



Historical Mission of TVET in China's Economic Transition

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ABSTRACT

This article examined how technical and vocational education and training (TVET) fulfills the historical mission of China's economic transition. Since the open policy in 1978, China has adopted the export-oriented strategy. For more than thirty years, China has successfully achieved significant reduction in poverty, enhanced sophistication in manufacturing, and improved the country's infrastructure. This export-oriented mode brought overseas capital, foreign technology and international market to China. Foreign companies moved their labor-intensive industry to China to reduce the cost of production, and thus, to make substantial profits and to acquire the Chinese market. However, in recent years, China's trade exports reduced to 50% of the total industrial exports. Exports decreased directly resulted in production capacity excess in China. China has been trying to increase its domestic demand after the fumble of its export-led growth policy over the past decades. The rural population, nearly half of the whole country's population, gradually presenting a strong purchasing power — is expected to be the main force to boost the domestic demands. Making farmers rich can be the driving engine for domestic demand in China. However, the current situation of agriculture industry in China is not optimistic: small arable farmland for large rural population, low agricultural productivity and limited agricultural modernization, pervasive poverty for rural population especially in the western region and mountainous and remote areas. Providing vocational education and training for low-skilled workers especially for migrant workers could equip them with the needed skills and to make them competent for digitalized production, intelligent manufacturing and informationized services in the modern labor market. TVET is needed to reduce unskilled workers and labor costs and to increase efficiency, and to transform the production mode from labor-intensive to technology and knowledge-intensive. China intends to establish a world-class modern TVET system by 2020. In order to vigorously develop TVET system and to establish a country rich with skilled human resources, the Ministry of Education needs to enhance school-business partnership. In addition, non-formal educational programs are designed to increase the income of rural households and to improve the quality of industrial labor force. China's transitional progress needs formal and non-formal TVET systems for social and economic sustainability.

Keywords: Economic transition, export-oriented strategy, rural migration, TVET, China

ECONOMIC TRANSITION IN CHINA

Export-oriented to domestic demand-driven

Since China's reform and opening to the global market in 1978, its economy has grown remarkably. For more than three decades, China's GDP growth rate averaged 10% per year. As China's economy develops and expands, China is experiencing an economic and business transition to move to the next

stage of development and to bring the Chinese economy to a higher level. For more than 30 years, an export-oriented economic development strategy has been used by the Chinese government since 1978 when China opened its door to the outside world. Export-oriented economy focuses on the utilization of overseas resources and wealth of international markets. Under this strategy, exporting goods drives domestic economic development. With large net export share of GDP, economic growth is driven mainly by international markets. This export-oriented mode brought overseas capital, foreign technology and international market to China. Foreign companies moved their labor-intensive industry to China to reduce the cost of production, and thus, to make significant profits and to acquire the Chinese market. In reciprocal, China obtained necessary capital, advanced technology, and foreign currency. Remarkable economic success has been made by this mode from 1978 to 2012. China also enjoyed rapid GDP growth of 142 times from 364.5 billion *yuan* to 51.9 trillion *yuan*, per capita GDP increased 136 times from 281 *yuan* to 38,354 *yuan*, national fiscal revenue rose 103 times from 113.2 billion *yuan* to 11.7 trillion *yuan*, and foreign exchange reserves went up 20,316 times from 0.167 billion dollars to 3.3 trillion dollars (NBS, 2012).

However, in 2008, China faced financial crisis. China's trade exports reduced to 50% of the total industrial exports. Worse still, after the 2008 financial crisis, European debt crisis and American manufacturing revival strategy made export-oriented economic mode drew to a close. European debt brought Euro devaluation and led to Renminbi (RMB) revaluation, which significantly shocked foreign trade exports in China. According to the news from the Canton Fair, trading volume from US and European market fell sharply in the 110th Canton Fair in 2011. China also experienced negative growth in exports over the past 20 years in the first quarter of 2014 (China IRN, 2014).

