

Structural Transformation and High-Quality Development during the 14th Five-Year Plan Period from the Perspective of New Structural Economics

Justin Yifu LIN

Three prominent features of the 14th Five-Year Plan

China's 14th Five-Year Plan (2021–2025) is important for two reasons. One is that it spans the first five years of China's entrance into a new era of socialism with Chinese characteristics. The other is that it charts China's endeavor to fully build a great modern socialist country by 2050, which is the ultimate goal of the two-step approach that underpins this plan, after achieving the first centenary goal of building a moderately prosperous society in all respects.

Justin Yifu LIN is Dean of Institute of New Structural Economics, Dean of Institute of South-South Cooperation and Development, and Professor and Honorary Dean of National School of Development, Peking University

China will enter the ranks of high-income economies by bringing its gross national income (GNI) per capita above USD12,700 during the 14th Five-Year Plan period. When China succeeds, the share of the global population in high-income economies will increase from 18% to 36%.

However, the circumstances of China's 1.4 billion people differ greatly. GDP per capita is greater than USD20,000 in Beijing, Shanghai, Suzhou, Guangzhou, Shenzhen, Xiamen, Zhuhai, Nanjing, Wuhan, Ningbo, Wuxi, Changzhou, Hangzhou, and Ordos, 14 cities with a combined population of 150 million. In contrast, GDP per capita is USD7,000 in less affluent provinces, such as Gansu, Shanxi, and Yunnan, and 600 million people in China earn only about 1,000 yuan (about USD153) each month. How can China achieve high-quality growth with this big gap remains?

Experts at the 2016 G20 Hangzhou Summit predicted that the nascent new industrial revolution would gain momentum during the 14th Five-Year Plan period. Against this background, new structural economics (NSE) researchers are trying to understand how local governments in China can plan for high-quality development accommodating both their local situations and changing circumstances domestically and abroad. In doing so, these researchers seek to transform theoretical knowledge into practical outcomes, a key principle enshrined by this school of economic thought.

Overarching principle to facilitate high-quality development during the 14th Five-Year Plan period

To facilitate high-quality development, the overarching prin-

principle is leveraging the efficient market and government facilitation and boosting regions' development based on their comparative advantages.

NSE upholds the idea that economic development in any stage manifests itself primarily in income growth. To sustain income growth, it is important to bolster productivity by innovating existing technologies and developing emerging industries that deliver higher added value. Additionally, tangible infrastructure, such as roads, ports, electric power, and telecommunications facilities, should be optimized to support new industries and technologies. Furthermore, intangible infrastructure and institutional arrangements, such as the financial and business environments, laws, and regulations, must be strengthened to reduce transaction costs and maximize technological and industrial productivity. These actions form the general mechanism of economic development.

It is logical to ask how this mechanism can be harnessed in China to sustain high-quality economic development across regions. The possibilities may vary, but one underlying principle is that local comparative advantages derived from factor endowments should be sufficiently leveraged and transformed into competitive edges in the process of technological innovation or industrial upgrading.

Comparative advantages are important because developing industries that are aligned with local comparative advantages is the only way to minimize production costs, a key prerequisite for gaining a competitive edge. However, market competition is not only a matter of lowering production costs. Total costs, which include not only production costs but

also transaction costs that hinge on the efficacy of tangible and intangible infrastructure, are most important.

This notion leads to two additional questions regarding how entrepreneurs should choose industries and technologies based on local advantages and how they should leverage these advantages to gain an upper hand in the market. The answer to the first question is that a factor pricing mechanism should be established to reflect the rarity of a production factor in a given location. In other words, when capital is scarce and labor is abundant, capital should be priced higher than labor, and vice versa. A factor pricing mechanism can motivate entrepreneurs to maximize profit margins by using more abundant and cheaper factors and avoiding rarer and more expensive ones. Likewise, entrepreneurs will choose technologies and industries that conform to local advantages based on that location's factor endowments. To create a factor pricing mechanism that truthfully reflects resource availability, the product and factor markets should be efficient and freely competitive. Such markets are a foundation for developing an economy based on comparative advantages.

