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Path Analysis of China' s Economic Transformation Postprint

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Abstract

[Purpose/Significance] The 13th Five-Year Plan period and the subsequent fifteen years represent a critical juncture for China's economic development. Under the combined pressures of sluggish domestic and external demand and the imperative of economic transformation, the economy has encountered pronounced downward pressure. In this context, economic transformation constitutes the key to sustaining relatively rapid growth of the Chinese economy.

[Method/Process] This paper, grounded in a review of economic transformation theories and empirical evidence, examines the predicaments confronting China' s current economic growth. Drawing upon the New Kaldor Facts, it argues that to elevate China to a higher developmental plane, economic transformation must be initiated from the 13th Five-Year Plan period onward.

[Results/Conclusions] The fundamental transformation pathway encompasses three dimensions: First, properly delineating the government' s role, shifting it from a leader to an enabler of economic growth, transitioning from the forefront to a supportive background position. Second, implementing fiscal and tax system reforms to align with the new phase of China' s economic growth, gradually shifting the tax system from an indirect tax regime characteristic of the industrialization stage to a direct tax regime requisite for the urbanization stage. Third, further perfecting the market competition environment by creating new economic growth drivers through price system reforms, public institution reforms, and other measures, thereby enabling innovation and human capital to assume a more substantial role in driving growth.

Full Text

The Path Analysis of Economic Transformation in China

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Abstract

The 13th Five-Year Plan period and the next fifteen years constitute a critical juncture for China' s economic development. Under the dual pressures of sluggish domestic and foreign demand and the imperative of economic transformation, the Chinese economy faces significant downward pressure. In this context, economic transformation is key to maintaining robust growth. This paper reviews theories and empirical evidence of economic transformation, analyzes the predicaments confronting China's current economic growth, and draws on the new Kaldor facts to argue that China must undertake economic transformation starting from the 13th Five-Year Plan to reach a new development stage. The fundamental transformation path involves three priorities: first, redefining the government' s role from a leader of economic growth to a facilitator, moving from the forefront to behind the scenes; second, reforming the fiscal and taxation system to adapt to China' s new growth stage, transitioning from the indirect tax system of the industrialization era to a direct tax system suited for the urbanization phase; and third, further improving the market competition environment through price system reforms, public institution reforms, and other measures to create new growth drivers, enabling innovation and human capital to play greater roles in economic growth.

Keywords: 13th Five-Year Plan; economic transformation; new Kaldor facts; innovation

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The 13th Five-Year Plan period and the next fifteen years represent a critical phase for China' s economic development. Under pressures from weak internal and external demand and economic transformation, the economy exhibits clear downward momentum. Objectively, the reasons include: (1) During the 13th Five-Year Plan period, labor supply will reach a turning point, and with rising urbanization rates, capital supply growth will also decline to single digits; (2) As the industrial structure modernizes (with value-added from modern sectors like industry and services accounting for approximately 93% of GDP at comparable prices), the efficiency gains from labor transfer from rural to modern sectors diminish. Meanwhile, since labor productivity in the tertiary sector is lower than in the secondary sector, the expansion of services leads to inefficient allocation of labor and capital, slowing overall productivity improvement; (3) Total Factor Productivity (TFP) contribution to economic growth has fallen from its peak of nearly 30% to the current level of 17%; and (4) With the arrival of the "Lewis turning point," factor distribution has begun tilting toward labor, with labor output elasticity rising to 0.5, further reinforcing the economic deceleration trend. Against this backdrop, economic transformation is essential for maintaining relatively rapid growth.

1. Theoretical Framework of Economic Development Stages

In 1960, American economist Walt Rostow proposed his stages of economic growth theory in *The Stages of Economic Growth*, analyzing development from a social perspective. He divided a nation' s economic development into five stages: traditional society, preconditions for take-off, take-off, drive to maturity, and age of high mass consumption. The first stage, traditional society, features limited production capabilities, generally closed or isolated economies, and relatively backward technology. The second stage, preconditions for take-off, involves initial economic reforms with leading industries typically in primary sectors or labor-intensive manufacturing. The third stage, economic take-off, represents the transition from backwardness to advanced status, with massive labor transfer from primary to manufacturing sectors, significant increases in foreign investment, and emergence of regional growth poles. Comparative advantages in international trade shift from agriculture to labor-intensive exports like clothing, footwear, toys, small handicrafts, and standardized home appliances. The fourth stage, drive to maturity, witnesses diversification of industries and export products, with investment shifting from labor-intensive to capital-intensive industries, substantial improvements in transportation and communications infrastructure, and enterprises beginning overseas investment. China has currently entered this development stage. The fifth stage, age of high mass consumption, sees an economy' s leading industries shift from manufacturing to services, with increased consumption in leisure, education, healthcare, national security, and social security programs. Most developed countries have entered this stage, while China is approaching it.

