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# China Political Economy

*China Political Economy* focusses on the crucial theoretical and practical problems China faces in the process of reform, transition and development. CPE welcomes papers which explore China's economic transition and development, its differences to western countries and cultures and the influences of China's economy on the wider global economy.

The target audience of the journal are economic scholars, government officials and entrepreneurs that are interested in China's economic problems. The journal serves as a platform for scholars sharing ideas, a reference for governors making decisions and a source for entrepreneurs generating innovative concepts.

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China Political Economy is a new international academic journal founded by the School of Economics at Nanjing University, China. The inaugural issue will be published in June 2018.

Political economy, especially socialist political economy, represents mainstream economic thought in China. Every step of progress in China's economic reform and its opening-up over the past forty years is derived from the intellectual accomplishments of major theoretical studies in the field of socialist political economy. A thorough understanding of Chinese political economy would thus enable us to understand accurately the course of China's economic reform and future development. Entering the new era of growth, Chinese political economists bear the historical mission to establish socialist political economy as a significant academic discipline with distinctive Chinese characteristics. Therefore, the study of new ideas and thoughts in the political economy of Chinese socialism makes it possible to identify emerging trends in China's economic development in the new era.

The journal China Political Economy aims to provide a global outlook and an open-minded forum for the study of critical issues in economic theories and practices, arising from the emerging course of China's economic reform, transition and growth. It will present readers throughout the world with the development of and innovative research in economic studies in China's new era, recording and reviewing the theoretical contributions made by Chinese economists.

The journal will focus on themes featuring China's concerns on the global stage while being inclusive with the unique positioning of Chinese views. The critiques and analysis presented will be deeply rooted in China's realities while drawing on international experience, examine history with an eye to contemporary issues, and take in the fate of mankind while turning an intelligent face toward the future. The contributors and editors of China Political Economy will strive to develop the journal into a world-class academic periodical with a distinct Chinese style and ways of thinking to enhance the development of Chinese economics and further introduce it to international academic circles. The journal will help the world better understand China, especially its growth and openness, and make contributions with a distinctly Chinese perspective to the progress of our globally interconnected human community.

We welcome high-quality manuscripts submitted by both Chinese and overseas scholars, representing outstanding and well-documented research outcomes. Articles published in the journal are selected through a fair and rigorous peer-reviewing process. Submissions must be original and theory-oriented, reflecting current academic trends while providing in-depth studies and insightful analyses of China's economic realities that shed light on the country's unique challenges.

The journal will contain featured articles and forums on topics such as theoretical research on political economy, reform and development of the Chinese economic system, macroeconomic operations in China, and studies of business organizations, finance and capital markets, enterprise strategy and corporate behaviors as well as the relationship between China's economic opening-up and the global economy.

While published in English, the journal will accept manuscripts submitted in Chinese or English. For accepted Chinese-language manuscripts, the editorial board will render professional translations into English so that Chinese scholars can share their findings and arguments with readers throughout the international academic arena.

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# The logic of four decades of economic reform and major breakthroughs in political economy in China

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## Abstract

**Purpose** – In the process of reform, although every landmark theoretical breakthrough is marked by the speech of the highest leadership of the Communist Party of China (CPC) or the decision of the CPC National Congress, each breakthrough is attributable to the theoretical contribution made by the academia of political economy. Notably, these theoretical breakthroughs invariably embrace innovations in the discourse system of political economy. The paper aims to discuss this issue.

**Design/methodology/approach** – The innovations and breakthroughs thereof have led to the political economy of socialism with Chinese characteristics.

**Findings** – The success of China's economy highlights the superiority of the socialist economic system and development path with Chinese characteristics.

**Originality/value** – These major breakthroughs are accompanied by breakthroughs in relevant theories, which constitute a synthesis of a series of major theoretical innovations in political economics.

**Keywords** Political economy, Breakthrough, Economic reform

**Paper type** Research paper

The success of China's economy highlights the superiority of the socialist economic system and development path with Chinese characteristics. The use of Marxist standpoints, viewpoints, and methods to perform scientific theoretical summarization is worthwhile. In retrospect over the past 40 years in China, as per the logic of economic reforms in this time span, every major progress in reform and opening-up has been preceded and propelled by major breakthroughs in the field of political economy. The innovations and breakthroughs thereof have led to the political economy of socialism with Chinese characteristics.

The logic of China's 40-year economic reform is to clarify the stage of development, involving the theory of the primary stage of socialism and the theory of the new era, which have generated four dimensions of reform. The first dimension is the reform of the resource allocation mode, which is driven by the breakthrough of the theory of the socialist market economy. This theoretical breakthrough has clarified the direction of market-oriented reform. The second dimension is the adjustment of ownership structure and the reform of public ownership, which is driven by the breakthrough of basic economic system theory in the primary stage of socialism. The third dimension is the reform of the basic distribution system, which is driven by the breakthrough in factor payments theory. The fourth



dimension is the supply-side structural reform, which is driven by the breakthrough in economic operation theory. These four dimensions of reform constitute the major theoretical breakthroughs in the field of political economy. Each of these major breakthroughs is accompanied by breakthroughs in relevant theories, which constitute a synthesis of a series of major theoretical innovations in political economics. In the process of reform, although every landmark theoretical breakthrough is marked by the speech of the highest leadership of the Communist Party of China (CPC) or the decision of the CPC National Congress, each breakthrough is attributable to the theoretical contribution made by the academia of political economy. Notably, these theoretical breakthroughs invariably embrace innovations in the discourse system of political economy.

### **1. Clarification of development stage: a breakthrough in the theory of the principal contradiction facing Chinese society**

Different stages of development presuppose diversified principal social contradictions. Accordingly, various reform theories and development concepts emerge. Two stages exist in the theoretical breakthroughs of the development stages in China's 40-year reform: one is the theoretical breakthrough in the primary stage of socialism in preliminary reform, and the other is the theoretical breakthrough in the new era of economic development in the wake of the new era of socialism with Chinese characteristics. They are related to the breakthrough of the theory of the transformation of principal contradiction in Chinese society.

Theoretical breakthrough in the primary stage of socialism in the early days of the reform: The Third Plenary Session of the 11th CPC Central Committee summarized the class struggle-based outline while clearly shifting its focus to economic construction. It sounded the clarion call for reform and opening-up. Subsequently, Deng Xiaoping clearly stated that China's socialism is in the primary stage. This means that when China entered the socialist society, she did not complete the tasks of modernization and marketization of production as other countries under capitalist conditions, that is, she needs to use the primary stage of socialism to complete modernization and marketization. The theoretical basis is the transformation and a new definition of principal contradiction in Chinese society. This has, for a long time, been defined as the contradiction between the proletariat and the bourgeoisie and between socialism and capitalism, thus taking class struggle as the outline. It is now defined as the contradiction between the growing needs of the people and backward social production. This definition can be said to be the first transformation of the principal contradiction in Chinese society. According to this definition, backward social production makes up the major aspect of contradiction. As proposed by Deng, the essence of socialism in the primary stage is the liberation and development of productive forces. Economic construction has thus fallen into the crosshairs of the CPC.

The primary stage of socialism is determined by the level of productivity development. The characteristic of socialism in the primary stage is expressed in the production relationship. On the one hand, the structure of production relations in the primary stage of socialism, public ownership and performance-based distribution cannot be one-size-for-all, eliminating private ownership and non-performance-based distribution. However, multiple ownership economies and distribution patterns must be developed, with public ownership as the mainstay. On the other hand, the socialist production relationship is still in its infancy, which necessitates multiform public ownerships and multiple approaches for performance-based distribution. Obviously, precisely because of the theory of the primary stage of socialism, China's reform can break through the dogma of socialism beyond the current stage of development and the shackles of the traditional system. The theory of the primary stage of socialism has thus become an important theoretical cornerstone of China's reform and opening-up.

Theoretical breakthrough in the new era economic development: At the 19th CPC National Congress in 2017, General Secretary Xi reaffirmed that China's basic national

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conditions, which are still in the primary stage of socialism, have not changed. Xi clearly indicated that China's economic development has entered a new era, that is, an era of development from high-speed growth to high-quality growth. This development can be said to be a new breakthrough in the theory of development stage, reflecting a new breakthrough in the theory of principal contradiction in the Chinese society.

After entering the new era, although still in the primary stage of socialism, the principal contradiction in this stage has undergone a second transformation. On the one hand, the needs of the people are not only the increasing material and cultural needs in quantity but the growing need for a better life in terms of quality. On the other hand, after nearly 40 years of reform, the level of social productivity has improved markedly. The backward social production expressed in the past no longer reflects the reality of China's economic and social development. Thus, the term has changed from the previous backward social production to unbalanced and inadequate development that cannot meet the needs of a better life. Therefore, the principal contradiction in the Chinese society has transformed into that between people's ever-growing needs for a better life and unbalanced and inadequate development. This transformation has motivated socialism with Chinese characteristics in the new era.

Such a transformation has not changed the fact that China is still in the primary stage of socialism. It indicates the principal task of China's economic development after entering a new era, clarifying the requirements for shifting to high-quality development. This is a feature of an era when the Chinese economy becomes stronger. In the new era, the main aspect of the principal contradiction in the Chinese society is the imbalance and inadequacy of development, which is to be solved by high-quality development to meet people's need for a better life. With this priority in mind, changing the development concept and development model and carrying out structural reforms on the supply side are needed.

In general, the theoretical breakthroughs in the development phase over the past 40 years have come down to the fact that development is of overriding importance. Faced with the contradiction between the growing needs of the people and the backward social production, the development of productive forces is the top priority. Faced with the contradiction between the people's growing need for a better life and the unbalanced and inadequate development, the economy needs to shift from high-speed growth to high-quality development. The contents of economic reforms at each stage are determined by the development tasks presented by the principal contradictions in the development phase.

## **2. Reform of resource allocation: a breakthrough in the theory of socialist market economy**

China's long-term implementation of the planned economic allocation of resources saw a breakthrough by the planned commodity economy. Several national seminars on the law of value theory in the early 1980s confirmed the planned commodity economy and released the mechanism of value law and market. On the basis of this idea, the concept of taking planned economy as the mainstay supplemented by market-based resource allocation is proposed. At that time, the reform aimed at expanding market-based resource allocation led to the gradual liberalization of the market, the prices, and the enterprises with conspicuous effects. The economy was invigorated by the market, the efficiency was improved by the market, and the original rigid system became elastic. This process laid the foundation for confirming the socialist market economy and comprehensively promoting market-oriented reforms.

The fundamental breakthrough in the theory of resource allocation is to confirm the socialist market economy. For a long time, people have believed that socialism can only be a planned economy and cannot be integrated with the market economy. The theoretical breakthrough of political economy is to clarify that the market economy is a resource allocation model not unique to capitalism. The socialist market economy is the integration of the basic socialist system with the market economy. Some aspects of the traditional socialist

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basic economic system cannot, indeed, be combined with those of the market economy, but they can be organically integrated with the market economy in the reform. As General Secretary Xi stated, after reform, state-owned enterprises have generally merged with the market economy.

The socialist market economy as a resource allocation method was clearly defined for the first time by the 14th CPC National Congress in 1992: the market shall play a fundamental role in resource allocation under the state's macroeconomic regulation and control. Therefore, what the enterprise produces, how it is produced and for whom it is produced is not directly arranged by the government but is regulated by the market, and the object of government regulation has been transferred from the enterprise to the market. The efficiency and vitality of economy have thus been escalated. The theoretical breakthrough of the socialist market economy promoted the shift of resource allocation to the market economy and clarified China's market-oriented economic system reform. From the 15th to the 18th CPC National Congress, this definition has always been the guiding ideology for the market-oriented reform of China's economic system. The theory of socialist market economy has thus become another theoretical cornerstone of China's economic system reform. The core issue has become the management of the relationship between the government and the market. According to this definition, the reform of the resource allocation mechanism revolves around the framework of the state-regulated market and market-regulated enterprise.