A competitive market guides entrepreneurs toward the technologies and industries that align with local comparative advantages. However, this choice only affects the prices of production factors. Thus, a second question is how entrepreneurs should leverage comparative advantages to gain a stronghold in the market. For this purpose, the government should enable tangible and intangible infrastructure in entrepreneurs' chosen industries. In other words, to boost industrial development based on comparative advantages, firms

require not only an effective market but also government facilitation to provide both tangible and intangible infrastructure according to local conditions. Thus, a locality's comparative advantages can materialize as competitive edges in the domestic and global markets. In summary, rapid economic development requires both an effective market and a facilitating government.

Approaches for facilitating high-quality development during the 14th Five-Year Plan period

NSE can help to understand how regional governments can propel industrial transformation and upgrading over the next five years using their regions' comparative advantages. First, NSE gauges local industrial development based on three dimensions. The first is whether the technologies of local industries are leading or lagging their domestic and international counterparts. The second is whether these industries are aligning with, running counter to, or losing their comparative advantages. The third is whether they can deliver new products and technologies with a short research and development (R&D) cycle, such as less than 18 months, or whether productive R&D takes several decades.

Industries that are divided into five categories

After evaluating local industries on the above three dimensions, NSE sorts different industries into five categories, as follows. The first category is industries that are catching up with the global frontier. Such industries are either already present or are being planned by the local government. Their products are marketable, profitable, and have advantages in

their own markets even though they may have lower qualities and prices than those of developed countries. In some cases, these products may be much cheaper than those of developed countries. One example is machine tools. Whereas tools made in China are sold for USD1 million, their Swiss- and German-made counterparts may be priced in the range of USD3–5 million. These industries have not yet caught up with the global frontier.

The second category is industries that are already or almost on the global frontier. Such industries abound in China and range from home appliances to the fifth-generation telecommunications equipment.

The third category is industries requiring a transformation or upgrade. These industries are mostly labor-intensive industries in which China was world-leading but has gradually lost its comparative advantage owing to rising wages. These industries are actively transforming or upgrading themselves, as evidenced by firms moving toward the two ends of the smiling curve, or the value chain, where they can create more added value through branding, design, and market channel management. Manufacturing, which produces lower added value, should be relocated inland or abroad, where labor costs are cheaper.

The fourth category is industries with very short R&D cycles, such as 6 to 18 months. They rely less on financial and physical inputs than on human capital and include tech-savvy firms and firms that are acutely sensitive to market changes. Most industries emerging from the new industrial revolution fall into this category owing to their inherent goals of con-

necting people, machines, and resources more intelligently. Developed countries have amassed many financial and physical resources over the three centuries since the First Industrial Revolution. However, China is not at a disadvantage, as it owns rich human capital owing to its rigorous education and its people's abilities. Thus, China is poised to keep pace and compete with developed economies in these emerging human-capital-intensive industries. The success of Huawei, ZTE, DJI, iFlytek, Alibaba, Tencent, and Baidu are greatly indicative of China's competitive human resources.

The fifth category is strategic industries. Unlike industries in the fourth category, strategic industries normally take a decade or more to develop new products and require major inputs of human, financial, and physical capital. China's GNI per capita is over USD10,000, barely a sixth of that of the United States, whose average individual income exceeds USD60,000. China has not yet developed comparative advantages in these industries, but doing so is imperative owing to their critical importance for national and economic security. Failing to develop these industries will either threaten national security or lead to heavy dependence on foreign supplies of key technologies, such as chips. Thus, development must be ramped up in these industries.

Two solutions for local governments to facilitate industrial development

The first solution is steering development according to local conditions. This solution is applicable to industries with comparative advantages, including industries that are catching up with the global frontier, industries that are already or

almost on the global technological frontier, and industries with short-innovation cycles. Industries in the first category need to narrow the gap with developed countries, whose products are just competitive in price and offer slightly better quality. Borrowing technology may be the solution for closing this gap. These industries can introduce advanced technology from abroad by purchasing better and newer equipment, buying patents, setting up overseas R&D centers and staffing them with local talent, or founding domestic R&D centers to gain the necessary expertise. Local governments should closely examine the industrial status quo, identify the needs of local firms, and help them to address technical difficulties and update their technologies and products more efficiently.

