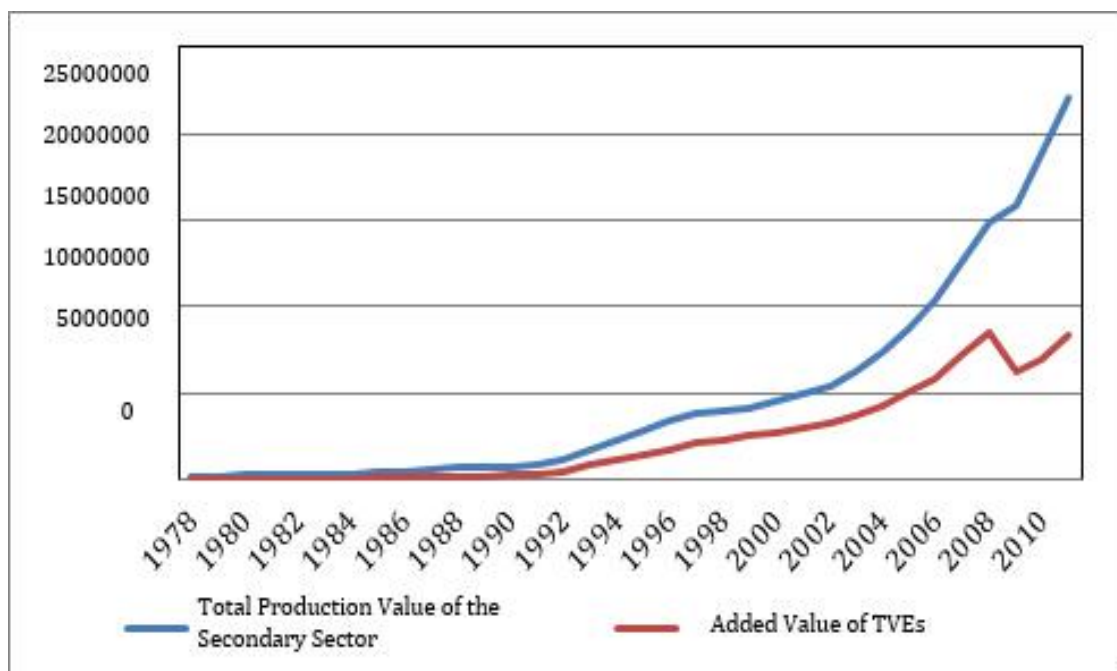
4. 2 Contribution of the rural industries to China's industrialization

In the context of the urban and rural dual structure, development of the rural industries in China had several positive impacts. First, the labor-intensive rural industries created many employment opportunities for the large number of surplus labor force in the rural areas. Second, while heavy industry largely located in urban areas, light industry dominated the rural areas. This helped optimize industrial distribution and structure, and thus balanced the development of heavy industry and light industry. Last but not least, the booming of rural industries and TVEs also promoted the development of small cities and towns.

4.2.1 Rural industries were an important component of China's industry.

Since reform and opening up, TVEs dominated the development of the rural industrial sector. The total value of TVEs was just about 20.9 RMB in 1978, but grew to more than 55 trillion RMB in 2011. In 2011, the added value of TVEs reached over 8 trillion RMB, or 37.58 percent of gross industrial output value of the whole nation.

**Figure 4. 1: Ratio of Added Value of TVEs in the Secondary Sector
(Unit: Million RMB)**

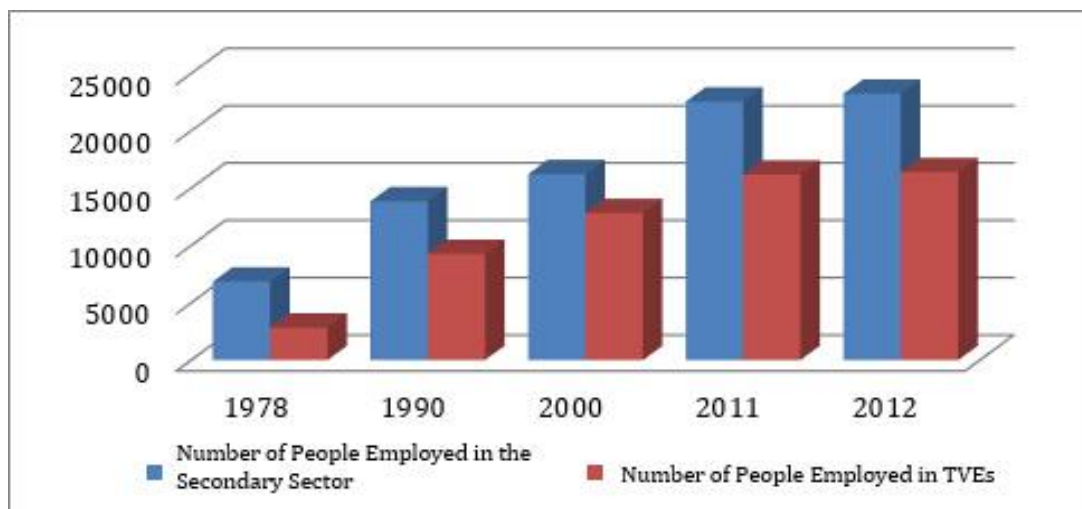


(Data Sources: *China TVEs Yearbooks* from 1978 to 2011)

4.2.2 Rural industries employed a large proportion of China’s working-age population.

TVEs have provided massive employment opportunities and increased the income of farmers. In 2011, TVEs employed more than 162 million labors and distributed salaries amounting to more than 2.62 trillion RMB. This means that rural residents on average gained about 2,471 RMB salary incomes from TVEs. By the end of 2012, the employed population in TVEs reached 164 million (See Figure 2), accounting for 40 percent of total employed persons in rural China. Salary income from TVEs for rural residents grew to about 2,800 RMB on average, or about 35.4 percent of farmers’ per capita net income (Yang 2013). In 2012, TVEs also employed 2.93 million new labor market entrants and more than 7.4 million unemployed persons. While TVEs have become a major source of non-agricultural incomes of farmers and fueled poverty reduction in rural China, they also made great contribution to China’s fiscal revenue and the development of rural social endeavors. For example, in 2011, TVEs paid taxes of more than 13.4 trillion RMB and provided subsidies of about 40 billion RMB to agricultural construction and rural social expenditures.

Figure 4.2: Number of People Employed in the Secondary Sector and in TVEs



4.2.3 Rural industries balanced China’s industrial structure.

Rural industrial development led to a change of industrial structure and a more balanced development pattern in China. The rural industries not only facilitated a coordinated development between the agricultural and industrial sector, but also linked together the urban and rural areas. Most TVEs were small- and medium-sized and focused production on component parts, agricultural and mineral products or other industrial products that were not suitable to be produced in the urban areas. While TVEs largely concentrated on labor-intensive processing of agricultural products and resource development, enterprises in urban suburbs mostly provided complementary processing services to state-owned enterprises (SOEs) in the cities. Therefore, TVEs and SOEs depended on each other and were complementary with each other in industrial production. The development of rural industries thus balanced China’s industrial structure.