Consistent with these findings, American management scholar Michael Porter proposed in *The Competitive Advantage of Nations* that industries and economic structures evolve through four stages: factor-driven, investment-driven, innovation-driven, and wealth-driven. The factor-driven stage features successful industries relying almost exclusively on basic production factors, with firms competing on price, offering limited products with relatively simple technology. The investment-driven stage is dominated by modern, efficient, mass-production enterprises with technology approaching international frontiers, where the entire society focuses on economic development, though domestic demand remains low and worker incomes generally remain modest. Growth drivers come primarily from the supply side rather than demand side—China' s economy is currently in this stage overall. The innovation-driven stage witnesses the emergence of important industrial clusters and competitive world-class new industries, with competition shifting from production costs to productivity, and enterprises gradually withdrawing from price competition or simpler domains. Policies at this stage should abandon past interventionist approaches, instead stimulating or creating more advanced production factors, improving domestic demand, and encouraging new businesses. Some coastal regions in eastern China are beginning to enter this stage, though government transformation remains far from

complete. The wealth-driven stage, conversely, represents an economic decline, where enterprises begin losing their international competitive advantages, labor-capital relations become increasingly rigid in defending vested interests, economic innovation slows, and capital flows into real estate and other fixed assets. Empirical observation reveals that the wealth-driven stage does not necessarily appear only in high-income economies but can emerge in middle-income and above economies, creating both high-income and middle-income traps. China has already exhibited characteristics of this stage in certain aspects, warranting serious attention.

In 1961, economist Nicholas Kaldor proposed six stylized facts summarizing the overall economic characteristics of developed economies like the United States: (1) Real output per worker or per capita grows at a constant continuous rate over long periods, i.e., steady productivity growth; (2) Per capita capital stock grows at a constant continuous rate; (3) The real interest rate, obtained by subtracting inflation from nominal rates, remains roughly stable; (4) The capital-output ratio remains roughly stable, or output and capital stock growth rates tend to converge; (5) The income shares of various production factors in national income remain roughly stable; and (6) Per capita output growth rates vary significantly across countries, with nations having higher income and profit shares tending to have higher capital-output ratios. Kaldor' s facts demonstrate that when economies enter the high-income stage, changes in labor, capital, and other production factors become minimal and their contribution to growth weakens, causing the economy to enter a stable period (similar to Porter' s consumption-oriented economy).

2. Realistic Pressures for China's Economic Transformation

Multiple indicators suggest China is advancing toward the late stage of industrialization. During the industrialization period, China benefited from three favorable conditions: vast domestic and international markets for material products, surplus labor, and relatively accessible capital (initially from Hong Kong, Macao, and Taiwan, later attracting other foreign investments). Producers primarily selected from existing external production technologies to absorb cheap labor—first through labor-intensive light industries, then through capital-driven heavy and chemical industries—completing the path of scale-economy industrialization in just over three decades until reaching the technological-production boundary constrained by domestic and international material goods market demand. However, these favorable factors are now diminishing.

2.1 The Disappearing Demographic Dividend

According to estimates from the National Bureau of Statistics' sixth population census (2010) and labor force age cohort projections, China' s working-age population will decline at an average annual rate of -0.01% during 2015-2020, representing a new demographic transition trend during the urbanization period.

After 2015, continuous decline in the working-age population and corresponding reduction in labor supply will become the norm. Given the objective reality of the disappearing demographic dividend, relying on labor input to sustain growth is no longer feasible for China, which has already entered the mid-to-late industrialization stage. Simple calculations illustrate this point .