At the Third Plenary Session of the Eighteenth CPC Central Committee, General Secretary Xi fully affirmed the theoretical contribution of confirming the socialist market economy and clarifying the fundamental role of the market in resource allocation. Xi (2013) clearly stated that this is a "significant theoretical breakthrough that has played an extremely important role in China's reform and opening and socio-economic development, which also shows that theoretical innovation has a major precursor effect on practical innovation, the comprehensive deepening of reform must be primed by theoretical innovation."

Upon entering a new era, the socialist market economy is endowed with a new definition. This definition is clearly stated at the Third Plenary Session of the 18th CPC Central Committee: the market plays a decisive role in resource allocation and better plays the role of the government. This change can also be said to be a new breakthrough in the theory of resource allocation. The role of the market in resource allocation has changed from a basic role to a decisive role. This shift indicates that the market is no longer under the control of the state, but it plays a decisive role autonomously and returns to the original meaning of the market economy. Its theoretical and practical significance is, as put by Xi (2013), the positioning of the market to play a decisive role in resource allocation, which is conducive to establishing a correct government–market relationship concept in the whole party and society, to transforming economic development model and government functions, and to curbing corruption and other negative phenomena.

Another element of the new definition of the socialist market economy is to better play the role of the government, which is integrated with the market's decisive role in resource allocation. As Xi (2013) stated, "In terms of the role of the market and the government, we must adhere to the Dialectic Law and Two-Point Theory (the doctrine that everything has two aspects), attach equal importance to the 'invisible hand' and 'visible hand,' and put more efforts to form a pattern whereof the roles of the market and the government are organically unified, mutual complemented, coordinated and promoted to motivate sustained and healthy socio-economic development." Xi (2014) The Third Plenary Session of the 18th CPC Central Committee incorporated the better play of the government role into the framework of the modernization of the national governance system and governance capacity. To better play the role of the government, two clear-cut rules exist: first, the responsibility and role of the government should be clarified. The government must primarily maintain macroeconomic stability, strengthen and

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optimize public services, ensure fair competition, strengthen market supervision, safeguard market order, promote sustainable development, expedite prosperity for all and make up for market failures. Second, the requirement of better play means scientific macro control and effective government governance, which is an inherent requirement for exerting the advantages of the socialist market economic system. Here the roles of the government and market constitute not a zero-sum tradeoff but sufficient operations at different levels.

China's economic system reform has been comprehensively deepened from two aspects on the basis of the abovementioned new breakthroughs in the theory of socialist market economy. On the one hand, market-oriented reforms have been further deepened. Focusing on making the market play a decisive role in resource allocation, improving the market and its mechanisms, and establishing a unified, open and competitive market order, the 19th CPC National Congress further proposed to improve the mechanism market-oriented allocation of production factors. On the other hand, the role of the government is ameliorated, while canceling and reducing on a larger scale the administrative examination and approval items, reform of streamlining administration, delegating more powers to lower-level governments and society, improving regulation and optimizing services is carried out, macro control mechanism is improved, and the national governance system and the governance capacity are modernized.

### **3. Reform of the basic economic system: a breakthrough in the theory of ownership**

The theory of ownership is nothing short of the core content of Marxist political economy. Based on the theory of the primary stage of socialism, the breakthroughs in ownership theory since the reform mainly focused on the two aspects of the ownership structure of the primary stage of socialism and the connotation of the public ownership economy.

The first major breakthrough in ownership theory is the theory of ownership structure. Since the reform, the theory of ownership structure has broken through the pattern of public ownership as the mainstay and co-existence of multiple ownership economic entities. The theory has evolved into a pattern of public ownership as the mainstay and co-development of multiple ownership economic entities and the basic economic system in the primary stage of socialism, as defined by the Third Plenary Session of the 18th CPC Central Committee. In this way, the privately owned economy that used to be off-institutional became the intra-institutional part of the socialist basic economic system. The development of multiple non-public ownership economies broke through the limitations of the basic economic system. The significance of this theoretical breakthrough is that it developed the non-public ownership economy (non-public sectors of the economy) in terms of breadth and depth. Especially in the wake of the new era, the negative list system is implemented in areas where the non-public economy enters; as long as it does not affect national security, access will be given to non-public sectors in areas that involve no violation of national laws. This adjustment of the ownership structure enhances the vitality of the entire economy. According to Xi's speech at the Private Economy Symposium in November 2018, the contribution of the private economy constituted over 50 percent to the state's fiscal revenue, over 60 percent to the GDP and fixed asset investment and foreign direct investment, over 70 percent to corporate technical innovation and new products, and over 80 percent to urban employment. The private economy has thus made outstanding contributions in terms of steady growth, promotion of innovation, employment increase and improvement of people's livelihood.

Another major breakthrough in the theory of ownership structure is that mixed ownership can be a realized form (implementation form) of the basic economic system, as clarified by the Third Plenary Session of the 18th CPC Central Committee. The shareholding system, the shareholding cooperative system, Sino-foreign joint ventures and the joint ventures of various ownerships are concrete forms of mixed ownership. According to this theory, the

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common development of public and non-public ownership can form not only across enterprises but also within an enterprise. The significance of this reform is that public and non-public capital can be mutually owned and controlled. Non-public enterprises can participate in the reform of state-owned enterprises and become the controlling shareholders; state-owned enterprises can also become shareholders of non-public enterprises. In practice, mutual bail out between private and state-owned enterprises may pull together during trouble. This is a win-win situation instead of the zero-sum or negative-sum situation where the state sector advances while the private sector withdraws, or vice versa.

The second major breakthrough in ownership theory is that of public ownership theory, which is first manifested in redefining public ownership as the mainstay. The development of a multi-ownership economy and a mixed-ownership economy in the process of reform will inevitably encounter the problem of the dominant status of public ownership. Past theories have particularly emphasized the purity of corporate ownership. Therefore, public ownership as the mainstay is defined as dominance in quantity. The practice of reform broke this dogma. The decision of the Central Committee of the Communist Party of China on several issues concerning the establishment of a socialist market economic system by the Third Plenary Session of the 14th CPC Central Committee clearly defined public ownership as “the dominant position of the state and collective assets in the total assets of the society, with the state-owned economy controlling the lifeline of the national economy, and playing a leading role in economic development.” The 15th CPC National Congress further stipulated that the public ownership economy includes not only the state-owned and collective-owned economies, but also the state-owned and collective-owned components in the mixed-ownership economy. This provision has important guiding value for economic reform. First, although the proportion of public enterprises has declined in terms of quantity, public ownership is still the mainstay as long as public assets are dominant. Second, the state-owned economy will be mainly concentrated in the lifeline of the national economy while not necessarily taking a dominant position in other competitive areas. Then, a strategic adjustment of the state-owned economy's advancement or withdrawal will occur.

Another related breakthrough is the theory of realization form of public ownership. In the past, the realization form of public ownership was limited only to state-owned and collective enterprises. The 15th CPC National Congress clearly defined that the form of public ownership realization can and should be diversified. It clarified that the shareholding system can become a form of realization of public ownership. Accordingly, public assets operate in a wholly public-owned enterprise as well as in a mixed-ownership enterprise with non-public assets. The dominant position of public ownership is reflected in the control power of public assets in enterprises. Therefore, public-owned enterprises have established the modern enterprise system through the reform of the shareholding system and listing of companies. After mixed ownership becomes the basic form of realization of the basic economic system, public assets have different requirements for wholly owned, partially owned and controlling assets. The competitive fields are not necessarily wholly owned by public assets; involvement is sufficient. The lifelines of the national economy are not necessarily wholly owned by public assets, but absolute control is a must.

The third breakthrough is the theory of a modern property rights system. The Decision of the Central Committee of the CPC on several issues pertaining to the improvement of a socialist market economic system adopted by the Third Plenary Session of the 16th CPC Central Committee clearly stated that property rights are the main content of the ownership system. Moreover, it clearly required the establishment of a modern property rights system with clearly established ownership, clear-cut rights and responsibilities, strict protection and convenient circulation. The breakthrough of the theory of modern property rights system has expanded the space and depth for the study of ownership theory, which has further promoted the deepening of reform. The fruition of theoretical research on property

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rights systems covers shareholding diversification in mixed ownership; the circulation, transfer and transaction of property rights; and the separation of property rights of the investors and legal persons in the shareholding system. In particular, after entering the new era, new progress has been achieved in the study on the property rights theory, which are prominently manifested in the following: the clarification of the inviolability of public and non-public property rights on the basis of the Two Unwavering guideline, which calls for efforts to unwaveringly merge and develop the public sector of the economy and unwaveringly encourage, support and guide the development of non-public ownership economy; enhanced state-owned capital; and the reform direction of the rural land property rights system featuring the Separation of Three Farmland Rights, i.e. clarifying land ownership, stabilizing land contracting rights and liberalizing land management rights to enable the convenient transfer of management rights. The report of the 19th CPC National Congress clarified that one of the two key points of accelerating the improvement of the socialist market economic system is to ameliorate the property rights system. The goal of reform is to achieve effective incentives for property rights.

The fourth breakthrough occurred in the theory of state-owned enterprise reform. Previous theories of political economy do not recognize state-owned assets as capital. The reform process has broken this dogma and clarified that state assets are also capital, which is a major breakthrough in itself. Given that state-owned assets are capital, a natural requirement exists for proliferation and appreciation. After entering the new era, the new progress of state-owned enterprise reform theory and its practice is highlighted in two aspects on the basis of the existing state-owned economic strategic adjustment and various forms of reform. The first aspect is the function-based reform of state-owned enterprises, which is divided into two categories, namely, commercial and pro bono (public welfare). Commercial enterprises are in the competitive field and pursue value proliferation in the same way as capitals of other types of ownership. Wherever commercial enterprises can proliferate, state capital flows to them. Public capital in a mixed-ownership enterprise does not pursue controlling power in the enterprise, but it must pursue the proliferating ability of the enterprise. Public welfare enterprises must guarantee the public interest; therefore, they are generally operated by public enterprises. However, public capital cannot be one size for all. Public welfare state-owned enterprises can also establish mixed ownership, allowing non-state-owned capital to participate in shares and attract non-public capital to participate. The dominant position of public ownership here is manifested in the control of mixed-ownership economy. Its control and power are not only manifested in its controlling position, but, more importantly, it also treats other ownership economies equally and shares the attraction of interests. The second aspect is the reform of the state-owned assets management system. The initial reform is the shift of the state from managing business operations to managing assets. After entering the new era, the management of assets shifted to the management of, principally, capital. Accordingly, the reform turned to the state-owned capital authorization operation system. Therefore, the reform was extended on the basis of the separation of government and enterprise to the separation of government and assets.

#### **4. Basic distribution system reform: a breakthrough in the theory of factor payments**

After the downfall of the Gang of Four, four seminars on the theory of performance-based distribution constituted an important ideological liberation movement at that time. In December 1978, the Third Plenary Session of the Eleventh CPC Central Committee fully affirmed the results of the seminars, clarified relevant issues, and examined the theory of performance-based distribution. At the Plenary Session, Deng Xiaoping indicated that keeping back the principle of more pay for more work and making light of the material interests could be acceptable to a few advanced activists but not to the masses; it could be

acceptable for a period of time but not for a long time. The radical clarification of the concept of performance-based distribution by the Third Plenary Session of the 11th CPC Central Committee, albeit only a breakthrough in the framework of the public ownership and planned economy at that time, faces up to institutional inefficiencies, recognizes material interests and material incentives, opposes egalitarianism, and recognizes income disparities. This situation has broken the bottleneck for further promotion of the distribution system reform.