4.2.4 Rural industries contributed greatly to the initiative of “earning foreign exchanges through exports”.

In 1980, China’s foreign exchanges were only 18.1 billion US dollars, falling short of the needs of economic development. In 1985, the Chinese government began to encourage TVEs in coastal areas to join the initiative of “earning foreign exchanges through exports”. Many TVEs in the coastal areas then became export-oriented, engaging in processing raw materials on clients’ demands, assembling parts for clients and processing according to clients’ samples. By 1986, TVEs also began to form joint ventures with foreign companies. Since the 1990s, some TVEs have exclusively focused on exports or made investment in other countries. Foreign exchanges earned through exports by TVEs greatly increased. In 2011, export delivery value of products made by TVEs continued to increase and reached more than 4.37 trillion RMB,

accounting for 37.53 percent of the total earned foreign exchanges that year (2012 Yearbook of TVEs and Processing Industry of Agricultural Products)

4.2.5 Rural industries brought along the development of small towns and cities in China.

Rural industries often concentrated in small towns and were the dominant sector in promoting their emergence, development and prosperity. In the initial stage, small towns were largely the destinations where businesspersons resided in and engaged themselves in trading products. Rural industrialization then turned the small towns into places where industrial productions occurred, which in turn promoted the development of the tertiary sector. The subsequent reduction of transaction cost and increase of employment opportunities enabled small towns to attract more rural enterprises and further push the development of these places. In addition, rural industries also provided capital and financial support to infrastructure construction and provision of public goods in small towns and cities. The “Sunan Model” urbanization—the development of small towns in the Sunan region— was, in effect, a result of the booming rural industries.

4.3 Private enterprises and China’s industrialization

Though state-owned economy still plays the dominant role in China’s national economic development, private enterprises and Chinese entrepreneurs have made great contributions to China’s rapid economic development and industrialization. In 2013, contribution of the private sector to China’s GDP exceeded 60 percent. There were 19 provinces in mainland China where contribution of the private sector to provincial GDP exceeded 50 percent. In Guangdong, the private sector contributed more than 80 percent to the provincial GDP. Also in 2013, added value of scalable private enterprises increased by 12.4 percent from 2012, while the increase rate for state-owned industries was 6.9 percent. It can be seen that the private sector is making larger and larger contributions to the country’s industrialization and economic development.

We could also divide the development of the private sector in China into three periods. In the first period, from 1978 to 1992, the private sector was a complement to the socialist public economy. The amendments to China’s Constitution adopted at the first session of the seventh NPC in 1986 provided that “the state protects the lawful rights and interests of the private sector of the economy, and exercises guidance, supervision and control over the private sector of the economy”. In the second period, from 1992 to 2002, the private sector was an important component of the socialist market economy. In 1998, the Constitution was revised to admit the increasing roles of the private sector in China’s economy, which read: “During the primary stage of socialism, the state adheres to the basic economic system with public ownership remaining dominant and

diverse sectors of the economy developing side by side...Non-public economies, including the individual and private economies, are an important component of our socialist market economy.” The third period is after 2002 to the present, economies with different types of ownerships start to compete on equal terms and the development of the private sector has entered into a new phase. The 16 CPC National Party Congress stated that the country would unswervingly encourage, support and guide the development of the nonpublic sectors of the economy.

4.3.1 Growth and contribution of private enterprises in China

The nonpublic sectors of the economy have become important growth poles in China, and made larger contributions to employment, China’s GDP and technological innovation (measured by the number of effective invention patents) than the public sector. From 2000 to 2009, the number of registered private businesses grew by more than 30 percent a year, which still excluded the ubiquitous unregistered business¹³. In 2011, China registered 9.677 million private enterprises and 37.565 million individual enterprises, which employed 235.5 million people, four times of those employed in the public sector and accounting for about 30.8 percent of the total working-age force in China. The nonpublic sectors made a contribution of more than 50 percent to China’s GDP in the same year, which did not take into account the massive shadow economy. In the meantime, the nonpublic sectors of the economy also played the dominant role in technological innovation. In 2011, the number of effective invention patents owned by scalable industrial enterprises was 131,986. Among them, 41,366 or 26.1 percent belonged to the private enterprises, 2.5 times bigger than those owned by the three major public enterprises: state-owned enterprises, state-owned associated enterprises and state solely-funded enterprises (Feng 2012). In terms of imports and exports, in 2013, the exports from private enterprises amounted to 916.77 billion US dollars, an increase of 19 percent from 2012, while the imports were 576.48 billion US dollars, increased by 28 percent. Both were higher than the respective increase ratios of 11.2 and 20.5 percent in exports and imports from 2012 to 2013 in China (China Radio International 2014).

4.3.2 The important roles of private entrepreneurs

Along with the increasing importance of the private economy, private entrepreneurs gained more and more social recognition. From almost non-existence, private entrepreneurs have expanded quickly and become more educated and professionalized. Their roles in promoting the development of China’s national economy are becoming more obvious. Entrepreneurs of SMEs have also played a vital role in fueling the process of rural industrialization in China. Along the years, China has seen the

¹³ See: “Entrepreneurship in China: Let a Million Flowers Bloom”, <http://www.economist.com/node/18330120>

emergence of many “star villages” led by capable private entrepreneurs. For example, the well-known Huaxi Village at Jiangyin city of Jiangsu province hosts Huaxi Group, which has more than 60 subsidiary enterprises and a disposable fund of 2.6 billion RMB in the end of 2013. The success of the Group and the Village was largely because of a private entrepreneur named Mr. Wu Renbao. Another one is the Nanshan village at Yantai of Shandong province. The village-operated Nanshan Group had revenue of more than 100 billion RMB in 2012 and was among the top 500 large-scale enterprises. In addition, differing from their Western counterparts characterized by the “protestant ethic” and professionalism, the Chinese entrepreneurs are strongly impacted by the Confucianism culture which centers on honesty, credibility, responsibility for family and state, self-discipline and social commitment.

4.4 Support to rural industries and private enterprises from the

Chinese government

One of the main reasons for the rapid development of rural industries and private enterprises was the strong support from the state. First, the Chinese government created an enabling environment for the development of rural industries and private enterprises through laws and policies. Along the years, the Chinese government formulated a series of laws, regulations and policies to protect and support the development of TVEs, including *Rules on Several Issues of Developing Commune and Brigade Enterprises*, *Regulations on Township- and Village-Owned Collective Enterprises*, and *Law of TVEs*. The importance of the nonpublic sectors was also gradually recognized through the amendments to the Constitution as discussed above. In 2005, the State Council promulgated *Several Opinions on Encouraging, Supporting and Guiding Nonpublic Sectors of the Economy*, the first policy document on promoting nonpublic sector development since the founding of the Republic. China now has installed a sound legal and policy system for the development of the nonpublic sectors.

The Chinese government also provided financial and technological support to TVEs and private enterprises. For example, in the period of command economy, the Chinese government arranged for commune- and brigade- enterprises to produce component parts and other products and provided equipment support (Ye 2001). More than half of the state investment in the communes went to the commune- and brigade enterprises. Loans were also provided in preferential terms and taxes were charged at a low level or exempted for commune- and brigade- enterprises. After the market-oriented economy was introduced, the state then gradually reduced intervention on the operation of private enterprises and granted them equal status in the market. However, a series of research and development programs like the “Spark Program” were launched to support TVEs’ technological upgrading.