Table 1: The Prediction of China' s Labor Input Growth

The table assumes that during 2015-2020, the investment rate remains around 20%, but capital efficiency does not improve, capital elasticity continues to decline, and TFP contribution follows suit. During 2021-2030, even if net investment maintains 20% levels, due to intensifying negative demographic factors, the economic growth rate will ultimately hover around 2.5%. Clearly, labor input-driven growth is not viable.

2.2 Declining Capital Input Efficiency

If we maintain a high net investment rate of 30% based on the 2008-2014 period, simple calculations reveal that given extensive high-input growth that cannot reverse the declining capital efficiency and the consequent falling capital elasticity, combined with the irreversible negative growth of working-age population, high-input growth yields minimal results .

Table 2: The Prediction of High Capital Input Growth

Under the combined negative effects of working-age population decline, capital efficiency deterioration, and falling capital elasticity, simply increasing the net investment rate can no longer effectively support GDP growth. Although capital' s contribution share rises 5 percentage points to 76.9% compared to the previous period, and TFP contribution ideally increases from 27% to 30%, the economic growth rate still declines by 4.4 percentage points to 5.27%. During 2021-2030, the growth rate will further decline to 3%. China can no longer replicate its previous capital input-driven growth path.

2.3 Diminishing Efficiency of Scale Supply

This manifests in three areas: (1) **Overcapacity**: Influenced by the inertia of large-scale industrialization and lagging theoretical understanding, China' s economic model remains confined to the material capital-dominated production and consumption stage. When advancing toward more sophisticated production and consumption patterns, the economy encounters product surplus problems. For instance, according to the Ministry of Industry and Information Technology' s *2012 First Half Report on China' s Industrial Economic Operation*, China' s steel industry faces overcapacity exceeding 160 million tons, and cement overcapacity surpasses 300 million tons, with similar situations in other traditional industries. The theoretical root of this problem lies in overemphasizing material capital importance. Excessive material capital accumulation leads to diminishing returns, while the absence of knowledge processes due to lack of broad human capital pres-

sures the economy into a negative feedback, non-growth spiral. (2) **Mismatch between production and consumption patterns**: China' s capital-driven production model has a strong "export-oriented"character, creating a disconnect between production and domestic consumption. The phenomenon of overseas shopping provides evidence of this problem' s severity. China' s current industrialization model was established by undertaking low-end industrial chains from early industrialized countries, essentially serving relatively low-end international market demands (since developed countries no longer supplied these goods) and forming complementary relationships with foreign demand patterns rather than primarily satisfying domestic needs. Consequently, as an embedded link in international markets, domestic productivity improvements derive mainly from external demand pull rather than internal demand drivers. (3) **Excessive savings and asset bubbles**: China' s current excessive savings emerge under a production model that dominates consumption patterns where material goods demands have already been satisfied. On one hand, residents' potential demand for material goods is no longer about quantity but quality, yet the production structure cannot keep pace, converting potential demand into savings. On the other hand, residents' demands for technology, education, culture, and healthcare lack adequate market institutions to satisfy them, also converting potential demand into savings. A significant portion of savings stems from price expectations in the real estate market, forcing residents to compress current consumption and even future human capital investment to accumulate home-purchasing capacity.

Faced with these dilemmas, we must consider new drivers for the transformation period.

3. Achieving China' s Economic Transformation Through Innovation

Observation reveals that economic transformation is driven by efficiency improvements and the generalized Engel' s law. Production mode transformation pushes industries from low-efficiency agriculture to high-efficiency industry, and further from high-efficiency industry to even higher-efficiency services. Lifestyle changes reflect the generalized Engel' s law, extending from the declining share of food in consumption expenditures to the declining share of material consumption overall. Consequently, demand structure pulls industries toward continuous change, with the service sector' s share increasingly rising. Under globalization' s stimulation, China' s lifestyle patterns have gradually aligned with international standards, forcing our production modes to transform. In which direction should production modes shift? New economic observations provide insights.