A first breakthrough is the theory of get-rich-earlier and get-rich-later. In the early days of reform, based on the proposed idea that poverty is not socialism, egalitarianism is not socialism, and polarization between the rich and the poor is also not socialism, Deng proposed a major policy that allows some people in some areas to get-rich-earlier. This is as follows: "In terms of economic policy, I think we must allow some areas, some enterprises, and some workers and peasants to earn more and be better off earlier, given their efforts and good performance. This will inevitably generate great demonstration effects, affecting their neighbors, and driving people from other regions and other units to learn from them. In this way, the entire national economy will continue to develop under this ripple effect, so that people of all nationalities in the country can become richer in a faster manner." He also clearly stated, "This is a big policy, a policy that can influence and drive the entire national economy" (Deng, 1983), correspondingly giving priority to efficiency with due consideration to fairness. The proffering of this major policy is a significant achievement of the integration of the Marxist theory of prosperity for all and the actual stage of China's development. On the road to common prosperity, we recognize the difference between get-rich-earlier and get-rich-later, which is to allow and encourage people to get rich through hard work, wealth, investment and innovation; fully mobilize the various elements of wealth creation; and maximize the potential of all aspects of economic development. This theoretical breakthrough has greatly liberated productivity.

Under the conditions of socialism, getting rich earlier in some areas is not the purpose of the concept of prosperity for all but is a pathway. In fact, the CPC has carefully observed the expansion of the income gap while allowing some people in some areas to get rich first. The decision of the CPC Central Committee on Several issues pertaining to the improvement of a socialist market economic system required strengthening the adjustment of income distribution and addressing the problem of the excessively widening income gap of some members of society. With the goal of achieving prosperity for all, we will increase the proportion of middle-income earners, raise the income level of low-income earners, regulate excessive income and prohibit illegal income. Considering that the problem of unfair distribution seriously affects the further improvement of efficiency, the 17th CPC National Congress held in October 2007 clarified that the initial distribution and redistribution must properly manage the relationship between efficiency and fairness and that redistribution shall focus more on equity. Moreover, the proportion of household income in the national income distribution should be increased gradually, the proportion of labor remuneration in the initial distribution should be escalated, and a gradual reverse of the expansion of income distribution gap should be demanded. This idea means that the major policy that allows some people in some areas to get rich first needs to become a policy that enables the majority to be better off. The principle of giving priority to efficiency with due consideration to fairness needs to shift to the principle of attaching equal importance to efficiency and fairness.

The second breakthrough is the theory of income distribution structure. In 1987, the 13th CPC National Congress confirmed the primary stage of socialism. In line with this confirmation, several distribution methods were confirmed for the first time. At that time, the proposed approach was to implement a variety of distribution models with performance-based distribution as the mainstay. The 14th CPC National Congress confirmed the socialist market economy and clearly defined the distribution system as performance-based distribution as the mainstay, supplemented by a variety of distribution models, allowing production factors such as private

capital to share the distribution of income. The 15th CPC National Congress held in 1997 proposed, for the first time, to allow and encourage the production factors such as capital and technology to share the distribution of income. It clearly stressed the adherence to the system with performance-based distribution as the mainstay that coexists with multiple modes of distribution to integrate performance-based distribution with production factor-based distribution. The 17th CPC National Congress further proposed to adhere to and improve the distribution system with performance-based distribution as the mainstay that coexists with multiple modes of distribution to ameliorate the distribution system based on the contribution of production factors such as labor, capital, technology and management. It clearly proposed the creation of conditions to allow more people to have property income. In November 2013, the decision of the Central Committee of the Communist Party of China on some major issues concerning comprehensively deepening the reform of the Third Plenary Session of the 18th CPC Central Committee proposed a sound factor payments mechanism determined by factor markets such as capital, knowledge, technology and management. Summarizing the existing recapitulations, the complete factor payments mechanism depends on three factors: the input of factors, contribution of factors, and supply and demand of factors. These three factors combine to form actual income distribution. General Secretary Xi presided over the Central Political Bureau Study in November 2016 and clearly termed the system by considering performance-based distribution as the mainstay that coexists with multiple modes of distribution as the basic socialist distribution system. The report of the 19th CPC National Congress also proposed to adhere to performance-based distribution and improve the production factor-based distribution, thereby ensuring a rational, fair and orderly distribution of income.

Another breakthrough is the formation of a shared development concept. The income gap created by years of efficiency prioritization with due consideration to fairness peaked upon entering the new era (when the Gini coefficient reached 0.477 in 2011). Appropriate income gaps can promote efficiency, but excessive gap or economic inequality (rich–poor gap) will hinder low-income groups from sharing the fruits of growth and prevent efficiency from increasing. In this context, General Secretary Xi (2015) stated that the essential requirement of socialism and an important mission of CPC is to reduce poverty, improve people's livelihood and achieve prosperity for all. According to this definition of the essence of socialism, allowing most people to get rich by sharing the fruits of development is necessary while continuing to implement the distribution system with effective and improved efficiency established in the reform and opening-up. Xi (2017) proffered the following idea at the Fifth Plenary Session of the 18th CPC Central Committee: "We must adhere to the principle of 'development for the people, by the people, and shared with the people.' More effective institutional arrangements shall be made to enable all the people to get more Sense of Gain (tangible benefits) in co-construction and sharing development. Implementing the concept of shared development, it comes down to two levels of things: first, fully mobilize the enthusiasm, initiative, and creativity of the people nationwide to promote the cause of socialism with Chinese characteristics, and continue to make the 'cake' (development fruition) bigger; second, cut the ever-grown 'cake' well, let the meliority of the socialist system be more fully reflected and let the people have more Sense of Gain (tangible benefits)." This concept further clarified the direction of income distribution reform in the new era, stating that poverty alleviation needs to be implemented effectively and that middle-income groups should be expanded, thereby forming an olive-shaped distribution structure. Therefore, the concept of shared development is the sublimation of the theory of prosperity for all. From the essential nature of prosperity for all as defined by socialism, to the major policy that allows some people in some areas to get-rich-earlier, to prosperity for all achieved by those who get-rich-later being helped by those who get-rich-earlier, and to the shared development concept, an integrated theoretical system for achieving prosperity for all under socialist condition has taken shape.

## 5. Supply-side structural reform: a breakthrough in economic operation theory

The market-oriented reform that China has conducted continuously since 1978 is, in effect, the adjustment of the demand side. The effect is evident, but it cannot fundamentally solve the problem of quality and balance of the supply-demand structure. Therefore, at the end of 2015, General Secretary Xi proposed to promote the supply-side structural reform, which promoted a series of innovations in the economic operation theory in the new Era.

The first innovation is the theory of supply and demand. On the basis of existing demand-side reforms, the supply-side reform is proposed, seeking development momentum on both sides of supply and demand. Elevating the analysis of supply–demand relationship to macroeconomic management is nothing short of a major innovation. As General Secretary Xi (2017) stated, “Supply and demand are the two basic aspects of the intrinsic relationship of the market economy, which have a dialectical relationship that is both opposite and unified. Neither of the two can do without the other, the two are interdependent and mutually conditional, the supply side and the demand side are two basic means of managing and regulating the macro economy.” Demand-side management focuses on solving aggregate problems and on short-term regulation, and supply-side management focuses on solving structural problems and on long-term development. Clearly, these provisions are fundamentally different from the Western supply-side economics.

The second innovation is the theory for supply-side operational goal. The supply-side structural reform objectives are clearly defined as to improve the quality and efficiency of the supply system. As General Secretary Xi (2017) stated, “The structural reform of the supply side shall focus on liberating and developing social productive forces, promoting structural adjustment through reforms, reducing ineffective and low-end supply, expanding effective and medium-to-high-end supply, and enhancing the adaptability and flexibility of supply structure to demand changes, to escalate total factor productivity.” Specifically, the supply-side structural reform objectives are as follows: to promote the improvement of total factor productivity, to optimize the supply structure, and to cultivate new industries and new operation types. General Secretary Xi repeatedly used the concept of total factor productivity in his speech on supply-side structural reforms and effectively clarified the evaluation criteria for resource allocation efficiency. The quality transformation, efficiency transformation and power transformation proposed in the Report of the 19th CPC National Congress constitute the basic ways to improve the total factor productivity.

The third innovation is the theory for supply-side regulation methods. The structural contradictions between supply and demand in reality are concentrated on the supply side. The unsuitable demand for product quality, technical grade, hygiene and safety reflects the shortage of effective supply. At the same time, ineffective and low-end overcapacity exists. As Xi stated, “China’s supply system is very strong, but most of them can only meet low-end, low-quality, and low-price demands.” Faced with this unbalanced supply structure, economic restructuring cannot remain in a state of incremental capacity expansion but must shift to adjusting inventory and optimizing increments. Therefore, inventory structure adjustments such as de-capacity and de-stocking are adopted to provide room and resources for effective supply.

The fourth innovation is the supply-side motivity theory. The mobilization of the initiatives of all parties is a major principle of a socialist political economy with Chinese characteristics. The operation of the enterprise requires the motivity not only on the demand side but also on the supply side. The motivity on the demand side originates from the pressure of market selection, while the motivity on the supply side highlights economic incentives, which focus on the incentives to the real economy, thereby highlighting the incentives for market players: reduce costs, taxes, fees, interests and social burdens for enterprises to make them lightly loaded; protect and motivate entrepreneurship, highlighting the protection of entrepreneurial property and the encouragement of

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entrepreneurship, with the ultimate goal of releasing the vitality of the enterprise; and reduce leverage. In view of the high-interest burden generated by enterprises due to excessive leverage, the investment and financing system needs to undergo a reform. The investment and financing structure of enterprises shall be transferred more from indirect financing of banks to direct financing and equity financing to establish a self-accumulating and self-regulating mechanism. Correspondingly, the development of multi-level direct financing capital markets will provide more tools that will allow enterprises to participate in capital market operations.

The fifth innovation is the theory of new drives. Economic development has shifted from high-speed growth to a new era of high-quality development. The demand for high-quality development on the supply side is no longer a matter of stimulating the supply of material resources. The drives of material resources and low-cost labor have subsided in the supply side of the new era. Other new drives, such as innovation drive, structural adjustment and efficiency improvement, can be developed on the supply side to promote economic growth. The driving force on the supply side is more sustained and stronger than the pulling force of the demand supply. Realizing the transformation of new and old drives constitutes the supply-side structural reform that affects China's long-term development. The 19th CPC National Congress Report clearly requires the fostering of new growth poles and drives in the fields of mid-high-end consumption, innovation-oriented development, green low-carbon economy, shared economy, modern supply chain and human capital services through the deep integration of internet, Big Data and artificial intelligence with the real economy. Compared with the existing five major tasks of de-capacity, de-inventory, de-leverage, cost reduction and addressing weak links, this is an upgraded version of the supply-side structural reform.

The major innovations in the above economic operation theories have ushered in a series of supply-side structural reforms. These include improving the institutional mechanism where the market plays a decisive role in resource allocation, thereby promoting supply to adapt to changes in market demand; deepening administrative management system reform, breaking monopoly and local protectionism, and reducing institutional transaction costs; establishing effective incentive mechanisms to enhance the endogenous motivation of micro agents; promoting the institutional reform of the science and technology system and boosting the drive of innovation; establishing strict quality management mechanisms; and cultivating the spirit of craftsmen.

In general, the major breakthroughs in the field of political economy that promoted economic reform in the past 40 years invariably reflect the logic of the two-point theory and key point theory, which is determined by adhering to socialist principles or advancing reforms. Here, we present the key point theory from the perspective of reform. As far as the principal contradiction in the new era is concerned, it features the two points of the people's need for a better life and unbalanced and inadequate development; the key point of overcoming this contradiction is to solve the latter. The theory of socialist market economy involves two points, namely, the government and the market as well as their relationship, and the focus is on market-oriented reform. As far as ownership is concerned, two points exist concerning public ownership as the mainstay and co-development of multiple ownership economic entities. The focus of reform is to develop several ownership economies. As far as the basic distribution system is concerned, it involves the two points of performance-based and production factor-based distribution. The focus of reform is to improve the mechanism of production factor-based distribution. As far as economic operation theory is concerned, it involves two aspects of the supply side and the demand side; the focus of reform is on the supply side.