After the onset of the structural adjustment programs in the 1980s, private SMEs in Africa witnessed a blooming growth. SMEs have since become an important driving force of economic growth in Africa and provided more than 50 percent of employment positions in many African countries. In South Africa, SMEs contributed 22 percent to the country's GDP and 55 percent employment (Mwapachu 2012). In Ghana, SMEs occupied 70 percent of GDP and 92 percent of commercial businesses in the country.

However, there are several factors that are impeding SMEs' development in the continent. The first one lies in government policies, including over-regulating, high taxes and onerous approval procedures. There is also the problem of lack of basic infrastructure. Insufficient supply of electricity and inconvenient transportation create barriers for SMEs' growth. In addition, SMEs have very limited access to loans for various reasons, which in turn makes them difficult to expand production scale (Gatt 2012). Thus, African countries should install policies to improve infrastructures, streamline policies and regulations, and create an enabling environment for the development of SMEs.

Reference

China Radio International 2014, "Imports and Exports from China's Private Enterprises Totaled More Than 900 Billion US Dollars in 2013" (in Chinese), available at <http://gb.cri.cn/42071/2014/03/04/6871s4446942.htm>

Cao,

Feng, X. (2012), *Report on the Surviving Environment of China's Private Enterprises* (in Chinese), China Economy Publishing, Beijing.

Gatt, L. (2012), "SEMs in Arica: Growth despite Constraints", available at

http://www.consultancyafrica.com/index.php?option=com_content&view=article&id=1120:smes-in-africa-growth-despite-constraints&catid=82:african-industry-a-business&Itemid=266

He, K. (2004), *TVEs in China* (in Chinese), China Agricultural Publishing, Beijing.

Li, C. (2002), "Comments on Theoretical Research of China's Rural Industrialization" (in Chinese), *China Village Watch*, vol. 6.

Lin, Y. & Liu, M. (2004), "Economic Development Strategy and China's Industrialization", *Economic Research*, vol.7, pp.48-58.

Mwapachu, J. V. (2012), *SMEs as strategic drivers of African socio-economic transformations: challenges and policy prescriptions*

Xu, W. (2009), "Reading the Three-decade Development of China's TVEs—Interviews with Mr. Lu Yongjun, Deputy Director of the Bureau of TVEs at the Ministry of Agriculture" (in Chinese), *Management Watch*, vol.1, pp.21-27.

Yang, S. (2013), "Speech at the National Working Meeting of TVEs and Processing of Agricultural Products (Summary)" (in Chinese), *Agriculture Engineering Technology (Processing of Agricultural Products)*, version dated January 15, 2013.

Ye, C. (2001), "Research on China's Rural Industrialization" (in Chinese), Master Thesis of Anhui Agriculture University.

Zhang, G. (2004), *A Review of Six-decade Reform of Rural China: Development of Township and Village Enterprises*, Haitian Publishing House.

5. Technological Innovation, Talents and Industrialization

Economists have identified several factors to explain why countries of the world display considerable disparity in long term growth rates. The first is capital accumulation in both its physical and human forms (King & Rebelo 1990). The second is economic externality, meaning that capital accumulation in one place will inevitably increase others' productivity. Such spillover effects could occur in the process of human capital accumulation through "learning by doing" (Arrow 1962) or physical capital accumulation (Lucas 1988). A third explanation emphasizes the role of technological change and industrial innovation (Aghion & Howitt 1992). For example, Lin (2005) argues that developing countries could have quicker economic growth through importing technologies from developed countries, and in the end enables them to catch up.

For a long time, China, as a developing country, lagged behind the Western countries not only in industrialization and modernization, but also in science and technology. Thanks to the policies of reform and opening up, and under the guideline of "science and technology constituting primary productive forces", China has transformed from a straggler to an innovator in science and technology through importing Western technologies and creating a supportive environment for indigenous innovation. As a result, China's science and technology has been improving steadily, enabling the country to sustain rapid rates of economic growth.

5.1 Technological Innovation and Industrialization

Progress in science and technology not only creates innovation in industrial production, but also expands the space of industrial development. Whenever the current way of industrial production is widely adopted, the industrial development will come into "spatial saturation" and growth will lose momentum. Only revolutionary technological change can bring about an essential upgrade of industrial structure and great expansion of industrial development space. The industrialization process in many countries indicates that there are two major sources for the advancement of industrial technology. One is indigenous technological innovation, namely, technological progress largely relies on the innovation of one's own country reflected by the possession of a large number of independent intellectual property rights and, especially core technologies. The other relies on technology diffusion from other countries. In such cases, those countries do not have that many independent intellectual property rights or key technologies. However, by learning, purchasing and importing technology from other countries, one country may also be able to build its technological base and realize

industrial growth. In fact, no country in the world could completely depend on indigenous technologies without learning from others to maintain economic growth.

As a developing country without the ability to technologically innovate, China mainly studied and imitated patented technologies imported from other countries, before (integrating its own society? (Hu 2011). Many industrial technologies in China came from technology diffusion of the Western countries (Jin 2004). In the following section, we identify three major driving forces behind China's technological advancement, including the dominant role of the Chinese government in planning and investing, import of foreign technologies, and social and economic incentives.

5.1.1 Dominant role of the Chinese government in planning and investing science and technology development

Different from the multiple forces of technological innovation in the developed countries, developing countries, including China, largely rely on national strategies to advance science and technology. China promulgated its first ten-year plan on science and technology development in 1956. Based on this plan, China committed to develop technologies that were concerned with national security and economic development, including, *inter alia*, nuclear energy, electronics, semi-conductors, automation, computing, air injection and rocket science. These technologies brought along the emergence of a series of industrial sectors. In 1962, China formulated another five-year plan on science and technology, which identified 374 major science and research projects, 3,205 key issues and 15,000 research topics. By the end of 1972 when the plan ended, China had already established its own technological systems concerning heavy industry, light industry and defense, despite the disruption of the "cultural revolution". After 1978, a series of overall plans regarding science and technology development were successively issued. For example, in 1982, a program known as "National Key Technologies Research and Development" was initiated to concentrate resources and research and development professionals to tackle barriers in the development of key technologies. From 1991 to 1995, China set up 180 major research and development projects and invested more than 9 billion RMB, leading to more than 60,000 scientific outcomes (35 percent of them reaching international level) and 60 billion RMB in direct economic returns. In 2006, the "National Key Technologies Research and Development Program" was turned into the "National Technology Support Program" to sustain national support to research on key application technologies (Li 2008). In the meantime, China also established research institutes at various levels, amounting to 3,674 in 2012, including 710 at the central level and 2,964 at different local levels. These programs greatly improved the contribution of science and technology to economic growth and China's overall competitiveness.