3.1 New Kaldor Facts

Observation shows that the high-level economic growth trap does not appear in all economies. The United States, as a typical example, has maintained over

a century of continuous growth. This phenomenon prompted economists to re-examine Kaldor' s facts. Charles Jones and Paul Romer [2] summarized the new Kaldor facts as follows: (1) **Increasing scope of markets**: Globalization and urbanization promote the flow of goods, ideas, capital, and people, thereby expanding market scope; (2) **Accelerating growth**: For millennia, population and per capita GDP growth have accelerated from near-zero to the rapid growth observed in the 20th century; (3) **Variation in modern growth rates**: Differences in per capita GDP growth rates across countries increase with their distance from the technological frontier; (4) **Large income and TFP differences**: Differences in inputs explain less than half of cross-country variation in per capita GDP; (5) **Substantial increases in human capital per capita worldwide**; and (6) **Long-term stability of relative wages**: Human capital relative to unskilled workers continues increasing, but this quantitative increase does not cause continuously declining relative prices.

Considering the accelerated dissemination of innovation and its non-rivalrous characteristics, the rapid expansion of market scope due to globalization and the fact of long-term accelerating growth become easily understandable. The other two facts—enormous cross-country differences in income and total factor productivity, and significant productivity differences among technologically lagging nations—demonstrate the importance of institutions and their evolution. The final two facts closely resemble Kaldor' s original observations, but whereas Kaldor emphasized physical capital, modern growth theory emphasizes human capital. The virtuous cycle between human capital and ideas can explain accelerating growth.

The new Kaldor facts illustrate that modern economic growth drivers need not be traditional capital and labor inputs but rather technological innovation and human capital enhancement. Good institutions can promote human capital improvement and stimulate innovation, thereby energizing the economic system and sustaining growth.

3.2 China Should Pursue an Innovation-Driven Path

Growth where Total Factor Productivity (TFP) contributes over 50% is considered innovation-driven. Developed economies maintain TFP contribution shares above 60%, while China' s TFP contribution remains around 25%, with TFP growth averaging approximately 2.5% annually—a low growth rate. This indicates China has yet to embark on an efficiency-driven growth path, though this is undoubtedly a necessary goal.

In 2008, the World Bank introduced a new System of National Accounts (SNA) for GDP accounting, incorporating important concepts of "legal ownership" and "economic ownership,"and including intellectual property products in GDP—such as R&D, mineral exploration and evaluation, computer software and databases, and original literary and artistic works. Numerous enjoyment-oriented products belonging to people' s spiritual life have also been reclassified from consumption

items to supply items, thereby clarifying the integration of knowledge consumption and production and achieving breakthroughs in establishing transformation assessment standards. The introduction of "employee stock options," linking option accounts to labor compensation systems, transforms original asset income into human capital income, highlighting the importance of human factors. The core is reclassifying knowledge production.

China remains in a "learning by doing" development process, with TFP growth primarily deriving from efficiency improvements brought by foreign technology and equipment and from large-scale investment, making China's TFP growth closely related to high capital input. For instance, China's TFP growth rate rises with the net investment rate, showing an overall upward trend. As the "globalization dividend" disappears, the "learning by doing" model's effectiveness will inevitably wane. Combined with diminishing returns from high-input scale effects and unfavorable efficiency improvement trends, if TFP cannot grow through "innovation" modes such as independent innovation, production innovation, and institutional innovation, the TFP growth rate will decline. Conversely, if China's independent innovation capacity improves and TFP contribution share rises significantly, a promising growth scenario may emerge, as shown in the calculations below.

Table 3: Two Situations of the Path of Innovation-Driven Growth

Here we calculate two scenarios depending on whether capital efficiency improves, assuming investment rates return to more rational levels of 25% during 2015-2018 and 20% during 2019-2030, rather than the 30% level of investment-driven growth. Under the capital efficiency non-improvement scenario, with capital efficiency and elasticity consistent with previous cases and TFP contribution shares at 50% and 60% respectively, China's economic growth rates would be approximately 6% during 2015-2018 and 4% during 2019-2030. Achieving TFP growth at 3% would be difficult but would have very strong growth-pulling effects. If capital efficiency also improves—even modestly, returning to levels 0.35-0.40 lower than pre-2007—with a 25% investment rate, the efficiency-driven growth path would push China's economic growth rate back above 8%, and maintaining a 20% investment rate could sustain 8% growth during 2019-2030. This scenario appears overly optimistic, as returning to over 8% growth would mean surpassing the potential growth rate of 7.87% for 2015-2018 and 6.9% for 2019-2030. However, this breakthrough also demonstrates that while the demographic "negative dividend" is objective, if human capital's role can be fully realized, it can overcome this trap and unleash the economy's potential growth capacity.