Exports decreased directly resulted in production capacity excess in China. Taking the steel production as an example, there were at least 150 million tons more than demanded. According to the statistics from China Customs by September 2013, China exported steel 4.92 million tons in total, decreased by 1.22 million tons since August, or by a 19.9% month-on-month decrease, or 4.47% year-on-year decrease (GAC, 2013). Industries with excessive production capacity also include textile, wind-power manufacturing, shipbuilding, and electrolytic aluminum and titanium. Excess production capacity makes it so urgent for China to change its economic strategies. As early as November 2008, the Chinese central government launched a 4-trillion-*yuan* (approximately US\$586 billion) stimulus plan — the goal was to increase domestic demand. China has been trying to increase its domestic demand after the fumble of its export-led policy over the past decades. However, because of the skyrocketing cost of houses and apartments in many Chinese cities, the middle class urbanites in China, teased as “house slaves”, were the former major consumers but now faced financial challenge to own a decent accommodation due to the house's price inflation.

The rural population, nearly half of the whole country's population, gradually presenting a strong purchasing power, is expected to be the main force to boost the domestic demands. An investigation on 220 million migrant workers (rural labors migrating from villages to cities) in China demonstrated the expenditures on consumer goods and services totaled 4.2 trillion *yuan* in 2012, which was 1.5 times of consumption expenditures in Indonesia, and 23% higher than in Turkey (Cankaoxiaoxi, 2013). Migrant workers have played a vital role in driving beer and instant noodles industries in China. China has almost half of its population in rural areas and total rural population is 630 million (NBS, 2014). The migrant and the rural workers could stimulate the domestic demands. Therefore, the rural population could be the driving engine for continuous economic growth in China if their productivity is higher.

Labor intensive to knowledge intensive

China is recognized as “world factory” for more than ten years because of the large number of migrant workforce and cheap labor costs. Its factories have produced relatively cheap goods that China has curbed inflation with many of its trading partners. Market economy and competition increasingly force world economy to rely on cheap labor (Chen, 2004; Zheng, 2004). Since the 1978 reform and the opening up policy, China’s manufacturing has become the fastest growing industry as compared to other countries, and the index of industrial production rose by nearly 4.23 times from 1991 to 1997 (NBS, 1998). Since 2000, the growth of manufacturing held steady at more than 40% of the gross national product, which attracted half of the city working population and most of rural surplus labors, and generated three-quarters of total foreign exchange income (Yao, 2008).

Although this labor-intensive business mode brought significant economic growth to China, the success is not sustainable in a long run. On the one hand, to feed the labor-intensive manufacturing industry, laborers are usually hired on factory lines with only general skills through short-term and temporary training and are very easily be replaced by others. On the other hand, low labor costs may favor upstream industries. Consequently, labor-intensive enterprises relying on demographic bonus will have to face great challenges when the country’s economic level reaches the Lewis Turning-Point. Literature has revealed that the China’s era of “world factory” might be drawing to a close. In 2011, China’s per capita GDP reached USD 5,444 which means China has reached middle-income level. This situation has resulted in some changes, especially in the labor market (Qu, 2013). According to the data from National Bureau of Statistics in January 2013, an absolute decline of the population of the working age (16-59 years old) first appeared in 2012. Data also showed that 1.2 million job vacancies to be filled in Guangdong Province after Spring Festival of 2013 (China News, 2013), and 120,000 job vacancies to be filled in Guangzhou city after Spring Festival of 2014 (Information Times, 2014). China is gradually stepping into an aging society and experiencing the “labor shortage”, particularly short supply of young skilled workers.

The shortage of skilled workers posed a challenge in employee retention. Hiring skilled labor would increase the labor costs for employers. At present, average wage of low-skilled workers in Shenzhen is 3,328 *yuan* per month. Enterprises in Zhuhai posted job announcements for low-skilled workers with a monthly wages of 4,000 *yuan*. From 2002 to 2009, labor costs (including benefits) for blue-collar workers in Guangdong province rose by 12% a year, and 14% a year in Shanghai, but the comparable figure was only 8% in the Philippines and 1% in Mexico (Alix Partners, 2011). “Cheap China” may no longer exist. China’s demographic bonus is vanishing and the Lewis Turning-Point is emerging. If we put the current challenges of China into the world historical process, we would find that the western countries also faced the similar risks of labor-intensive mode in 1970s and 1980s. They successfully evaded the situation by changing labor-intensive business mode into technology and knowledge-intensive business mode and realized the balance between economic benefits and social protection. In the era of short supply of highly skilled workers, industrial robots are soaring in China. Industrial robots in China are growing rapidly especially in the areas of electronics, chemicals, machining and metals processing. With an annual growth of more than 50%, China stands as a top industrial robots supplier in the world. It is estimated that 32,000 industrial robots on demand in 2014 (Stock Times China, 2013).