Table 5. 1: Inputs in R & D in China (2008-2012)

Year	2008	2009	2010	2011	2012
Number of R&D Professionals (10,000 person/year)	196.5	229.1	255.4	288.3	324.7
Basic Research	15.4	16.5	17.4	19.3	21.2
Applied Research	28.9	31.5	33.6	35.3	38.4
R & D	152.2	181.1	204.5	233.7	265.1
R&D Expenditures (1 billion RMB)	461.60	580.21	706.26	868.70	1029.84
Basic research	220.8	270.3	324.5	411.8	498.8
Applied Research	575.2	730.8	893.8	1028.4	1162.0
R & D	3820.0	4801.0	5844.3	7246.8	8637.6
Government Input	1088.9	1358.3	1696.3	1883.0	2221.4
Enterprise Input	3311.5	4162.7	5063.1	6420.6	7625.0
Ratio of R&D Expenditures to GDP (%)	1.47	1.70	1.76	1.84	1.98

Data Source: China Statistical Yearbooks from 2008 to 2012

As shown in Table 1, professionals and expenditures related to research and development (R & D) in China have both increased quickly over recent years. For example, the numbers of professionals engaged in R & D increased from 1.965 million people in 2008 to 3.247 million people in 2012, (% increase?) while the share ratio of R & D expenditures in GDP increased from 1.47 percent to 1.98 percent in the same period. According to the most recent 2013 Global Forecast on R & D Funds, the share ratio of R & D expenditures to GDP in 2014 will be more than 2 percent in China.

5.1.2 Import of Foreign Technologies

As discussed above, progress of technology and know-how in China involves two types of dynamic sources: endogenous and exogenous innovation. However, it has been argued that technology imports constitute the major source of innovation in China and

exogenous technologies, or international technology transfers, have played a larger role in China's economic growth (Liu 2006). Since opening the door to the outside world, China has secured more and more channels including foreign trade and foreign direct investment, by which advanced international technologies can be obtained (See Table 2). Technology imports then indirectly stimulated domestic technical innovation and inspired direct participation in global technological competition. Nevertheless, China is still a laggard in the field of new technologies and has a long way to go in promoting indigenous innovations.

Table 5. 2: Technology Acquisition and Reconstruction of Scalable Enterprises in China

Indicators	2004	2009	2011	2012
Expenditures in Importing Foreign Technologies (1 billion RMB)	39.74	42.22	44.90	39.39
Expenditures in Absorbing Imported Technologies (1 billion RMB)	6.12	1.82	20.22	15.68
Expenditures in Purchasing Domestic Technologies (1 billion RMB)	8.25	20.34	22.05	20.17
Expenditures in Reconstructing Technology (1 billion RMB)	295.35	434.47	429.37	416.18

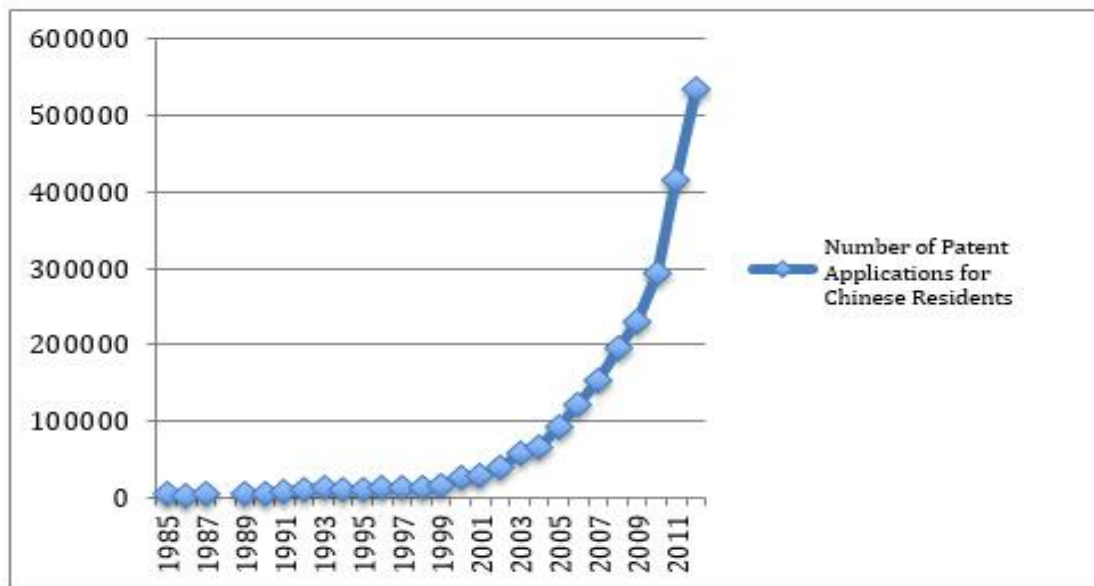
Data Source: China Statistical Yearbooks, Selected Years

5.1.3 Social and Economic Incentives

The Chinese government has provided both social and economic incentives to encourage technological innovation through granting various awards and establishing platforms for technical professionals to play their roles. In 1978, the CPC Central Committee convened the National Conference on Science and Technology and awarded 7,657 technological achievements. This represented a restoration of the award system in the field of science and technology, which was further institutionalized by the establishment of the National Office for Science and Technological Awards by the State Council in 1988. In 1994, a national award for international cooperation on science and technology was set up to encourage international exchanges in this regard. In 1999, the State Council enacted the *Regulations on National Science and Technology Prizes* and established five national prizes in science and technology, including National Highest Science and Technology Award, National Natural Science Award, National Technological Invention Award, National Science and Technology Advancement Award, and International Scientific and Technological Cooperation Award. These awards were aimed to recognize citizens and organizations that had made remarkable contributions to scientific and technological progress, and to promote the development of science and technology in China. In 2000, the National Highest Science and

Technology Award was formally launched, with a maximum award/prize of 5 million RMB. These incentives greatly advanced China's technological innovation. For example, in 2012, China, for the first time, topped the ranking for both the source (filings by China) and the destination (filed in China) for the four types of intellectual property, including patents, utility models, trademarks and industrial designs¹⁴.

Figure 5.1: Number of Patent Applications of Chinese Residents



(Data Source: World Bank¹⁵)

5.2 Talents and Industrialization

Empirical research shows that changes of investment in education also lead to changes of GDP growth. From 1952 to 2003, investment in education contributed about 24.4 percent to China's economic growth. The contribution of investment in education to economic growth became higher after China introduced the market-oriented economy, and increased from 22.8 percent to 29.7 percent (Fan & Lai 2005). The Chinese government has long paid high attention to education and cultivated a large number of talents. By 2005, the numbers of scientific and technological professionals in China totaled 42 million, the highest in the world. From 2007 to 2011, the numbers of R & D professionals across the world increased by 3.7 percent on average, while China's average rate of increase was 13.5 percent. China also hosted the largest number of researchers in the world, accounting for 25.3 percent and exceeding that of the United States (17 percent).