The above discussion is only an analysis of the significant contributions of major breakthroughs in political economy to the economic reform of China as per the logic of these reforms in the past 40 years, wherein the benefits of these breakthroughs include China's

opening-up and development as well as other aspects. This matter will be elaborated separately elsewhere. Overall, since the reform and opening-up, the breakthroughs in political economy theories have systematically established a socialist political economy with Chinese characteristics.

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# Creating a reliable financing mechanism for economic development

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## Abstract

**Purpose** – China's economic development in the past 40 years has an array of distinctive features that have attracted the attention of the world. The paper aims to discuss this issue.

**Design/methodology/approach** – The analysis logic is as follows: with regard to the mechanism, the above factors were met in a timely manner and jointly contributed positive energy to China's economic growth, with the increase in the savings rate as the necessary condition and foundation, and the increase in the savings rate is attributed to the explosive expansion of the financial system at the beginning of reform and the formation of positive incentives for residents, enterprises and governments at all levels, and the expansion of the financial system and the formation of positive incentives are clearly the crystallization of the wisdom of Chinese-style progressive reform.

**Findings** – Therefore, we have every reason to believe that the growth prospects of the Chinese economy remain bright. The author is nonetheless confident that the new two-step strategy for economic development will be realized, proposed by the 19th CPC National Congress.

**Originality/value** – Moreover, the growth of China's economy has long been accompanied by the "double surplus" of current accounts and capital and financial accounts in the international balance of payments, which is not completely consistent with the traditional paradigm of development economics. These phenomena are so unique that the international community calls it the "Mystery of China" or "China's Development Path."

**Keywords** Economic development, Capital provision mechanism, Economic new normal

**Paper type** Research paper

China's economic development in the past 40 years has an array of distinctive features that have attracted the attention of the world. The most prominent of these features is ascribable to the simultaneous and harmonious manifestations of high savings, high investment and high growth ("three highs") for decades. Moreover, the growth of China's economy has long been accompanied by the "double surplus" of current accounts and capital and financial accounts in the international balance of payments, which is not completely consistent with the traditional paradigm of development economics. These phenomena are so unique that the international community calls it the "Mystery of China" or "China's Development Path."

Starting with the phenomenon of surplus labor transfer, this paper analyzes the key links on which this development path is generated and succeeds and the institutional mechanisms that support them to uncover the theoretical logic behind the Mystery of China. We believe that the continuous transfer of surplus labor force from agriculture to industry, from rural to urban areas and from state-owned to non-state-owned enterprises, namely, the long-term parallel advancement of industrialization, urbanization and marketization, is the key to maintaining the long-term, high-speed growth of China's economy. The long-term coexistence



and mutual support of high savings rate and high investment rate are prerequisites for the continuous transfer of labor and the inevitable result of this development model. They also form the basis for the maintenance of this development model.

The practical experience of China's development path and the theoretical logic it reveals has global significance because it effectively breaks through the long-term economic bottleneck faced by developing countries: the shortage of development funds in a large developing country with "a formidable population economically poor and culturally blank."

The famous "two-gap" theory in development economics holds that developing countries are backward because two bottlenecks restrict their development: internally, a savings gap exists, that is, insufficient domestic savings; externally, a foreign exchange gap exists, that is, attracting foreign investment is difficult. Severe financial constraints have dampened the ambitious investment plans and the growth vision of developing countries. Therefore, solving the two-gap dilemma is the key for developing countries to eliminate poverty and backwardness and ultimately achieve modernization.

For decades, the two-gap theory has been time tested and true. At the beginning of this crisis, the world seemed to see the prospect of eliminating the two-gap spell. In the first few years of the crisis, when developed economies such as the US deteriorated and continued to beef up their "quantitative easing" over time, the economies of vast developing countries were not affected and even experienced a wave of brilliant growth; thus, "two-speed derailment" occurred. However, when the USA began to withdraw from quantitative easing and a large amount of capital returned to the USA, people could not help but immediately see a repeat of the same situations as they occurred in Latin America in the 1970s and 1980s and in Southeast Asian countries such as South Korea and Thailand in the 1990s. Developing countries have successively experienced economic slowdown, augmented inflationary pressures, stock market crash, deterioration of international balance of payments, capital outflows and sharp depreciation of the local currency exchange rate in violent fluctuations. This wave of rollercoaster cycles is a frustrating reminder that the structural distortions in most developing countries have been improved, and the two-gap dilemma remains the same. This situation elucidates that in an international environment where globalization is deeply developed and the USA still plays a leading role, no country can be immune to this dilemma.

It is in this context that, looking around the world after the crisis, people are more deeply aware of the value of China's development path. Since 1994, China has relied on its own strength to basically free itself from the shackles of the two-gap dilemma. Only by relying on domestic savings can the Chinese economy be immune to the spillover impact of the domestic policies of the developed economies led by the USA, keeping "a cool head in a crisis."

This occurrence is a miracle of global significance. Therefore, one of the important tasks in exploring China's development path is to summarize and recapitulate the key links that led to this miracle and the corresponding changes in the corresponding institutional mechanisms.

## **1. Understand the key position of savings/investment in economic operations**

The basic feature of modern social reproduction is the expansion of reproduction. The continuous expansion of the scale requires the generation of new capital. Therefore, investing the generated new capital is among the essential tasks of a country's economic growth and development.

From the perspective of macroeconomic operation, the realistic process of capital formation involves two links. The first link is the process of capital accumulation, that is, the process of saving; the second link is the process of using savings, that is, the process of investment. The core of macroeconomic balance is to maintain a balance between savings

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and investment. Here savings is a concept of physical economy, referring to the unconsumed portion of national income. For residents, savings refers to the surplus of disposable income minus consumption. For enterprises, savings refers to the balance of their after-tax profits after deducting profits from their owners. For the government, savings refers to the remaining portion of the government departments' fiscal revenue (tax, fee income, debt income, etc.) after deducting current account expenditures for defense, education, administration and social relief, among others.

In macroeconomic theory, which characterizes the operation of the national economy, savings equal to investment. However, such an "equation" is merely a relationship defined *ex post*. In other words, the so-called *ex post* is in terms of results. The key element of maintaining identity is the particularity of inventory in the economic system: at the supply side of national income, the new output of the enterprise is classified as savings. On the demand (i.e., use) side of national income, it is also defined as inventory investment. This double existence of inventory in national statistics can be said to be what makes "savings" equal to "investment" as a matter of course.

Given that *ex post* exists, then *ex ante* also exists. In economic analysis, *ex ante* refers to economic activities in which economic entities follow their own decision-making functions and decide independently according to their objective environment. In other words, *ex ante* is about the starting point. Undoubtedly, from the perspective of society as a whole, *ex ante* savings and *ex ante* investment are always unequal. Thus, insufficient savings or underinvestment occurs. When savings are insufficient, the economy (*ex post*) has inflationary pressures. When the investment is insufficient, it may lead to an (*ex post*) increase in inventories, which will lead to deflationary pressures and then to economic downturn. In this way, the essential task of macroeconomic regulation and control is to urge savings and investment to be equal *ex ante*. When unequal situations arise, we must try to adjust the two sides and their mutual relations by using various policy instruments.

In the market economy, given that people mostly exist in only one link of the social division of labor and the exchange system, the separation of the savings subject and the investment subject becomes the norm. The usual pattern is as follows: the resident sector, as the major consumption entity with savings that are much higher than the investment of the sector, constitutes the largest fund surplus sector in the whole society. The corporate sector is the main body of investment, and its savings are often insufficient to support the investment thereof. Therefore, it is the largest fund deficit department in the whole society. No set rules exist for the savings and investment dynamics of government departments, but in many cases, government savings are not enough to support government investment. Therefore, government departments are usually bogged down in fund deficits.

Seeing that, in the national economy, savers and investors are often held by different entities with widely varied surplus and deficits, savings need to be converted into investment, and a corresponding mechanism is also necessary.

Savings can be transformed into investment either through fiscal intermediary or through financial intermediary. The former refers to the government's collection of part of private savings through taxation, fees and other means of income, and ultimately the government completes the investment. The latter refers to savers' purchase of deposit certificates, foreign exchange, stocks, bonds, wealth management products and other financial products to transfer their savings (through financial intermediary) to investors, who complete the investment.

Before the reform and opening-up, China was once a country with short savings, like all developing countries. The "Great Leap Forward" in 1958 and the "Great Leap Outward" in 1977 caused catastrophic damage to the national economy because the domestic investment required for the "Leaps" far overstepped the level that domestic savings could support. At the 1981 State Conference, Comrade Chen Yun, the older-generation financial leader of

China, summed up the experience and lessons of China's economic construction since the founding of the People's Republic of China. He summarized the general policy of China's economic work as "one, to eat; and two, to build" (Jin and Chen, 2005). In this plain language, he clarified the interrelationship between several key factors in the operation of the national economy. Here, eating is the first essence; with meals, savings are possible, and only with savings can investment (construction) be supported by noninflationary sources of funds.

Therefore, the number one task for reform and opening-up has become to effectively mobilize savings to support high-level investment, start industrialization and urbanization, and ensure the employment of a growing population of the right age. To put it bluntly, if China's economic miracle benefits from the demographic dividend, industrialization and urbanization simultaneously in complementarity, then the windfall of these factors will obviously start with a steady increase in the savings and investment rates. In this connection, the key to the Chinese miracle is that it created an effective institutional mechanism for mobilizing and allocating savings.

## 2. Reform stimulates the willingness to save

The first essential step in mobilizing savings is to stimulate the willingness of microeconomic entities to engage in saving. This goal was achieved mainly by promoting progressive decentralization reform and vigorously developing the financial system before the Third Plenary Session of the Fourteenth Central Committee. After 1993, it was comprehensively embedded in the process of building and improving the socialist market economic system.

The economic and financial industries of the first 30 years of the People's Republic of China operated under the traditional planned economic system. The Chinese economic and financial reforms in the four succeeding decades facilitated a transition from a planned economic system to a socialist market economic system and from a closed economy to an open economy. In China, this process initially adopted a gradual decentralization reform model. The difference between a market economy and a planned one is that the latter is determined by the central planners to unify the allocation of resources, whereas the former is determined by a number of dispersed economic parties based on market price signals, and the collection of these decisions guides the allocation of resources. Therefore, the essence of the transition from a planned economy to a market economy is to move from centralization to decentralization in the decision-making process of resource allocation.

This dispersion of resource allocation power (decentralization) consists of two parts. First, the government decentralizes enterprises and households, shifting from a highly centralized and unified planned economy to a mass-employment, enterprise-led market economy. This reform is an "economic decentralization," which represents a shift from a highly centralized and unified planned economy to a market economy characterized by decentralized decision making. It aims to empower microeconomic entities with clear property rights to stimulate their enthusiasm for savings, investment and production. Second is the decentralization of power from the central government to the local governments. This step is a "separation of powers" between governments at all levels. It includes the reallocation of specific authorities and expenditure responsibilities between the central and local governments and aims to encourage, on a large scale, local governments at all levels to develop their economies. Unlike the former Soviet Union and Eastern European countries, China's economic and administrative decentralization reforms are all progressive rather than "explosive." This condition is reflected not only in the incremental deepening of the understanding of the reform objectives, but also in that the reform measures are implemented step by step and as far as possible along the path of Pareto efficiency improvement.