CHALLENGES AND PROSPECTS

New urbanization strategies

Economic and business transitions continue to be relevant issues in China. China faces fierce challenges especially in the long run in order to sustain growth. How to increase the productivity; how to enhance domestic demand and how to upskill the workers to realize business transition would undoubtedly be a great challenge to China. Making farmers rich can be the driving engine for domestic demand in China. However, the current situation of agriculture industry in China is not optimistic: small arable farmland for large rural population, low agricultural productivity and limited agricultural modernization, pervasive poverty for rural population especially in western region and mountainous and remote areas.

Rural development, agriculture and farmers are crucial parts of the national development strategies in China. To modernize agriculture in rural areas and to enhance farmers productivity are among priorities of Chinese national development. To respond to this situation, Chinese government adopted a strategy of “new urbanization”. The concept of new urbanization firstly emerged in the 18th Central Committee of the Communist Party of China (CPC) in November 2012. At the end of 2012, the Central Economic Work Conference listed acceleration of urbanization as one of the six tasks of Country Economic Work, and explicitly stated urbanization is the prime task in the process of modernization in China, and the largest potential for expanding domestic demands. The State Council officially issued the *National New Urbanization Plan (2014-2020)* on March 17, 2014.

The new urbanization strategy has great significance in China because it is one of the tools to modernization. The history of the industrial revolution demonstrates that the modernization begins with urbanization and dynamic industrial development. At present, the concept of modernization includes urbanization, industrialization, informatization, and agricultural transformation. Urbanization can function as a platform to develop industrialization and informatization and to accelerate the agricultural modernization. Urbanization is a powerful process to induce domestic demand. Domestic demand is a critical aspect in economic sustainability. Urbanization enables farmers to enhance their standard of living by obtaining better jobs and to enjoy better public service by becoming residents in towns or cities. They would enlarge urban consumer groups, upgrade consumption structure, release consumption potentials, and bring significant investment in urban infrastructures and public services.

In China, currently, the urbanization rate for resident population is 53.7% (and around 36% for household registered population). This figure is significantly lagged behind developed countries (80%) and developing countries (on average 60%) (State Council, 2014). Urbanization is an important approach to solve problems related to agriculture and farmers in rural areas. With small arable farmland for large rural population, China lacks of large-scale management of land. With small cultivated land of 0.1 hectare per capita and 0.6 hectare per household, it is the root of the problem. Urbanization could alleviate the problem by modernizing the agriculture. In addition, population movement from rural to urban areas, farmers could use mechanization and agricultural modernization. Hence farmers' standard of living could be improved significantly. Economic improvement in urban areas can strengthen agro-based industry that could accelerate rural economic and social development.

It is worth noting that the new urbanization focuses on the farmers' interests and on the achievement of sustainable development. New urbanization is a kind of urbanization characterized as uniform of urban and rural areas, mutual cooperation between industries and cities to achieve harmonious development. The core of new urbanization is to achieve the equality in public services and the integration of infrastructure between urban and rural areas. New urbanization is not just simple increase of urban population proportion or expansion of city scale, rather it highlights the transformation from “rural” to “urban” in terms of industry support, living environment, social security and living style to realize the equality of urban and rural areas and to ultimately achieve sustainable development. It is a process of coordination and development of mutually inclusive cities, towns, and new-type of rural communities.

The pathway for new urbanization should be the integration of industry with towns, and the transformation of rural working population. The success of urbanization can be measured by the employability, the salary increment, the improvement of infrastructure and public services and the agricultural modernization. For local urbanization, it encourages local employment rather than migration to cities for reemployment like “migratory-birds”, and encourages migrant workers already in cities to have vocational education and training to be better-skilled workers and better residents in the cities.