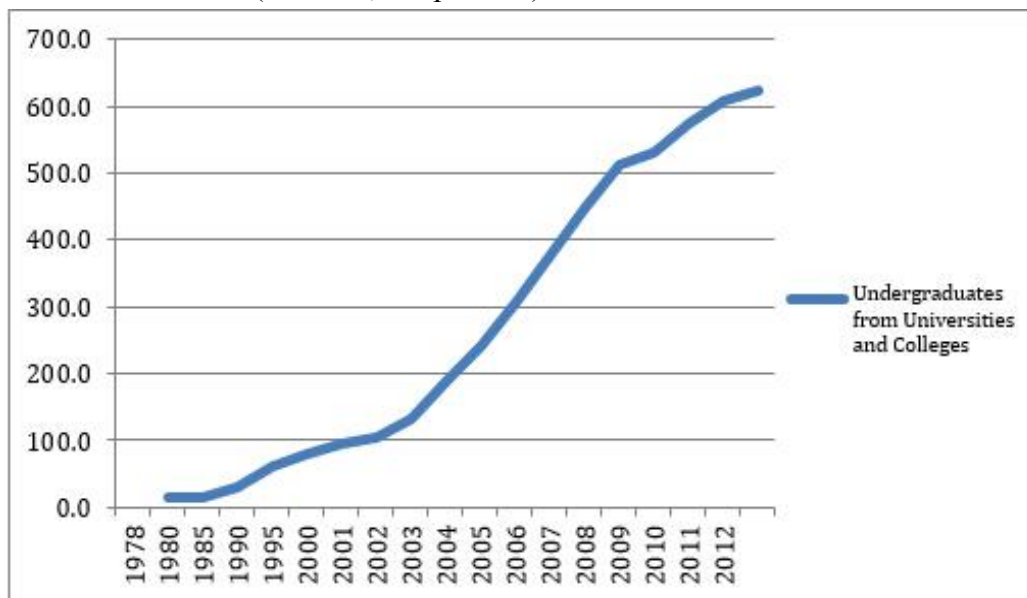
The rapid increase of the numbers of talents in China for the past three decades is closely related to national policies. Starting from 1978, the Chinese leadership has

¹⁴ See: WIPO, "Global Patent Filings See Fastest Growth in 18 Years", available at: http://www.wipo.int/pressroom/en/articles/2013/article_0028.html

¹⁵ See: <http://data.worldbank.org/country/china>

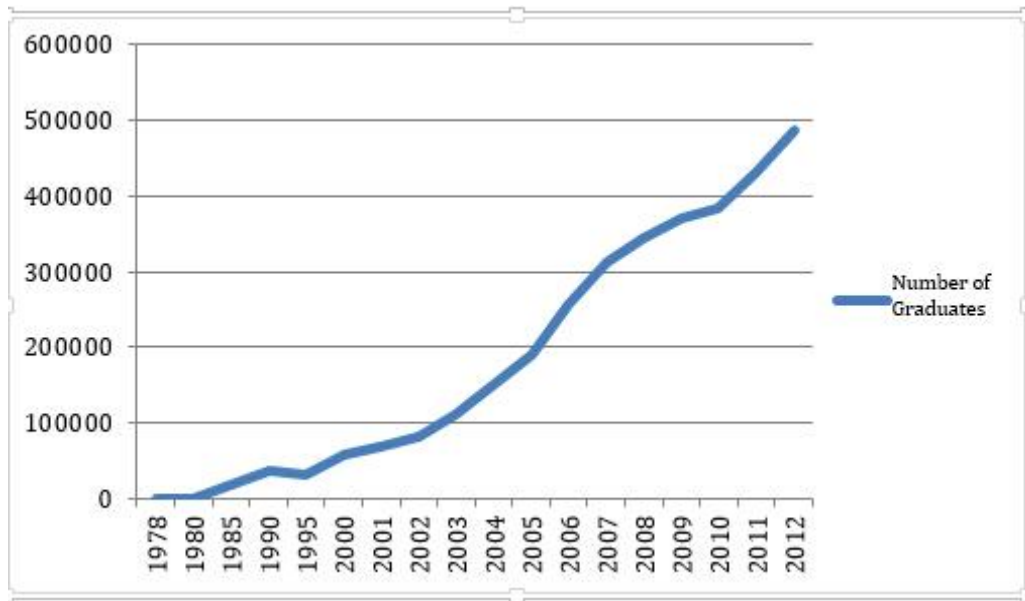
called for “respect of knowledge and respect of human talents” and deepened the reform of the administration system on R & D professionals. As a result, the numbers of educated people increased very quickly after 1978. Figure 2 below shows that the number of undergraduates from universities and colleges in China grew from 165,000 in 1978 to 6.247 million in 2012, while the number of post graduates increased from 9 in 1978 to 486,455 in 2012 (see Figure 3). The number of students studying abroad also saw rapid increases, from 860 in 1978 to 399,600 in 2012, while the number of students returning to China grew from 248 to 272,900 for the same period (Figure 4). Among the 353,500 returning overseas students in 2013, about 21,000 or 6 percent of them have doctoral degrees. In 1978,, China only had 18 Ph.D. candidates and 6 doctorates in 1982, which then rapidly increased to 300,000 and 60,000 respectively in 2012. China now has the largest number of Ph.D. students and doctors of philosophy in the world.

Figure 5. 2: Number of Undergraduates from Chinese Universities and Colleges from 1978 to 2012 (Unit: 10,000 persons)



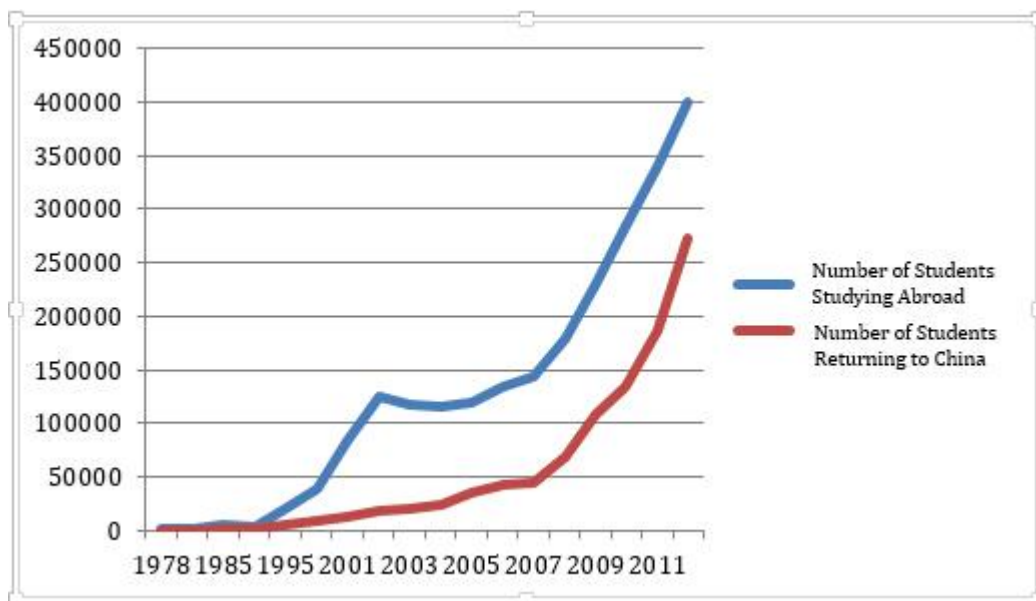
(Data Source: China Bureau of Statistics)

Figure 5. 3: Number of post Graduates from Universities and Colleges from 1978 to 2012 (Unit: person)



(Data Source: China Bureau of Statistics)

Figure 5.4: Number of Students Studying Abroad and Returning to China from 1978 to 2012



Data Source: China Bureau of Statistics

Over the years, the country has also gradually established a national financial aid system for innovation talent through various talent programs sponsored by government agencies. China issued its Medium and Long-term Talent Development Plan (2010-2020). According to the plan, the Chinese government has successively launched a series of talent programs such as “Cheung Kong Lecture Professional”, “Thousand Talents Program”, and “Young Tip-Top Talent Program”. The strong and exemplary role of these programs also drives local governments to establish and

implement local talent introduction programs and policies, which further accelerates the return of overseas talents. Since 2008, the growth rate of numbers of people returning to China has climbed significantly higher than that of people studying/staying ? abroad. In 2011, 186,000 people returned to China, nearly triple the 2008 figure. Over the past 50 years, more than 1.6 million Chinese studied abroad and 497,400 of them returned to China who then became the mainstays in the economic, social, scientific and technological development.