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A proven fact now is that the progressive decentralization reforms are undoubtedly more pragmatic, robust and successful as compared with the prevalent beliefs of the former Soviet Union and Eastern European countries that hoped to “leap” from the planned economy to the market economy. The process of decentralization gives property rights to microeconomic parties and creates an incentive-compatible framework for their economic activities, thereby stimulating the incentives for savings and investment and revitalizing the economy. The progressive approach allows all economic parties, including decision makers, to have a process of constantly exploring, trying, summarizing and gradually becoming familiar with new things. The new mechanism is established and improved in this gradual process.

Looking back at the economic and financial system reforms of the past three decades, we found that 1994 was an important watershed. This aspect refers to the “Decision of the Central Committee of the Communist Party of China on Several Issues Concerning the Establishment of a Socialist Market Economic System” made by the Third Plenary Session of the 14th CPC Central Committee in November 1993, which established a clear goal of building a socialist market economic system. Since then, on the one hand, major differences have developed between the reform measures and the previous ones. On the other hand, the most fundamental relationship in macroeconomic operations – the relationship between savings and investment – has been reversed.

After the goal of establishing a socialist market economy is clarified, the unnecessary disputes about “planned” and “market” economy have basically ended. With regard to the focus of the reform, before 1994, the focus was on decentralization and profit-sharing instead of on changing the property rights system. The simple approach of giving benefits without emphasizing the establishment of incentive and restraint mechanisms for microeconomic parties was also corrected. Corporate reforms started to accentuate clear property rights, a perfect governance structure and the establishment of a modern enterprise system. The fiscal system also began a tax-sharing system reform with such far-reaching influence that the international community calls it the “Fiscal Federal System.” Since then, not only have enterprises gradually become the market entities for independent decision making, but also, through the fiscal system reform of the tax-sharing system, local governments have gained a great deal of economic management power, which has been called by domestic and foreign scholars the “secret key” to China’s economic development, ushering in the local government’s initiative to develop the economy and the (primary level) intergovernmental competition based on this.

The continuous deepening of reform has undoubtedly promoted the increase in China’s savings rate and investment rate from the institutional level.

First, a direct result of market-oriented reforms is that investment entities have shifted from state-owned economic units to diversified entities. The transformation of investment entities means that market economic mechanisms will gradually play a role. This condition not only greatly stimulated the rise of investment, but also improved the efficiency of investment and greatly stimulated the enthusiasm of the majority of microeconomic entities. Therefore, it can be said that the “enterprize” corporate reform and the diversification of investment subjects are among the basic institutional factors that are supporting China’s high savings and high investment, and thus supporting China’s industrialization and urbanization.

Looking further, the deepening of market-oriented reforms has gradually reduced or even eliminated the various welfare benefits enjoyed by the employed population under the traditional planned economic system. On the demand side, these reforms have caused demand to shift to the market, thereby inevitably requiring residents to increase their savings in advance to accumulate their ability to pay. Furthermore, compared with the integrated system of employment, welfare and pension under the planned economic system,

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market-oriented reforms may also cause increased uncertainty of future expectations by the labor population, thus additionally increasing residents' "preventive savings." At the supply end, the transformation of the supply entities and the gradual replacement of the planning mechanism by the market mechanism have greatly stimulated the investment of the whole society. The surge in manufacturing investment is self-evident. Housing, old-age care, medical care and education, which have long been blocked from the government's investment list, have begun to attract increasing input. Then, after the economic infrastructure and society infrastructure entered our field of vision, China's investment entered a period of long-term high growth.

### 3. The financial "explosion"

Consistent with the shift of resource allocation power in the reform of the economic system from government plan to market orientation, since the reform and opening-up, the financial system that "grandly unified" in the People's Bank of China has been gradually split into an increasingly complex financial organization system, including the Central Bank, commercial banks and non-banking financial institutions. Meanwhile, a large number of other financial institutions that are compatible with the market economy, such as credit unions, financial companies and various financial institutions, including capital markets, money markets and fund markets, have also sprung up in China. The allocation of financial resources is increasingly determined by the decentralized decisions of various types of financial institutions, financial markets and non-financial sectors.

This reform process, which domestic and foreign researchers called "eliminating financial repression," first touched on the price of funds. The long-term distortion of the interest rate suppressed at low levels gradually rose with the deepening of financial reforms and became an important factor that stimulated the rise of China's savings rate. However, unlike the simple conclusions of general textbooks, the factors that affect Chinese residents' saving behavior are broad, including the following at least: the prioritization of the pattern of national income distribution for residents; the upswing in Chinese residents' monetary income levels as China's economic monetization continues to deepen; the increasingly rapid and uncertain institutional changes that increased residents' willingness to have precautionary savings; and China's adoption of policies to curb consumer credit, resulting in low debt ratios among residents.

However, in the process of increasing China's savings rate, the rapid development of the financial system is also indispensable. The continuous enrichment of financial institutions, financial markets, financial products and financial services has provided an increasingly broad savings channel for the majority of microeconomic entities.

In 1978, China had only one financial institution: the People's Bank of China, which monopolizes all functions of the central bank and commercial banks. It is also a ministerial administrative agency of the government.

From 1978 to 1984, in line with the diversification of economic entities and the marketization process of economic operations, China's financial system began a diversified process. The most notable events were the successive recovery and establishment of the People's Insurance Company of China, the People's Construction Bank of China (later renamed China Construction Bank) and the Agricultural Bank of China.

With the loosening of financial controls, various non-bank financial institutions and credit unions also began to develop. In October 1979, China's first trust and investment company, China International Trust and Investment Corporation, was established. In 1980, to meet the capital needs of the rapidly developing urban collective and individual enterprises, the first urban credit cooperative was listed in Hebei Province and soon triggered the climax of the establishment of urban credit cooperatives throughout China. At the same time, corresponding to the rapid development of township and village

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enterprises, the number of rural credit cooperatives in rural China has also soared since 1953. In April 1981, China Oriental Leasing Co., Ltd was established, marking the beginning of the financial leasing industry into China's financial system.

In 1985, as the People's Bank of China began to independently exercise the functions of the central bank, a new state-owned bank, the Industrial and Commercial Bank of China, which took over the function of the commercial banks that were separated, was founded. In this way, the state-owned commercial banking system that plays a leading role in China's banking system forms its basic framework.

Taking the establishment of the Central Bank System as an opportunity, China has further launched a large-scale financial institution innovation boom.

In terms of commercial banks, the first commercial bank in China organized by the shareholding system, the Bank of Communications, was reopened in 1986. The first bank initiated by a corporate group, CITIC Industrial Bank, was established in 1987. The first regional commercial bank, Shenzhen Development Bank, which was jointly funded by local financial institutions and enterprises, also started operations afterwards. Since then, more than ten joint-stock commercial banks, such as Minsheng Bank and Hainan Development Banks, as well as dozens of city commercial banks such as Beijing, Shenzhen and Shanghai Banks, have become new members of the Chinese commercial banking system.

With the development of the urban non-state-owned economy, urban credit cooperatives have rapidly spread in Chinese cities. In the most prosperous period, the total number reached more than 3,000. Rural credit cooperatives have adapted to the rapid development of township and village enterprises and once peaked at more than 40,000.

Non-bank financial institutions have also mushroomed. Trust and investment companies have sprung up. Financial companies based on corporate groups began to appear in 1987 and soon reached a scale of dozens. Investment funds also broke ground with the development of the securities market. After 1991, with the rise of the stock market, securities companies have developed rapidly throughout China, with as many as 200 at most.

On the basis of the above developments, since 1994, as per the principle of separating policy-related operations and commercial operations, as well as the principle of separated operation and administration of the banking, trust and securities industry, monetary authorities have also launched a large-scale restructuring of the financial institutional system of China. The policy loan business, which had been contained in state-owned commercial banks for a long time, was separated and handed over to three newly established development banks, namely, the National Development Bank, the Export-Import Bank and the Rural Development Bank. At the same time, the state-owned banks also followed the practice of commercial banks and began another round of commercialization reform.

Financial markets such as currency markets and capital markets, which have long been a taboo for people, have also emerged since the early 1980s. Beginning in 1981, in the most developed economies of the Jiangsu and Zhejiang areas, some "underground" fund borrowing and lending activities had been occurring, with the aim of regulating the surplus and deficiency of funds. In January 1986, the lending market was officially incorporated into China's financial system. In 1982, the People's Bank of China advocated the implementation of bills of exchange, promissory notes, cashier's checks and letters of credit, which can be described as the inception of the Chinese bill market. In 1982, China resumed the issuance of national debt, and the development of the capital market began. In 1991, on the basis of a fairly developed national debt market, the government bond repurchase business began to be piloted. A major event that should be particularly noted is that in the early 1990s, on the basis of the pilot reform of the national corporate shareholding system in China, the stock exchanges in Shanghai and Shenzhen opened in late 1990 and early 1991, respectively, marking the point where the stock market formally became an integral part of China's socialist market economy system.

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In summary, in the short period of 15 years from 1978 to 1994, China's financial institutions grew from the "one piece" of the People's Bank of China into many central banks, (national and regional) commercial banks, insurance companies, finance companies, urban and rural credit cooperatives, non-bank financial institutions (securities, trusts, leasing, funds, etc.) and policy-related banks, which all constitute a full range of modern financial institutions. Stock markets, currency markets and bond markets have also become outlets for investments with which investors are acquainted. This unprecedented and explosive development has laid a solid systematic and institutional foundation for the improvement of China's savings rate.

Statistics show that China's savings rate and investment rate have both improved steadily since 1994.

Before 1978, as the classic theory of development economics stated, China's fixed asset investment and economic growth were always constrained by the savings gap (saving rate lower than investment rate). Over 16 years, specifically from when the reform began in 1978–1993 when the reform entered the new stage of building a socialist market economic system, eight years exist in which the Chinese savings rate was higher and lower, respectively, than the investment rate.

After 1994, the situation changed radically. The savings rate outpacing the investment rate is a normal situation in the Chinese economy. This situation is manifested in the domestic market given the continuous long-term, high-speed growth of bank deposits and new financial assets; in external economic relations as the long-term, continuous surplus of the current account; and the resulting rapid boom of foreign exchange reserves.

In 1978, China's savings rate was only 37.9 percent. In 1994, it rose to 42.6 percent, which exceeded the investment rate of the year (41.25 percent). Since then, China's savings rate has climbed, rising to around 51 percent in 2008 and around 49 percent in 2017. Correspondingly, China's investment rate (capital formation) has also steadily escalated from 38.22 percent in 1978 to 41.25 percent in 1994, 44 percent in 2008 and around 46 percent in 2017. On average, China's savings rate and investment rate have reached 38 and 36 percent, respectively, in the past 40 years, being much higher than those of other developing countries in the corresponding period and developed countries in their historical periods of high growth. The savings rate and investment rate, which are high, last for a long period, and mutually supportive, have laid a solid foundation for China's miracle of an average annual growth rate of 9.5 percent in the past 40 years.

#### 4. Population: from "burden" to "dividend"

In the short term, investment rate and savings rate are primarily a function of capital profit rate and interest rate. In the long run, the investment rate and the savings rate are mainly determined by the population structure.

High investment rates and high savings rates have coexisted for a long time, leading to the emergence of demographic dividends, which derives from changes in the age structure of the population. In the decades following a wave of the "baby boom," the usual phenomenon is that the proportion of the working-age population in the economy increases, while the proportion of children (children's dependency ratio) and the elderly (old-age dependency ratio) declines. In the process of this structural change in the population, if the working-age population is able to obtain employment, then the labor participation rate of the total population increases, thereby promoting the increase of the savings rate in at least two aspects: first, the increase in the proportion of the working population leads to an increase in the total income of the entire population, which will inevitably increase the level of savings; second, the relative increase in young working population leads to a decline in the propensity of the total population to consume and an increase in the propensity to save, which in turn creates an additional savings rate

increase effect. Looking further, in the context of high savings rates, if the investment rate can be increased accordingly, then the economy will maintain a high growth rate. This phenomenon of high demographic rate, high investment rate and high economic growth rate caused by changes in demographic structure simultaneously and in parallel and support each other is a “demographic dividend.” However, a detail that is particularly important to point out is that demographic changes constitute only one of the necessary conditions for generating a demographic dividend. The sufficient condition is to provide continuous and large-scale employment opportunities, which can only be engendered from the process of large-scale industrialization and urbanization.