Upskilling of workers in economic transition

As one of the most vivid symbols of China's reform from a traditional society to a modern one is the transformation of the migrant workers to become a new type of labor force during the rapid development of industrialization and urbanization. The migrant workers can be seen as a tremendous force that has brought transformation to the country's economic and social structures. Since reform and opening-up policy in 1978, millions of farmers have left the countryside to work and live in the cities. They have

made a great contribution to China's modernization with their hard work. However, the poor education they have received and low skills they possess have seriously hurdled their way into urban employment and posed huge challenges to China's economic transition. Migrant workers in China are the surplus laborers in rural areas (former farmers) who have moved to the cities for higher income and better life. Most migrant workers are usually found to work in the construction, mining, manufacturing, service industries or the bottom of industrial chain — the labor-intensive industries. The scale of migrants' flow after reform and opening-up was unprecedented in China. Such a flow falls into two forms: one is trans-regional flow also called clock-pendulum flow — flowing from mid-west rural areas to eastern more developed cities like Shanghai, Beijing and Guangzhou along with the rapid development and short supply of laborers in coastal cities, which is also called “peasant-worker tide”. The other one is flowing to more developed cities or towns nearby. At present, clock-pendulum flow has been the main flow and Chinese migrant workers have been the largest clock-pendulum migrant workers group in the world (MOHURD, 2010).

According to the *National Monitoring and Survey Report on Migrant Workers* in 2012, the estimated number of migrant workers was about 260 million, which accounted for one-third of the total working population in China. They are mainly young workers with the average age of 37, and have to move between rural and urban areas. Unfortunately, the large group of migrant workers in China are mainly inexperienced and lack of vocational education and training. The statistics show that up to 60.5% of migrant workers have only a junior secondary school education. About 1.5% are illiterate, 14.3% attended only primary schools, 13.3% are senior secondary school graduates, 4.7% are specialized secondary school graduates, and 5.7% are postsecondary vocational college graduates. Only 10.7% of migrant workers have received agricultural technical training, 25.6% have received non-agricultural technical training, and up to 69.2% of the migrant workers with no vocational and technical training (NBS, 2013b). However, according to the *All China Federation of Trade Unions* survey in 2010, migrant workers' educational attainment and skill levels significantly lagged behind the urban labor market demands. In 2009, the workers with senior secondary school educational attainment and above, accounted for 60.2% of total urban labor market demand, and 39.8% of the workers have junior secondary educational attainment and below, but only 30% rural migrant youth fulfil the requirements. Among them, workers with secondary vocational educational attainment accounted for 57% of total urban labor market demand, but only 20% rural migrant youth fulfil the requirements (ACFTU, 2010). Migrant workers yearn for urban life and they struggle to meet the requirements of modern industry but they usually lack of relevant skills that are required in the labor market. The migrant workers' educational mismatch severely impeded their opportunity to be hired in modern sector.

More than 260 million migrant workers are in the labor market. For the past 30 years, economic growth has pushed the labor costs up. Enterprises reacting to digitization, automation and intelligentization in the production, services and management sectors that reduced the need for unskilled labor. Without good education and necessary technical skills, most migrant labors have no relevant knowledge and skills to be hired in modern industries. Therefore, it is urgent to provide high-tech modern vocational education and training to migrant workers so that they are employable in digital sector.

MISSIONS OF TVET IN CHINA

TVET and the new urbanization

China is fully aware that it is facing major issues of economic and business transitions. The critical challenge in China during this period is develop relevant and quality TVET system. Because of the close relationship between TVET sector and economic transformation, TVET would have a more active role to fulfill the historical mission of economic prosperity of the country. China's transition to a new urbanization path—one that is efficient, inclusive, and sustainable—to support its transformation into an innovative, modern, and harmonious economy in the next decades. The transition requires transforming rural working population from farmers into skilled workers. In this process, it may involve the transformations of the three groups.