4. Policy Recommendations

If institutions change incentives, the small portion of human capital used to produce and share ideas can rapidly increase, sufficient to offset population decline. Over the past half-century, these forces have operated in most OECD countries.

If China's policies and human capital levels increasingly resemble those of OECD countries, these forces have substantial room to exert tremendous influence.

Therefore, during the 13th Five-Year Plan period, China should improve the institutional environment in the following areas to create conditions for innovation:

(1) **Redefine the government' s role**, transforming it from a leader of economic growth to a facilitator, moving from the forefront to behind the scenes. The core is reducing intervention while strengthening coordination. Government intervention was the means for China's industrialization push, helping escape the poverty trap and establish a complete industrial system. China' s current challenge is breaking through the middle-income trap and effectively advancing urbanization. Unlike the previous industrialization model relying on physical capital accumulation and cheap labor, middle-income trap breakthrough requires considering not only supply-side efficiency but also consumption pattern upgrading and lifestyle changes, with human capital and knowledge sector development becoming new growth drivers. Deeper institutional change results from these historical condition shifts. This necessitates creating an environment for knowledge processes and knowledge sector growth, mobilizing individual initiative and creativity. This requires weakening government intervention while strengthening government functions in supporting sustainable growth, particularly in improving legal systems to protect property rights, creating effective market competition environments, and cultivating new factors of production.

(2) **Deepen fiscal and taxation system reform** to adapt to China' s new growth stage, transitioning from the indirect tax system of the industrialization era to a direct tax system required by the urbanization phase.

China' s current tax system was established in the early years of the People' s Republic and refined in the 1990s, bearing traces of the planned economy and clear characteristics of the industrialization period, with indirect taxes as the main component focusing on the industrial sector. China' s economic structure has undergone major changes, with industrialization entering its mid-to-late stage, urbanization maturing, and urban services becoming the economic mainstay. Continuing with an indirect tax-dominated system not only increases the tax burden on the industrial sector, making transformation and upgrading more difficult, but also weakens local governments' tax base and increases fiscal revenue challenges. Therefore, to adapt to China' s new development stage, the 13th Five-Year Plan period should initiate reforms gradually transitioning from indirect to direct taxation, reducing the indirect tax share and increasing direct taxes such as consumption taxes to promote economic transformation.

(3) **Accelerate reforms in several major areas**. First, address the widespread misallocation of human capital in China by promoting the transformation and reform of "science, education, culture, and health" public institutions to improve service sector quality. Over the past three

decades, emphasis on industrial sector growth led to neglect of service sector development, treating services as auxiliary to industrialization and focusing on scale rather than quality and efficiency, causing the productivity gap between manufacturing and services to continuously widen. Currently, many of China' s modern service sectors exist either in highly regulated public institutions (science, education, culture, health) or in public service sectors like telecommunications, finance, railways, shipping, and utilities. These sectors attract substantial high-level human capital through their monopolistic power but fail to deliver high productivity. Therefore, combining public institution reform with deregulation can revitalize human capital stock, enhance service sector efficiency and externalities, and cultivate core competitiveness.

Second, promote mergers and reorganizations of enterprises in domestic industrial and service sectors and clean up "zombie enterprises." Enterprises that grew through factor-driven expansion during the high-growth period face difficulties during the economic slowdown due to lagging technological progress. Some have lost potential for efficiency improvement or cannot meet innovation requirements. These enterprises should be cleaned up to release resources for improving the domestic industrial environment.

Third, break the government' s selective financing support mechanism from the industrialization period and clarify the market' s resource allocation role. Advance state-owned enterprise reform, break monopolies, and separate government from enterprise; promote the construction of a unified domestic market, breaking institutional barriers to resource flow, especially high-level human capital mobility, and addressing fragmentation in capital markets, factor flows, infrastructure, and information; break administrative interventions causing horizontal and vertical economic segmentation, enabling agglomeration and network effects of economic networks, enhancing urbanization' s spatial allocation efficiency, and clearing channels for knowledge sector division deepening and innovation spillovers.

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