Studies have shown that demographic dividends are a common economic phenomenon that, however, occurs in different countries and regions in diversified time periods with varied degrees of influence on economic development.

Since 1949, China’s population growth has experienced two waves of baby boomers. One wave occurred in the 1960s, when the natural population growth rate was maintained at around 20–30 percent. The other wave took place in the 1980s after the reform and opening-up, when the rate remained at around 15 percent. Simple calculations indicate that the population born during the 1960s baby boom is currently between 50 and 60 years old. The population of this age group is not only a major component of the labor force after the reform and opening-up, but also major savers, with the gradual stabilization of work, the growing up of children, the relative increase in income and the relative decline in consumption. Similarly, the population born during the baby boom of the 1980s has now become major producers and savers. Undoubtedly, the two waves of baby boomers, especially that of the 1960s, have strongly driven the changes in China’s demographic structure and have had a substantial impact on economic growth.

Like other countries, the change in the age structure of the population has also produced a phenomenon of demographic dividend with high savings rate, high investment rate and high economic growth rate in parallel. As the proportion of the working-age population increases, the employment rate of the working-age population in China has remained at around 98 percent, which has led to an increase in the labor participation rate of the total population as the age structure of the population changes. In 1979, at the beginning of reform and opening-up, China’s total population participation rate was only 42 percent. By 2004, it had reached nearly 58 percent, and in 2010, it was as high as 74.2 percent. Since then, China’s population participation rate has begun to decline. In 2014, it fell to 67.0 percent[1]; however, although it has declined, it is still significantly higher than that of middle-income countries by 63.6 percent and Taiwan by 60.4 percent. With regard to the trends, changes in the total population participation rate are highly consistent with changes in the savings rate and investment rate.

In recent years, as the Chinese economy entered a new normal with the characteristics of medium- and high-speed growth, the demographic dividend has become one of the hot topics among the government and the public. What most people mean is that China’s economic growth over the past few decades has relied on the harvest of several dividends, of which the demographic dividend is the most significant and long-lasting. But now, from about 2010, the demographic dividend will fade away. Thus, we urgently need to plan new support for China’s economic growth in the future.

This idea is normal and reasonable. However, a particularly noteworthy detail is that if the fading-away demographic dividend is only regarded as a population issue and planning for the future focuses mainly around the population, then it may be a misunderstanding. This detail is enough to draw attention to one fact: the total population growth and the rising population participation rate, which are considered by everyone nowadays as necessary for the demographic dividend, are considered a burden to be removed before the reform and opening-up and for a long time afterwards. At that time, when it comes to

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population, from domestic to foreign, from theory to policy, it is said to be the “cancer” and “death load” of China’s development. A large population and the high degree of rejuvenation in the population structure means that China cannot solve its own employment and subsistence problems. Therefore, the population needs to be controlled; this issue eventually generated the controversial “family planning” policy. If we discuss this matter in depth, then the well-known Ma Yinchu’s debate, which occurred before the reform and opening-up, is worth mentioning. Professor Ma Yinchu, then the president of Beijing University, insisted that people are “mouths.” Given the reality of less land, less food and more people, he advocated family planning and population control. Opponents insisted that people are “hands” and stated that “when everybody adds fuelwood, the flames rise high, so don’t mind the population.” At that time and in the following period, Ma was obviously right. Although the opponents still verbally insist that Ma Yinchu’s Ma theory is Malthusian instead of Marxism, thus criticizing it, but in practice, they have to transfer 20m “Educated Youths” and even some urban youth in the late period of the Cultural Revolution to the countryside to ease the employment dilemma in the cities. However, we have to admit that since the reform and opening-up, we have apparently enjoyed the dividend of throngs of young people left by the traditional system, as indicated by the concept of demographic dividend.

For the same population, it can be either a once-feared burden or an unforgettable bonus, the distinction of which obviously has to be determined in relation to other socio-economic conditions and changes. I believe that, by virtue of reform, we have created a series of socio-economic conditions that constitute the real fertile ground for China’s economic miracle and transform the population from burden to dividend.

## 5. The role of industrialization and urbanization

From the experience of various countries, the change in the age structure of the population is only one of the necessary prerequisites for the simultaneous existence of high savings rate, high investment rate and high economic growth rate. Another prerequisite for the formation of the “three highs” is that the working-age population can be employed, especially in non-agricultural industries with high economic value added. Here, guiding the population to non-agricultural employment is a key factor because the non-agricultural industry has a high labor productivity. Therefore, the entry of the large-scale agricultural population into non-agricultural employment will lead to a substantial increase in the income of the employed population and drive the rise in income of the total population, and in turn lead to a virtuous cycle with mutual promotion of economic growth and increased productivity. At the same time, the transfer of labor from agriculture to non-agricultural industries has reduced the employment of the agricultural population, which will also have the effect of raising the income level of agricultural workers. As a result, the increase in the income of the entire population will inevitably lead to increased savings, which will provide support for the increase in investment, resulting in a virtuous cycle that features rising employment in non-agricultural industries, rising income, rising savings, rising investment and further growth of employment in non-agricultural industries.

The rise in the employment rate of non-agricultural industries is first and foremost related to the industrialization process. If the change in demographic structure constitutes the basis for the demographic dividend, then industrialization is a necessary condition for the demographic dividend. This idea means that the birth of the demographic dividend depends on the advancement of the industrialization process.

Recently, the international historian circle of Legal Metrology published a new research result, which holds that, in terms of economic and social development, industrialization is the most important event in human history in the past 3,000 years[2]. Other events are interesting but not important. Therefore, human history is “only divided by the world before the Industrial Revolution and the world after it,” because, from a bigger perspective,

the world's per capita GDP has remained basically unchanged in the two or three thousand years before 1800 and only gradually rose after the Industrial Revolution. On the micro-level, after the Industrial Revolution, human beings' lifestyles, social structures, political forms and cultural connotations have undergone fundamental changes. Before industrialization, the economic developments of all countries, including China, were invariably subject to Malthusian law. That is, in the case of constant productivity, natural disasters or wars lead to the death of the population, and then per capita income increases, providing conditions for the next round of fertility and population growth. However, after population growth, per capita land and per capita income decrease, the challenge of survival looms large, which in turn leads to war or plague, and the subsequent population is reduced again, and so on and so forth. Industrialization has broken this cycle because industrialization has empowered humans with "roundabout production," with which endless science and technology can be objectified and wealth can incessantly accumulate. All these conditions lead to an increase in productivity.

The next question is, now that industrialization is so important, what are the conditions for it, and why did it happen first in the UK? Western economists concluded that constitutionalism was implemented because the conversion of feudal society to capitalist society in the UK was achieved through a non-violent "glorious revolution," and in terms of ideology, it was attributed to the Enlightenment.

This is a topic that is interesting, challenging and has a worldwide impact. According to international standards, China's traditional industrialization has been basically completed, but we are clearly taking a different path from the UK and other Western countries. We used a violent revolution to overthrow the old semi-feudal and semi-colonial China. Under the leadership of the Communist Party of China, from the old democratic revolution, the new democratic revolution, to the socialist revolution and socialist construction, we have stepped onto the path of building a socialist market economy. What we are practicing is the rule of law under the leadership of the Communist Party of China, which is considerably different from the constitutionalism of the West. In the early stage of industrialization, our government played a leading role. Since the reform and opening-up, we have not only developed the private economy and promoted the "contract system" and other institutional changes, but also maintained collective ownership and achieved considerable progress through the growth of township enterprises. In summary, the government's active actions, the people's independent creation, a diversified property rights structure and the transformation of collective organizations constitute the major driving force of China's industrialization.

The pattern of China's industrialization and its effects are obviously different before and after the reform and opening-up. Before the reform and opening-up, the planned economic system and heavy industrialization impulse in disregard of the objective economic law have suppressed China's normal industrialization process. After the reform and opening-up, with the gradual establishment of the market economy system, the industrialization process began to follow the objective laws of the economy and proceeded smoothly.

In terms of the industrialization process and its effects after the reform and opening-up, a meaningful indicator is that the non-agricultural employment population accounts for a gradual increase in the proportion of the total employed population. Taking the change of non-agricultural employment population as a clue, we can divide China's industrialization process into four phases after 1978. The first phase was from 1978 to 1990. The industrialization at this stage was implemented under the impetus of the reform of the rural economic system. The main industry that was developed was the light industry. The second phase was from 1991 to 2000. The reform of the state-owned economic system and opening-up to the outside world constitute the main driving force for industrialization. The major industries that achieved rapid development are export-oriented processing industries and

general manufacturing industries. The third phase was from 2001 to 2012. At this stage, China's various reform and opening-up policies further deepened, and in terms of industrial development, it has shown a considerable trend of heavy industrialization. The fourth phase was from 2012 to the present. The rapid globalization, the fast development of the service industry and the proportion of the tertiary industry outstripping the proportion of the secondary industry are the prominent features of this stage. This condition means that not only is the proportion of non-agricultural employment in China still rising, but also that the optimization process has begun in the non-agricultural employment sector.

Speaking of the operating mechanism, high savings rate and high investment rate are the cause of industrialization and the fruition of smooth industrialization development. The causal cycle, which is endless, has resulted in long-term high growth in China. However, we can also find an exemplification of inconsistencies in Latin America in the 1970s without generating demographic dividends. At that time, some demographic changes in Latin America were conducive to economic growth. However, given that Latin American countries adopted the wrong industrialization development model, there was no such thing as the "three highs" in the later East Asia, which led to the loss of the opportunities for accelerated economy development.

In further discussion, the rise in the non-agricultural employment ratio not only reflects the industrialization process of the economy, but also clearly records the pace of urbanization. In fact, industrialization and urbanization are two sides of a coin. From the perspective of population distribution, a distinctive feature of cities that differs from rural areas is the relatively concentrated population. The basic driving force for the population to be able to agglomerate and form a city is the formation of a broad division of labor and exchange networks between people. Compared with the feudal cities and trade cities before the Industrial Revolution, industrialization has greatly promoted the market scale and even the development of cities in two aspects: first, industrialization has enabled the emergence of factories with economies of scale; second, industrialization has enabled a mutually reinforcing aggregation effect across factories and across industries. In turn, urbanization has also greatly promoted the development of industrialization through the scale agglomeration and expansion of the labor market, the intermediate goods market and the consumer goods market.

With the progress of industrialization, China's urbanization level has also increased rapidly after the reform and opening-up. In 1978, the ratio of the urban population to the total population in China was only 17.9 percent. In 1993, the proportion of the urban population rose to 27.99 percent and increased by about 10 percentage points in 15 years. After 1994, with the comprehensive development of the socialist market economy, urbanization entered the fast lane and the proportion of urban population jumped from 28.5 percent from 1994 to 54.77 percent in 2014 and increased by about 26 percentage points in 20 years.