First, “traditional farmers” should be transformed into “industrialized farm workers”, and training “family farm managers” to assist the “new farmers” to move to a higher economic echelon. Modernization of agricultural sector is important for the achievement of sustainable development and broad-based economic growth. In the past, most traditional farmers in China used inefficient manual tools and their plants and domestic animals have poor yields and production. Moreover, these underequipped farmers, with their inefficient production methods, are exposed to increasingly fierce competition from more productive machines as well as to the effect of low prices of agricultural products. This continually affect poor farmers with low productivity to extreme poverty, making them vulnerable to hunger and prompting their migration to towns and cities that are themselves underequipped and without relevant skills. With the rapid development of new urbanization, China must accelerate agricultural modernization to raise quality and efficiency of the agriculture sector. Agricultural modernization includes large-scaled operation with modern technology, and the establishment of modern family farm. The 2013 *Central First Document* proposed reforms in agricultural business mode to encourage family farm and farmers’ cooperative development (Central People’s Government, 2013). China will strive to transform the rural agricultural development, to raise the output rate of the land, to increase resource utilization rate to attain intensive and sustainable growth. In order to meet these challenges, comprehensive reform is needed in the reform of agricultural curriculum in vocational schools and colleges in terms of training objectives, major structure, curriculum system, teaching content and training mode. In 2012, the ministries of Agriculture and Finance implemented *Rural Labor Force Sunshine Project* that was designed to provide farmers with agricultural training to cater to modern agriculture development and new village construction (MoA, 2012). This project focused on three parts of training: agricultural vocational and technical training, agricultural entrepreneurship training and agricultural specific technology training, to provide “new farmers” with advanced technology and skills to improve their productivity and standard of living.

Second is to turn rural surplus labor force and landless farmers into non-agricultural skilled workers, to enable them to have higher income and better life with this transfer of training for local jobs, in which urban vocational schools and colleges shall play an important role. The pathway for this transformation is the partnership between vocational training institutions with local industry. Therefore, training programs and curricula in vocational schools and colleges cannot be separated from local industry. Connecting TVET with local industry could lead to a smooth transition from landless farmers to local employment. On the one hand, “special-request training” could assist vocational schools and colleges to understand the demands for talents from enterprises, and to develop training programs and contents based on labor market and farmers’ needs, and to send the trainees directly to enterprises after their graduation. This initiative could improve the employability of these rural surplus labor force and landless farmers significantly.

Third is upskilling of migrant workers from rural areas in order for them to secure decent employment, higher income and better integration into urban society, as a real “new citizen” with a decent life. The core of new urbanization is the “modernization” of people from rural areas. Although vocational education and training could improve their skills and then assist them hunt for a job in cities, confined to the economic enclaves, migrant workers face conditions of irregular employment, lack of promotion prospects, and low wages. With the advent of the economic reforms which brought the closure of certain state enterprises, intensified working conditions, demands for higher quality, and integration into the global economy, there has been a corresponding growth in the overexploitation of the poorly qualified migrant labor force. Therefore, the TVET’s mission for migrant workers, is not only providing them with low manual skills, but also the vocational education and training of high quality for better jobs and decent life. In addition, basic citizenship education is also a part of vocational education and training for migrant workers, including lifestyle, behavioral pattern, cultural custom, and ideology. Strengthening skill training and citizen education for migrant workers can accelerate the process of their citizenization. Equal education should also be provided for migrant worker’s children in cities similar to their counterparts in the cities.

The roles of TVET

Providing technical and vocational education and training (TVET) for low-skilled workers especially for migrant workers could equip them with needed skills and make them competent for digitalized production, intelligent manufacturing and informationized services in the modern labor market. TVET is also pertinent to reduce unskilled workers and labor costs and to increase efficiency, and to transform the production mode from labor-intensive to technology and knowledge-intensive. Since the early 1980s, Chinese governmental policies have gradually shifted to allow rural laborers the freedom to migrate to urban areas. Since 2000, several policies have been made in order to protect the rights of rural migrants and even to promote rural labor migration. In 2006, the government underlined the basic policy of developing secondary vocational education in rural areas (State Council, 2006). This policy aimed at providing vocational education for rural students after their completion of nine-year of compulsory education. By 2010, there were 13,900 secondary vocational schools nationally including more than 3,000 schools in rural areas. From 2001-2010, about 67 million students enrolled in secondary vocational schools. Almost 80% of the students were from rural areas (about 53 million students). The graduates from secondary vocational schools mainly engaged in the second and tertiary industry — the main employers of technical talents. From 2006-2010, secondary vocational schools trained more than 20 million rural students whom later would become migrant skilled workers in the cities (MOE, 2011).