Leading industries in the second category should deliver new products and technologies without interruption to remain competitive in the overseas and domestic markets. These firms focus more on development in their R&D endeavors, as development offers handsome profits when new products and technologies are patented and dominate in domestic and foreign markets. However, economic returns will never materialize without breakthroughs in basic research. Unfortunately, most firms are reluctant to conduct basic research, output of which is public products, even though such pursuits are the cornerstone of new products and technologies. Thus, central and local governments should pool their strengths to establish laboratories at the national, provincial, and prefectural levels; boost collaboration among enterprises, universities, and research institutes; support basic research to develop new products and technologies in leading industries;

and help firms overcome challenges in basic research.

Industries in the third category once contributed enormously to local economic growth owing to their comparative advantages. However, their advantages have dwindled because of an oversupply of labor. These industries can be found in counties and cities that committed to offering one featured product as part of the “One Place, One Product” campaign launched to revive local economies. Some jobs in these industries have been automated to improve productivity, yet automation can only provide a certain amount of added value. Thus, once they are in a better position, some firms shift to more valuable activities through branding, design, and market channel management. Manufacturing and assembling tasks that are too costly to automate can be moved to central and western provinces in China or overseas markets, where labor is cheaper. Additionally, local governments should establish vocational schools to train professionals, such as designers, who are critical for firms aiming to move up the value chain. Governments should also create more enabling infrastructure and business environments for industries aiming to become national or international market centers. Local governments can also smooth the process for industries seeking to grow through relocation and making early preparations so that firms can start operating soon after they move to a new market.

For industries in the fourth category, human capital is critical for developing the necessary software and hardware to achieve smart manufacturing and interconnectivity, two hallmarks of the new industrial revolution. Emerging industries can attract talent by recruiting at local universities, and cities

with few universities, such as Shenzhen, can bring in businesses and professionals by offering more incentives. A typical approach adopted by many successful provinces is building an incubator, bringing together talented people who brainstorm new ideas, products, technologies, and business forms. Capital is also needed to develop new products and identify new ways of managing production or doing business. Thus, venture capital is indispensable. Local governments can support innovative start-ups by introducing venture capital.

Strategic industries in the fifth category affect national and economic security. They are subsidized by the central government, as they are less profitable and less aligning with local advantages. An example of these subsidies is the Third-Front Movement, a massive military-industry investment program carried out in the 1960s and 1970s in remote parts of southwestern and western China. China seeks to bolster its strategic industries during the 14th Five-Year Plan period to safeguard national and economic security and enable further development. Thus, a mix of projects will be rolled out. When overarching policies are put in place, local authorities should proactively ensure that these strategic industries have a solid foundation for development. Doing so will help to build new growth drivers on existing competitive edges, which is essentially the second approach to facilitating industrial development.

The second solution is building new growth drivers by combing local comparative advantages with technological and human capital strengths in the strategic industries. Strategic industries require intensive human and physical capital

that often exceeds the local conditions. Local governments can barely provide for further upgrades and expansions of these industries. However, they can leverage technical expertise in the strategic industries to develop industries that are consistent with their local comparative advantages, which may include their labor or natural resource endowments. Successful cases of such industrial development abound since China began its reform and opening up in 1978. For example, Mianyang, a city in east Sichuan, is a critical node in the Third-Front Movement that developed the ability to produce top-flight, capital- and technological-intensive aircraft engines and radar. After 1978, Changhong Electric, a local consumer electronics manufacturer, leveraged the local labor force and the engineering expertise of radar producers to make color televisions that required fewer capital and technology inputs. The company therefore emerged as the best-known television manufacturer in the 1980s and 1990s. Chongqing, a heavy-industry base, became China's largest and most competitive motorcycle production hub in the 1990s by harnessing its existing technological prowess and supporting facilities.

During the 14th Five-Year Plan, local governments should drive industrial upgrades using their comparative advantages, which are determined by factor endowments. They can also funnel strategic industry's capital and technology into less demanding civil industries with wider markets and better alignments with local comparative advantages.

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