The increase in urban population and employment also contributed to the rise in savings and investment rates. First, given that urban employment is concentrated in the secondary and tertiary industries with higher per capita income, the increase in employment and income will inevitably lead to an increase in the savings rate. Second, urbanization also means a substantial increase in infrastructure construction and real estate investment. Third, the process of urbanization not only directly promoted the increase in the savings rate and investment rate, but also led to an increase in investment through the upgrading of the consumption structure of urban residents. Although poverty problems still exist in China due to the unfair distribution of income, housing, automobiles, leisure and tourism are becoming new consumption hotspots for an increasing number of urban residents. A particular detail that is worth noting is that the adjustment of the financial structure with consumer credit expansion as the main content since the mid-1990s has effectively

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alleviated the budgetary constraints of income and savings in the current period on the consumption of large consumer goods. It smooths the income of the consumer's life cycle and gives people the convenience of prepaying future income. All these factors will undoubtedly provide strong financial support for our citizens to achieve the third upgrade of the demand structure as soon as possible. These new consumer demands have, beyond question, created a large demand for new industries such as social infrastructure, municipal construction, automobiles, and housing, and these demands have generated long-term and sustained tremendous pressure on coal, electricity, oil and transportation. These demands and pressures invariably require the investment rate to be maintained at a certain level.

When it comes to industrialization and urbanization, a question about the relationship between the two needs to be discussed.

The urbanization process triggered by high investment is bound to be inextricably linked with industrialization. China's practice shows that our urbanization is obviously caused by industrialization. The urbanization that took place in the wake of industrialization has caused the reality that China's urbanization lags behind industrialization. This idea has prompted criticism from many researchers. We believe that urbanization lagging behind industrialization is not the drawback of China's economic development. On the contrary, the fact that industrialization precedes and industrial development precedes urban development is precisely indicative of the success of China's economic development, and also the major experience of China's development path because it follows the natural development process of "increased investment-industrial development-increased employment-population concentration-increased savings-urban development-increased investment...." This development route has ensured that hundreds of millions of migrants are employed, thus avoiding the serious social problems of ubiquitous slums as an aftermath of premature expansion of large cities in some developing countries.

## 6. A short conclusion: the success of progressive reform

In the above, we started with the transfer of surplus labor, focusing on how the outcome of high savings, high investment, demographic dividend, industrialization, urbanization and other factors jointly achieved the miracle of China's high-speed economic growth for 40 years. Our analysis logic is as follows: with regard to the mechanism, the above factors were met in a timely manner and jointly contributed positive energy to China's economic growth, with the increase in the savings rate as the necessary condition and foundation, and the increase in the savings rate is attributed to the explosive expansion of the financial system at the beginning of reform and the formation of positive incentives for residents, enterprises and governments at all levels; and the expansion of the financial system and the formation of positive incentives are clearly the crystallization of the wisdom of Chinese-style progressive reform.

After experiencing a high-speed growth of 9.5 percent per annum for 40 years, China has now entered a new normal with the 40 extrinsic characteristics of medium- and high-speed growth and further transformed into a new track of high-quality development. The co-occurrences of decline in resource allocation efficiency, the fading away of demographic dividends, the reduction in capital accumulation efficiency, the strengthening of resource and environmental constraints, overcapacity, soaring leverage and the "quantitative easing and high price" paradox in the financial sector constitute both the cause of the decline in economic growth and a new challenge we are facing.

The new normal of China's economy does not only purport a decline in growth rate; its profound connotation is the improvement of the quality of economic development and of efficiency. The overall result is that the Chinese economy will take a new step and enter a new era. In our view, the new normal is different from the recession and depression in the conventional economic cycle. It is a new development in which economic development is out

of the normal track and a new path is taken. On a global scale, another path entails the reorganization of the supply chain, transformation of the economic structure, reshaping of the governance system and reengineering of the relationship between big powers. From a domestic perspective, in addition to the abovementioned global commonality, another path is to break away from investment-driven and export-driven growth and engage in quality, efficiency, innovation, tolerance, green and sustainable development, and thus cross the middle-income trap and embark on the road to the great rejuvenation of China. In short, the new normal signifies the nirvana of the Chinese economy.

However, the great rejuvenation of China is by no means at our fingertips. When we say that the new normal has opened up the road to new prosperity, it also means that it has created new strategic opportunities for us, providing new elements, conditions and environment for the new stage of our development. For opportunities to become reality, we still have to take the determination of the strong men to cut the arm to save the body, to actively promote reforms in various fields and to earnestly complete the historical tasks of transforming development styles and restructuring, for which some conditions are required and are only basically in place. China is in the process of completing the traditional industrialization and rolling out new industrialization, urbanization and agricultural modernization. Given that China's savings rate and investment rate remain high and will continue to be high for a long time, the capital base to support new industrialization, urbanization and agricultural modernization remains strong. Therefore, we have every reason to believe that the growth prospects of the Chinese economy remain bright. We are nonetheless confident that we will realize the new two-step strategy for economic development proposed by the 19th CPC National Congress.

#### Notes

1. The data are from the National Bureau of Statistics.
2. See Chen (2013).

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# Examining the shared development of socialist political economics with Chinese characteristics

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## Abstract

**Purpose** – The shared development concept is crucial for the construction of a socialist political economy with Chinese characteristics. The paper aims to discuss this issue.

**Design/methodology/approach** – This is because shared development constitutes the logic thread of the socialist political economy with Chinese characteristics and the core for the formation and development of its whole system.

**Findings** – China's modernization is well underway and is following a unique path with its own characteristics, whereby shared development is undoubtedly one of its core values.

**Originality/value** – In the new era, the development path under the concept of shared development of socialism with Chinese characteristics must adhere to the all-round development of human beings, promote social equity and justice via development, and embrace inclusive growth, specifically, pro-poor growth.

**Keywords** Socialism with Chinese characteristics, Political economy, Shared development, Prosperity for all

**Paper type** Research paper

## 1. Ideological origin of shared development concepts

### 1.1 Shared development, community of freeman and community of common destiny

In the process of human history, culture and ideological development, we can find the ideological origin of shared development in relevant concepts such as "common prosperity, equity and justice, and community." French thinker Jean Jacques Rousseau first proposed the concept of community. From the perspective of social contract theory, he believed that once a social contract is concluded, "it means that everyone transfers all their personal rights to the collective formed by the people. Individuals obey the collective 'general will', that is, obey themselves, since the people are the sovereigns of this political community" (Rousseau, 1982). Marx's theory of scientific socialism is based on the public ownership of production materials. Shared development, common prosperity and equity and justice are the characteristics of this ideal society. Marx and Engels (1972) expressed the concept of "real community (wirkliche Gemeinschaft)" and proposed that "under the conditions of a real community, each person is in his own ally, through which his own freedom derives [...]. There, the free development of each is the condition of the free development of all." Marx and Engels believed that this society is in

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the advanced stage of human development. No class, nation state, private ownership and oppression exist in this society. The real community not only realized the true unity of individuals but established the free development of individuals on the common development, and the individual development is, in itself, comprehensive and free.

As an advanced concept of human economic and social activities, shared development embodies the common will and the subjectivity status of human beings regarding their all-round development in the ideal society. The shared development concept is incompatible with the capitalist production relationship. This is because capitalism cannot contain the value orientation and the characteristics of production relations required for shared development. In Marx's view, capitalist private ownership and the corresponding market system, commodity fetishism and currency fetishism have dominated the behavior of the so-called rational economic man (*homo economicus*). Furthermore, labor alienation and capital power constitute the subsistence characteristics for social and individual life in capitalist production relations. In the socialist society, fundamental changes have occurred in the basic economic system and ownership relations. The subsistence characteristics of the principal entities of production relations have changed to meet the needs of the broad masses of the people and the universalization of equity and justice. While enjoying their own personal interests, members of society have become principal entities for the realization of the common interests of the society. Thus, shared development has the conditions of highly developed productive forces and new production relations and has become the trait of this social production relationship. According to Marx's historical materialism, the transition from capitalism to future ideals (communist society) is a long-term historical process. This process must undergo the developing and primary stages of socialist development. In the *Critique of the Gotha Programme*, the new system for the future and its formation are described by Marx as follows: "In the advanced stage of the communist society, the situation of forcing individuals, like slaves to obey the division of labor, has disappeared, thus the opposition of mental labor to physical labor has disappeared. Labor is not only a means of making a living, but also becomes the first need of life. As the individual develops, their productivity also grows, and all the sources of collective wealth have been fully flown – only at that time can we completely exceed the narrow vision of bourgeois rights, and society can write on its own banner: from each according to his ability, to each according to his needs!" (Deng, 1995c).

### 1.2 Shared and sharing

Martin Weizman of the Massachusetts Institute of Technology proposed the famous theory of sharing wages. The sharing of wages refers to the profit sharing of the production unit (i.e. the enterprise) as well as the wage dividend. In this kind of labor remuneration system, workers' wages are linked to and vary with the fluctuations in certain economic efficiency indicators. The wage sharing system is an improvement of the traditional wages of capitalism. It does not, however, change the antagonism between labor and capital in capitalist enterprises. As the capitalist economy entered the twentieth century, economic stagnation, inflation and reduced corporate efficiency emerged. The sharing system is widely used in enterprises, and it considerably impacts the Western labor economics and wage theory in the twentieth century. The theory of sharing wages as well as the theories of marginal productive wages and labor-capital collective bargaining wages has become the mainstream wage theories. As with the corporate employee shareholdings that began to flourish in the twentieth century, sharing improves corporate governance structures and labor relations.

### 1.3 Sharing and equity and justice

The concepts of sharing and equity and justice are consistent in the pursuit of social values. From Kakkis, Plato and Aristotle in ancient Greece, to Western European thinkers in the Middle Ages, to Voltaire, Montesquieu, Rousseau and so on, have discussed equity, in addition

to the emergence of ideas of equity during the bourgeois revolution and by Marx and Engels. In the seventeenth and eighteenth centuries, the bourgeois thinkers Grotius, Hobbes, Voltaire, Rousseau and so on, were the proponents and developers of the theory of natural rights. Their thoughts on equity and justice represented the pursuit of the European bourgeois revolution. The so-called “social rationality” means defending civil liberties and opposing feudal autocracy. As Grotius believed, based on the rationality shared by human beings, the natural rights that people have in conformity with human nature are fair and square. In the nineteenth century, many bourgeois thinkers proposed equity ideas that differed from those of natural law. For example, Bentham believed that the requirement of equity lies in the welfare of society. Marx believed that although equity and justice represent a value judgment, the concept reflects the real economic relationship; in different historical periods, various representatives of social interests have conferred different connotations to the categories of equity and justice. Therefore, the scope of equity and justice is evolutionary in itself. Indeed, the equity and justice concept constitutes Marx's value orientation and basic principles of social distribution, but Marx recognizes that the principles and methods of fair distribution are objective rather than subjective and abstract. The equity of distribution depends on its compatibility with the production mode and relations determined by the level of productivity in a certain historical stage. Marx indicated that the so-called distribution relationship is derived from and compatible with the special social forms (modality) prescribed by historical production process as well as the relationship between people in the process of reproduction for their livelihoods. However, it represents only one aspect of the production relationship.

## 2. Theoretical logic and practical exploration of shared development

### 2.1 Profound connotation of shared development

Shared development is, first and foremost, development. The concept of shared development, which can be divided into two aspects (i.e. quality and quantity), is multilayered. The quality aspect entails that multiple development entities have equal claims in the distribution of development outcomes; the quantity aspect entails that equality is not equal to equal quantity, and equal enjoyment of rights refers only to the equality of qualifications, not equal average claims. The definition of shared development should, therefore, be more precise in terms of quality and quantity and can be further divided into non-equivalent and equivalent shared development. The sharing under the conditions of socialism or communism is relative rather than absolute, given the differences in labor quality under the “distribution according to labor” and the differences in “distribution according to needs.” Therefore, sharing refers more to opportunities and qualifications. In terms of basic survival necessities, “sharing” can be equivalent. In terms of the products for development and enjoyment, they can only be shared relatively owing to differences in people's needs, talents, personalities and preferences (Hongmei, 2017). Sharing is, in the economic sense, a sharing economy. The sharing economy expresses a state in which people have a consensus on the ideological cognition of economic activities, a principle of co-management in the process of economic activities and a shared disposal method in the possession of economic activities. Therefore, the sharing economy involves the characteristics of sharing the entities, organization, mechanism, process and results. The shared development concept proposed by the CPC includes the concepts of sharing for all and by all, co-construction and sharing, and progressive sharing, which constitute the scientific epitomization of the profound connotation of the main concept.