5.3 The Africa Case

(Know-how, technological innovation and talents made great contributions to China's industrialization and economic development. China is also becoming a country with relatively advanced technologies. In contrast,) *suggest delete* African countries still face a lot of challenges in technological development. Most African countries invest about 0.5 percent or even less of their GDP in R & D (World Bank 2012). Education in Africa is still not well developed. In 2012, the dropouts of primary school students reached 30 million people, with a dropout rate of 25 percent. Moreover, many students could not read or calculate even after having studied at school. Up to now, invention innovations from the African region have been very limited. According to the World Intellectual Property Organization (WIPO), Africa registered 500 patent filings in 2013, including 351 from South Africa, 54 from Morocco, 7 from Algeria and 7 from Kenya. This was less than one percent of the total 205,000 global filings that year.

Even worse, for various reasons, African countries are facing serious "brain drain" problems. According to the World Migrant in Figures 2013, one in every nine people who are born in Africa and have a university degree is a migrant in one of the 35 member countries of the OECD. The World Bank calculates that in 2010 approximately 90 percent of North Africa's emigrants moved to nations outside the continent (Feldman 2012). The Nigerian Information Technology Development Programme forecasted that about 430,000 African information and technology professionals would go to the United States for work in 2015. Brain drain has thus become one of the major barriers to Africa's development. To stop further(exaggeration?, African governments and bilateral and multilateral donors should work together to help the region to install talent introduction and incentive programs, increase investment in R &D, facilitate transfer of technologies to the region and build Africa's capacity in developing and applying new technologies such as bio-technology and information technology (Zhang 2009).

Reference

- Aghion, P. and Howitt, P. (1992), "A Model of Growth through Creative Destruction", *Econometrica*, vol. 60, no.2, pp.323-351.
- Arrow, K. J. (1962), "The Economic Implications of Learning by Doing", *Review of*

Economic Studies, pp. 155-173.

Fan, B. and Lai, X. (2005), "Research on the Contribution Ratio of Investment in Education to Economic Growth" (in Chinese), *Academic Journal of Zhejiang University (Humanitarian and Social Science Version)*, vol.35, no.4.

Feldman, R. (2012), "Africa's Brain Drain: Its Impacts on Security and Stability", U.S. Army Reserve.

Hu, A. (2011), *China in 2020: a New Type of Superpower*, Brookings Institution Press, Washington, D.C.

Jin, P. (2004), "Innovation of Industrial Technology in China" (in Chinese), *China's Industrial Economy*, no.5.

King, R.G. and Rebelo, S. (1990), "Public Policy and Economic Growth: Developing Neoclassical Implications", NBER Working Paper, no. 3338, National Bureau of Economic Research.

Li, P. Li, Q. and Ma. R. (2008), *Sociology and the Chinese Society*, Social Science Documentation Publishing, Beijing.

Lin, Y. and Liu. P. (2005), "Late-development Advantages, Technology Introduction and Economic Growth of Developing Countries" (in Chinese), *Economics*, vol. 1, pp.53-74.

Liu, Y. (2006), "Endogenous and Exogenous Factors of China's Technological Advancement and Policy Recommendations", China Science and Technology Forum.

Lucas, R. E. (1988), "On the Mechanics of Economic Development", *Journal of Monetary Economics*, pp. 3-42.

61-70.

Zhang, Y. (2009), "Serious Challenges of Developing Science and Technology in Africa" (in Chinese), *Global Prospect for Science, Technology and Economy Magazine*, no. 7.

6. What lessons can Africa draw upon from China's industrialization experience?

Various industrialization strategies have been pursued to achieve transformation in Africa without great success. In the immediate period after independence from roughly 1966 to 1970, growth in Africa matched East Asian growth both in direction and size, Post 1970 up to 1975, African growth matched that of East Asia at least in direction, though it was of a smaller magnitude. The gap between East Asian and African growth begins to expand substantially in the post-1980 period, after the second oil crisis and the onset of structural adjustment programs on the continent (Githinji 2011). This raises interest analyzing the gap by comparing the economic performance of both parties. China's successful industrialization became of interest for African countries after entering the new century. In two decades, China's share of global manufactured exports rose from nearly zero to 15 percent -- to a third if you only count labor-intensive products (Giugal 2014). It is natural to ask how Africa can follow East Asia or China's industrialization path. The simple answer is "No". But there is a lot that Sub-Saharan Africa can learn from the Chinese industrialization experience -- that incredible transformation from an old, inward-looking, heavy industrial sector which provided relatively little employment, exported almost nothing, and was owned and managed by the state, into the world's most formidable light-manufacturing machine, run by private entrepreneurs and the provider of hundreds of millions of jobs. As mentioned in the introduction part of this report, China's industrialization has been attributed to many factors, such as its strong development oriented state, agricultural development, rural industries, private sectors as well as local entrepreneurship, regional integration, infrastructure, FDI and so on under China's special political and social cultural context. Many of those components were highlighted in different chapters in this report. African countries have already paid attention to them and have taken some of the policy experiences such as infrastructure development, FDI and the SEZ into their own efforts. Even so, we still need to be cautious in that sharing China's industrialization experiences would have to be based on African conditions as well as its context-based strategy. Given Africa's conditions, all of the elements mentioned contributing to China's industrialization success is useful for Africa as references; however, we argue that to strengthen the role of the states and the role of agriculture are the two most important areas for Africa countries to consider. They must develop their industrialization strategy as well as determine the terms of engagement with the emerging economies to grasp the new opportunity for economic development based on

industrialization. The former might affect whether Africa can develop coherent industrial policy while the latter would affect under what conditions the industrialization in Africa can be sustained.