In 2014, the State Council released a decision to accelerate the development of a modern TVET system. Based on this decision, Ministry of Education (MoE) and other national sectors jointly released a plan which describes as following: By 2020, China will establish a world-class modern TVET system with Chinese characteristics. It is estimated that secondary vocational schools will have 23.5 million registered students and higher vocational colleges will have 14.8 million registered students. The goal is to nurture skills in modern agriculture, advanced manufacturing, modern service-oriented businesses, new strategic industries and social management. The modern vocational schools will have better school facilities and better faculty and staff (MoE et al., 2014). The modern TVET system means building a better lifelong learning system. The important aspects of building a lifelong vocational education system are: (a) vertical — linking secondary and postsecondary vocational institutions and to access to four-year college from junior college and (b) horizontal — allowing general and vocational education to integrate. Also, in order to vigorously develop higher vocational education system and to establish a country rich with skilled human resources, universities should restructure the professional Master Degree program and to enhance school-business partnership (Shi, 2013).

In addition to the formal education system, there are also non-formal educational programs. In order to increase the income of rural households and improve overall quality of industrial labor force, in September 2003, the State Council created *National Plan for Training Rural Migrants (2003-2010)* — to provide hundreds of millions of migrant workers with introductory training in the areas of law, health, job-seeking, and vocational skills. According to the *Training Plan for Rural Migrant Workers (2003-2010)*, during the period from 2003 to 2005, the state provided training for 5 million prospective rural migrant workers with relevant vocational skills. The state also provided on-the-job training for 50 million of rural migrant workers. From 2006 to 2010, the state provided training for 30 million prospective rural migrant workers with vocational skill training and 200 million on-the-job training for the rural migrant workers (MOLSS, 2003).

In 2004, China's central government launched a nation-wide training scheme for rural surplus laborers under a strategic initiative to accelerate the country's urbanization process. The aim of this national training program for rural surplus labor — the *China Sunshine Project* — was designed to provide subsidized training for the surplus workers in China's rural areas. The project was succeeded to assist the surplus workers to acquire essential skills for urban jobs when they migrate to cities. The Ministries of Agriculture, Finance, Labor and Social Security, Science and Technology, Education and Construction initiated the *Sunshine Project*. Training under the *Sunshine Project* is fully funded by government grants. The central government contributes the major proportion of the grant and local government is required to allocate some money to support the project. The current policies have produced positive results. From 2006-2010, secondary vocational schools trained more than 20 million

students to be migrant skilled workers in cities — with an average of four million per year (MOE, 2011). The *Sunshine Project* trained 15.8 million rural migrant laborers from 2004 to 2008, with the central governmental investment of 3.25 billion *yuan*. It was estimated that 86 per cent of them (13.73 million migrant workers) succeeded in finding non-agricultural jobs (MOA, 2013) with the monthly average wage of 2,290 *yuan* per migrant worker.

CONCLUSION

For more than 30 years, an export-oriented economic development strategy has been used by the Chinese government since 1978 when China opened its door to the outside world. This export-oriented mode brought overseas capital, foreign technology and international market to China. Foreign companies moved their labor-intensive industry to China to reduce the cost of production, and thus, to make profits and to acquire the Chinese market. Despite the positive result thus far to upgrade low-skilled workers such as migrant workers, TVET is also critical to produce highly-skilled talents for the emerging industries by establishing modern vocational education system. The modern vocational education system means building a better lifelong learning system. The important aspects of building a lifelong vocational education system are: (a) vertical — linking secondary and postsecondary vocational education and access to four-year college from junior college, and (b) horizontal — allowing general and vocational education to permeate each other. Also, in order to vigorously develop modern TVET and to produce adequate skilled human resources, the Ministry of Education needs to focus attention on enhancing school-business partnership.

In addition, non-formal educational programs were designed to increase the income of rural households and to improve the quality of industrial labor force. Non-formal vocational programs have provided hundreds of millions of migrant workers with introductory apprenticeship and on-the-job training in the critical areas. In 2004, China's central government has launched a nation-wide training scheme for rural surplus laborers under a strategic initiative to accelerate the country's urbanization process. The aim of this national training program for rural surplus labor is to provide subsidized training for the surplus workers in rural areas, assisting them to acquire essential skills for urban jobs when they migrate to cities. An initiative such as the *Sunshine Project* was established to train millions of rural migrant laborers to improve the quality of the labor force and to shift the production mode from labor-intensive to technology and knowledge-intensive domain. In sum, China's dynamic growth needs TVET for social and economic sustainability. TVET is not only dealing with training but it is also a tool for social and economic reengineering to reduce poverty, to realize equity and to develop harmonious society. China will continue to focus on TVET reform to improve its human capital development especially among the youth.

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