6.1 The opportunities Africa faces now

Needless to say, how much damage the colonial economy, catch-up industrialization for import substitution during the post-independence era and particularly the imposed structural adjustment program, has been made for African development? Africa now stands at a cross roads. Firstly, under the new global context, rapid economic expansion by the emerging economies will likely continue. This will not only keep global commodity prices high for resource rich Africa for raw materials, but at the same time, the rise of non-skilled labor wage will continue and will push those countries to upgrade their industrial structure to more value-added capital and knowledge intensive industries. For example, the non-skilled labor wage will likely rise to 1000\$US per month after 10 years, thus providing a huge opportunity for low income countries to develop labor-intensive manufacturing (Lin 2012, P324). During the global economic transition of the 1960s, Japan transferred 9.7 million laborers and Korea offered 2.3 million labor positions, In the future, China will release 85 million laborers during the transformation of its economy (Lin 2011c). Secondly, Africa has rich natural resources and big population with a large proportion of young people. China's clothing export value was around 107 billion \$US in 2009, while the export value of the same products from Sub-Sahara Africa was only 2 billion \$US. If only 1 % of China's textile industry was transferred to Africa, then Africa would gain 47 % increase in employment. Given its 1 billion population and estimated 10 million laborers available, and if we normatively assume that only 12% of labor opportunity is transferred to Africa from the 85 million labor force from China, it certainly provides doubtless hope for Africa's future manufacturing sector (Lin 2012, P325). The question is how can Africa use this opportunity to convert its comparative advantage into a competitive reality?.

6.2 Role of the state and industrial policy

The role of the state in industrialization has gained more credit when the case of Japan and East Asian economies during the 1960s and 1970s are examined, and particularly the recent case of China, has been reviewed. It is commonly agreed that in order to industrialize Africa, African countries need to rethink the role of the state. Such a course of action can successfully change the economic structure under a globalized world economic system. It is not to inform African countries to become so-called developmental states or to follow China's developmental politics; but rather to share how rapid transformation happened with the role of the state by taking the case of China.

6.2.1 Consensus-based developmental politics

China's rapid industrialization has taken place under China's special political conditions. Since the end of the 1970s, the Chinese Communist Party has prioritized economic development into its political agenda in order to ensure its legitimacy. The constitution gives the Chinese Communist Party a leading role to govern the country in consultation with other political forces. This type of "consensus politics" provides the opportunity to collect different opinions from different agencies while still keeping the Chinese Communist Party in the decisive decision-making position, or in the Chinese term "democracy and concentration". This political system has helped China to develop and implement the country's economic strategy over the last 30 years in a very consistent manner. Firstly, the Chinese Communist Party has depoliticized itself in two stages. The first stage was during the time that Chinese society had not yet been stratified. To level up economic welfare was the common interest of the people, therefore to shift from an ideological regime to a developmental one gained popular public support and reinforced the Chinese Communist Party's legitimacy; the second was the time when society began to be much more classified. Then the Communist Party claimed that its political principle to be the "three representatives", implying that it represents the interest of all groups in the society. The Chinese Communist Party has constantly focused its dynamic political transformation by taking on the country's development challenges over time. By doing so, the Communist Party has gained strong political and social support from the people and consequently created political stability to develop coherent development policy and implement it efficiently. Despite the challenges the Party has faced, there has been less risk for the party to experiment with new policy under this consultation based consensus politics, because the party only needs to adjust the policy if the policy experiment does not work, rather worry about being challenged to step down. This explains, from the political institutional perspective, why the strategies and policies for economic development over last three decades in China have been developed and implemented efficiently. It is not our intention to justify China's political system, but to say how the political stability has been created to maintain the continuity of development strategy as well as consensus building. Most African countries have gradually shifted to a competing-politics-based democratic system, the party in power is balanced by different parties. It is difficult to reach a full consensus or take the risk to experiment with new policy. The terms of the political power in the context of highly unequal societies embedded with regional, ethnic, income and religious differences likely creates instability, and eventually limits the long run perspective and continuity of development strategies. We argue that for countries like China in the past and African countries today, to initiate industrialization requires political stability and consensus building essentially in a long run perspective because to realize industrialization is multi-decade project and needs stable strategy and policy from the state despite market mechanisms. This, however, does not imply any rejection of democratic institutions, but rather to suggest that to judge any system

in poor countries should be based on the fact if it can bring about growth and poverty reduction by its own means.

6.2.2 Development planning

Despite the decreasing role of central planning authority in China, the Five Year Development plan has been the main tool for China to implement its long term development strategy. The role of the state in China is mainly exercised through the planning process so that the development perspective developed by the party is put into practice. Firstly, the development plan is a learning process. A number of think tanks and research institutes are given the task of undertaking systematic research on overall development issues as well as thematic areas prior to the next five year plan. The experiences and lessons are systematically reviewed and recommendations are developed. It needs to be noted that those studies are undertaken by “local brain”, rather driven by “donors” although external opinions are absorbed properly through collaborative exercises. Secondly, the five years plan is a consensus building process. Based on the various studies, the National Development Planning and Reform Commission (NDRC) drafts the plan and submits it for wide consultations. The consultations take place in formal and informal ways. Thirdly, the national level five year plan serves as a guide for the regional plan to keep to coherent development in a regional integration manner given China’s vast geographic size and decentralization policy. The five year plan is then submitted to the people’s congress for final approval. The consensus politics works throughout the process, particularly during the congress debates to ensure that the plan does not become the “divided cake”. Most African countries adopted a planning system after their independence. In recent decades, different kinds of development perspectives as well as five years plan have been popular items on Africa’s development agenda. However, the effectiveness of those plans to promote growth and reduce poverty has been widely argued. Despite the well perceived fact that the structural adjustment program has demonized the state capacity in African countries, there are many other aspects that also contribute to the situation. Most of the development strategies and plans for African countries are still if not all, at least partly funded by the external agencies. Local ownership of the strategies and policies are often emphasized; however, under mutual accountability mechanisms, the strategies and policies developed are not fully locally owned. A large proportion of the funding for local think tanks comes from donor agencies, and thus the research agendas are often not for the country, but serve for the interests of the funders. In fact, due to a lack of local intellectual capacity given the serious brain drain, most African counties are not able to develop their own development strategy and policy. The competing politics can provide different perspectives, but without consensus, development plans ultimately become a compromise. “Everything is a priority” reflects deficiency of development planning in most African countries in this regard. To be successful States, as agents of development, must have overarching structure to integrate different

interests into well justified goals reflecting the country's development needs, and obtain their own capacity financially and intellectually to do the research and assimilate outside research to create a national framework to guide and implement their industrialization.

6.2.3 Decentralization and development campaign

It is often conceived that China maintains concentrated central power. In fact, China has decentralized its economic development structure since the reform. Local governments gained great power to develop their regions after the taxation reform. A similar development planning procedure is followed by local governments down to county level. Different strategies and policies are encouraged as long as they do not conflict with national ones and at the same time, due to the dual accountability mechanism, local leaders are held accountable to their top leaders as well as the population in the region. The promotion of leaders is measured by economic performance in the region; therefore, development campaigns have been created. "100 highly performing countries" is an example of the type of incentive for this development campaign. The leaders from well performing regions often are preferentially promoted to the up level, which gives incentive for better performance. Dramatic increases in FDI after the middle of the 1990s in China largely derived from this decentralization and development campaign.

This is an insightful story how individual performance relating to economic development under China's special context without analyzing the negative consequences China has to bear today. Therefore, this cannot be the reference for African countries. Letting local officials, rather than markets, decide which firm gets land or phone line or water service, and which one doesn't, may not be the best or cleanest way for Africans to allocate inputs (Giugale 2014). Nevertheless, lesson learnt from this experience suggests that local governments could be the key agents as long as appropriate institutional structures are in place to develop the practice based on a review of the many experiences the continent has already had.

6.3 Agricultural development is essential for industrialization

The importance of agriculture and its potential for development in Sub-Saharan Africa is widely acknowledged. Africa is comprised of a majority of "agriculture based countries", dependent on agriculture as a major component of their development trajectories (29 percent of GDP) and of the livelihoods of the bulk of its population (68 percent population in agriculture) (World Bank 2007). Agricultural productivity in both land and labor terms in Sub-Saharan Africa has been stagnant since the 1970s. Over the last 40 years, Sub-Saharan Africa has become a net importer of agricultural commodities and staple foodstuffs. The continent imported more than 15 percent of its

basic consumption, at a cost of \$ 88 billion in 2006 and \$119 billion in 2007 (Anseeuw 2011). Neither as yet, can agriculture provide a low price of food and a surplus of capital or release a labor force. Consequently, Africa's growth and industrialization have been constantly decoupled from agriculture.

6.3.1 Agriculture-based industrialization

In China, during the time from the 1950s-1970s, China had adopted a heavy-industry led industrialization strategy. Although this strategy had distorted China's economic structure, it helped China establish its national industrial system (independently?). Agriculture had been the major capital source for this period of industrialization. It was estimated that the total amount of 600-800 billion RMB had been accumulated from agriculture through a rural-urban division system comparing the total fixed value of 900 billion RMB in industries in 1978 (Wen 2000). To restructure China's economic system after the 1970s through the opening up policy, agriculture has been still the most important element for China's industrialization. This was particularly the case during the 1980s because the FDI to China was only starting to increase after 1995. China's food crop centered agricultural development strategy also helped to keep food prices low so that wages have been lower for three decades, which resulted in the comparative advantage of a rich labor force being taken for industrialization. Steady agricultural development based on small-holders' productivity increase provided surplus capital, as well as the labor force for industrialization. Different from the previous heavy industrialization model that attracted capital, but ostracized labor through the planned regime, the industrialization after the 1970s began with the small and medium rural enterprises or Township and Village Enterprises (TVEs), owned by farmers. This rural industrialization policy substantially attracted both capital and a labor force supplied by agriculture. From 1978-2011, the labor force employed in agriculture dropped from 70% to 30% while employed in industries increased from less than 10% to close to 40%. Up to 2011, the TVEs employed 169 million rural labor force members accounting for 40% rural employment and produced 37.4% of total industrial production value (Yang 2013). This agriculture-based industrialization experience suggests that for agriculture based economies to develop their industries they need to fully utilize their comparative advantages, for the case of China and Africa, rich agricultural resources and labor forces. For this to take place, the development of the agricultural sector is essential.

6.3.2 Context-specific agricultural strategy and policy

The success of China's agriculture has been largely due to its consistent strategy and policy. The key experience of the policy, particularly after the end of the 1970s has been largely an incremental learning process. First, agricultural strategy and policy, despite the reform, has been consistent with the previous policy that agriculture is the base of the national economy and the grain crop is the central component of agriculture

for a secure food supply. Secondly, market reform for agricultural products has never been radical, but based on the experiences and lessons gained from the policy experimentations in specific sites in various regions to bring a small scale of success into a larger scale of application. The grain market moving towards a free marketing system took more than 20 years to put all regulations and infrastructure in place, while at the same time controlling the price of fertilizer and other agro-inputs to be affordable for farmers. The state also continued to provide public services such as research and extension. Thirdly, agricultural development has been well integrated with non-agricultural sector development through the encouragement of agricultural diversification and rural enterprise development. Overall, the state led, market driven and farmer-based model has been the central element in the success of Chinese agriculture (Li 2013). Generally, the policies implemented have always been focused on small-holder development, i.e. for land and labor productivity. Only when it takes place, can agriculture be linked to industrialization and ultimately to transformation.

African agriculture policy since the independence period has also gone through different stages from state building with planning regimes to state weakening with market forces, but most were largely influenced by external development interventions. From the 1960s to the 1970s, many newly independent African countries were influenced by socialist ideology and began to adopt state-led planning to secure food self-sufficiency. From the 1980s and the 1990s, the Structural Adjustment Programmes (SAPS) were aggressively promoted in Africa. In contrast with China's steady incremental reform towards market liberalization for agriculture, the African liberalization of markets, privatization and restructuring of government institutions and removal of subsidies were radically undertaken under the 'conditionality' that concessional finance would only be available for compliant countries. Consequently, this policy led Africa's agriculture into stagnation or declining productivity during the 1980s. Since the year 2000, agriculture has regained focus within the poverty reduction framework. This new policy framework is well reflected in the global action such as MDGs, regional ones such as the African Union's The Comprehensive Africa Agriculture Development Programme (CAADP), and individual country programs based on the poverty reduction strategy papers (PRSPs). Despite the fact that overall, this new strategy has not been very successful; Africa indeed achieved some individual successes in agricultural development. For example, through a combination of extension and marketing support, input deliveries and credit, governments in East and Southern Africa achieved a series of smallholder production surges lasting between 10 and 20 years (Gabre-Madhin et al 2004). With policy reform in rice milling and marketing, Malian rice production has more than tripled since 1985, growing by 9 percent over the last 20 years (Diarra, Staatz, Bingen, & Dembele 2000). However, the challenge now is to scale up those activity-specific successes into sustained, system-wide improvements. Unlike China's pro-smallholder agricultural policy and institutional capacity, most African countries lack a political environment in which

smallholders can exert their influence, while large scale farms have stronger lobbies in government. Even in those countries which have developed a strong pro-agriculture policy, poor delivery capacity has constrained policy implementation (Li 2013).

References

- Anseeuw, 2010. 'Agricultural policy in Africa – renewal or status quo? A spotlight on Kenya and Senegal'. *The Political Economy of Africa* edited by Vishnu Padayachee, Rutledge
- Diarra, S.B., Staatz, J.M., Bingen, R.J. and Dembélé, N.N., 1999, 'The reform of rice milling and marketing in the office du Niger: catalyst for an agricultural success story in Mali', *Staff Paper* 99–26, East Lansing: Department of Agricultural Economics, Michigan State University.
- Gabre-Mahdhin, E.Z. et al. 2003. 'Success in African agriculture: results on an expert survey'. *Markets and Structural Studies Division Discussion Paper No.53*. International Food Policy Research Institute. Washington, DC
- Giugale, M. 2014: http://www.huffingtonpost.com/marcelo-giugale/can-africa-follow-chinas_b_4033251.html
- Githinji, M.W. and Adesida, O 2011. Industrialization, Export and the Developmental State in Africa: The case for Transformation. Working paper 2011-18, Department of Economics, University of Massachusetts, Amherst
- Lin, Justin Yifu 2011c. Global Crisis Requires Global Solution. Speech prepared for the Council on Foreign Relations, New York, Feb. 28.
- Lin, Justin Yifu 2012. *New Structural Economics: A Framework for Rethinking Development and Policy* Perkin University Press, Beijing
- Li Xiaoyun, Tang Lixia, Xu Xiuli, Qi Gubo and Wang Haimin 2013. What can Africa Learn from China's Experience in Agricultural Development? *IDS Bulletin* Volume 44
- World Bank, 2007, 'Agriculture for Development', *World Development Report*, Washington, D.C.: World Bank



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