### 2.2 Shared development and prosperity for all

Prosperity for all (common prosperity), as both an ideal pursued by the people and a state after realization, means that the fruits of development are shared by all. Therefore, its

connotation must include common enjoyment. There has been abundant discussion in the academic community about the relationship between sharing and common prosperity. For example, Deng (2016) indicated that common prosperity focuses on the aggrandizement of material wealth, whereas shared development emphasizes the comprehensive sharing of economic, political, cultural, social and ecological development achievements. He argued that common prosperity is the development goal of socialism, and shared development constitutes the staged basis in achieving common prosperity (Deng, 2016). Liu and Ai (2016) argued that sharing encompasses common prosperity and provides the impetus for its realization. As the major goal of sharing, common prosperity guides the former and directs its direction (Liu and Ai, 2016). Yu Yuanpei (2011) believed that sharing highlights the problem of distribution, which is embodied in the well handling of the relationship between “being rich first,” “being rich later” and “common rich.” The key lies in the impartiality of both primary distribution and redistribution to achieve equity and justice. Shared development reflects the essence of socialism and deepens the connotation of common prosperity to narrow the income gap and eliminate polarization (Yu, 2011). Hu Peizhao (2006) believed that China is in the primary stage of socialism. He mentioned that common prosperity implies that the people can share the fruits of economic development and that social welfare can be gradually expanded (Hu, 2006). According to the Marxist point of view, the distribution relationship is determined by ownership and property relations, and the root cause of unfair distribution of wealth and income lies in the fundamental change of ownership structure (Enfu and Jiangang, 2013). Wei Xinghua (2012) highlighted the importance of adhering to a basic economic system, with public ownership as the mainstay and co-development of various ownerships, to invigorate the state-owned economy, create more wealth and ensure the welfare of the people throughout the country (Wei, 2012). The socialist ideology with Chinese characteristics shall be implemented in the new era to adhere to people-centered development ideology and constantly promote the all-round development and common prosperity of all people. According to Marx, the all-round development of human beings contains the development of all individuals. The free development of human beings must be based on the all-round development of individuals' abilities, and the ultimate goal of development is for the people themselves (Li and He, 2016). Thus, the “sharing for all and by all, coconstruction and sharing, and progressive sharing” constitute a new achievement of Marxism adapting to conditions both in the new era and in China. Fan and Xie, (2017) also believed that shared development is a new stage of common prosperity. He indicated that common prosperity at the current stage features the implementation of prosperity for all (Fan and Xie, 2017).

In the process of promoting socialist common prosperity, sharing provides the foundation and momentum for common prosperity, which is its main goal. In the development stage, prosperity for all contains the get-rich-first idea, and the “first rich” shall lead the “later rich” to achieve common prosperity. From the perspective of sharing, the entities of sharing are the entire people, rather than a part or a minority of people, be it individuals or groups, with equal qualifications and opportunities to participate in socioeconomic activities. Sharing is not tantamount to “joint ownership” or “equal ownership” as taking possession of the labor of others and the legitimate rights and interests of others free of charge is unlawful. Instead, shared development should be based on the sharing of social equity, justice and co-construction. That is, the more the construction and contribution, the greater the ability and opportunity to enjoy development outcomes. Sharing economic development outcomes is fundamental, but it is not the only content of sharing; practicing shared development aims not only to solve the people's livelihood issues in primary socialism stage but also to meet the spiritual needs of the people, including clean air, adequate leisure and cultural life while ensuring the comprehensive sharing within the economic, political, social, cultural, ecological and other sectors. Under the conditions of insufficient and uneven

social production development in the primary stage of socialism, it is feasible only to achieve “gradual sharing” and “conditional sharing” rather than all-round and all-field sharing, and there must be laws and regulations to provide stable social expectations and long-term institutional guarantees for shared development. In the sense of these aspects, sharing has the same meaning as prosperity for all. Therefore, prosperity for all must include both sharing and common prosperity.

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### *2.3 Practical exploration of pursuing sharing and common prosperity in China's socialist construction*

*2.3.1 From the establishment of New China to the reform and opening up (1949–1978).* At the beginning of the founding of New China, China established the state system and government system of the people's democratic dictatorship and the people's congress system. After a comprehensive socialist transformation, the establishment of a socialist institutional system has laid the foundation for the concept of prosperity for all. CPC regards “realizing communism” as its maximum program and “serving the people wholeheartedly” as its fundamental purpose, which are in line with the pursuit of social values, such as co-construction, sharing and common prosperity. On December 16, 1953, the CPC Central Committee adopted the “Resolution on the Development of Agricultural Production Cooperatives,” stating its aim “to further improve agricultural productivity [...] and enable farmers to gradually get rid of poverty and achieve a common prosperity and a generally prosperous life.” Taking the socialist road and the basic socialist system of prosperity for all helped lay the fundamental premise for the realization of common prosperity, and the leadership of the Party Central Committee – with Mao Zedong as the core – has ardently explored socialist construction. In the distribution field, through the implementation of the socialist public ownership of production materials, equal “performance-based distribution” has been piloted for share economy and common prosperity.

*2.3.2 The age of Deng Xiaoping (1978–1992).* As the “master designer” of China’s reform and opening up, Deng Xiaoping is also the principal founder and pathfinder of the common prosperity theory since the reform and opening up. Deng believed that common prosperity is “a thing that reflects the essence of socialism” and that “the essence of socialism is to liberate and develop productive forces, eliminate exploitation and polarization, and ultimately achieve prosperity for all.” Regarding the goal of common prosperity in the primary stage of socialism, Deng indicated that “the principle of socialism is, first, to develop productive forces, and secondly, prosperity for all.” The material basis for achieving common prosperity is to vigorously develop productive forces, that is, “the central task of the entire socialist historical stage is to develop productive forces” (Deng, 1993). Regarding the implementation path of prosperity for all, Deng repeatedly emphasized: “We allow some regions and some people to get rich first only with a view to finally achieving prosperity for all, so we must prevent polarization” (Deng, 1995b). Along this line of thinking, Deng’s era has witnessed significant reforms of the economic system: implementing the household contract responsibility system in the rural areas, developing the commodity economy in the urban areas while opening up to the outside world, establishing special economic zones and encouraging areas in the eastern coastal areas to take the lead in modernization, and so on. In the field of distribution, while breaking the distribution pattern of egalitarianism, some people may get-rich-first to achieve equity on the basis of efficiency and promote common prosperity by the first rich leading the later rich to gradually achieve common prosperity.

*2.3.3 Building a socialist market economic system (1992 – 17th CPC National Congress).* After 1992, the CPC leadership group continued to inherit, enrich and develop the idea of

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prosperity for all. The report of the 14th CPC National Congress clearly stated that “the goal of China’s economic system reform is to establish a socialist market economic system,” “attach equal importance to efficiency and equity and use various regulating methods, including the market to encourage advanced productivity factors on the one hand to promote efficiency and rational income gaps and prevent polarization on the other to gradually achieve prosperity for all.” In the field of distribution, the combination of the principles of “distribution according to work” and “distribution according to the Contribution of Production Factors” as well as the principle of unity of efficiency and equity have been applied to pursue sharing in distribution; regional balanced development is promoted to pursue regional sharing. The 16th CPC National Congress formulated the goal of building a well-off society in an all-round way, emphasizing that the masses of the people must share the fruits of reform and development at every stage of socialist modernization. Attaching equal importance to efficiency and equity, the idea of prosperity for all constitutes one of the core elements of the important thinking of the “Three Represents.”

The 17th CPC National Congress emphasized “people-oriented, scientific development with more emphasis on equity” and proposed the strategic thinking of the scientific development concept, which is people oriented. The foundation and foothold of all the efforts of the CPC and the state shall be always set upon the realization, safeguarding and development of the fundamental interests of the overwhelming majority of the people to realize the development for the people, by the people and shared by the people. This people-oriented, multi-faceted and comprehensive development has greatly expanded the connotation of shared economy and common prosperity.

*2.3.4 Xi Jinping's new era (2012–present).* The 18th CPC National Congress of the Communist Party of China proposed the requirements of the overall goal of “building a well-off society in an all-round way,” clarifying the adherence to the path of common prosperity: “We should adhere to the basic socialist economic system and income distribution system, adjust the pattern of national income distribution so that the fruits of development can be more abundant, equitable and accessible to all the people, advancing steadily toward common prosperity.” The CPC National Congress proposed that “promoting all-round development of people to gradually realize prosperity for all” is the goal of socialism with Chinese characteristics – one that profoundly reflects the “people-oriented” values in the scientific development concept. The CPC Central Committee, with Xi as the core, stands at the historical height of building a well-off society in an all-round way and realizes the great rejuvenation of the Chinese nation. It also firmly adheres to the shared development concept of “everyone participates, everyone contributes, and everyone enjoys.” The committee has continuously deepened the reform of the income distribution system and has focused on building a long-term mechanism for “development shared by all.” Based on the new historical orientation of socialism with Chinese characteristics in the new era, the 19th CPC National Congress proposed that “the principal contradiction in Chinese society has been transformed into the contradiction between unbalanced and inadequate development and the people’s ever-growing needs for a better life.” It clarified that given the richest connotation of socialist ideology with Chinese characteristics in the new era, the most fundamental requirement is a people-centered development ideology focusing on solving the problem of insufficient and imbalanced development, and constantly promoting the all-round development of people and prosperity for all. The Congress divided the goal of building a well-off society in an all-round way into two steps or two stages, thus highlighting the goals and tasks of raising people’s income and uplifting people’s living standards. Based on improving people’s livelihoods, more reform achievements can be made accessible to all.

### 3. Theoretical value of shared development in the political economy of socialism with Chinese characteristics

#### 3.1 Shared development reflects the essential requirements and fundamental goals of socialism

Pursuant to the practice of socialism with Chinese characteristics, Deng Xiaoping introduced a scientific thesis on the nature of socialism: "The essence of socialism is to liberate and develop productive forces, eliminate exploitation and polarization, and ultimately achieve prosperity for all" (Deng, 1995a). Deng's new generalization of the nature of socialism not only adheres to the scientific socialism of Marxism but also introduces new contents to socialism in the new era. Its basic connotation includes two aspects: to incorporate the liberation and development of productive forces into the essence of socialism; and to highlight the development goals of the socialist society, namely, to eliminate exploitation and polarization and ultimately achieve prosperity for all. In the concept of common prosperity, "prosperity" reflects the degree of abundance of social wealth to members of society, an epitome of the level of development of social productive forces. Meanwhile, sharing reflects the way in which members of society share wealth and embody the nature of social production relations. Therefore, shared development and common prosperity include the attributes of both productivity and production relations. From the qualitative prescriptive, shared development and common prosperity become the essential provisions and goals of socialism.

#### 3.2 The socialist system provides the fundamental conditions for the realization of shared development

In reality, there is no abstract distribution of wealth, which, in effect, is always bound with specific economic systems and social relations. The basic attributes of shared development and common prosperity stipulate that they are fully viable only when bound with socialist public ownership. Marx stated that only when a private society, in which the bourgeoisie and the proletariat are opposed, is replaced by a new "commonwealth," a new social system be realized. This defines the institutional premise of shared development and common prosperity. The unfairness of means of production and the resulting inequality in distribution are the inherent ills of capitalist society. We can eliminate exploitation and inequality and achieve common prosperity only by eliminating the capitalist system with the private possession of means of production. It is impossible to eliminate the inequality and polarization endogenous to capitalist production modes under the premise of the capitalist economic system, regardless of the types of social wealth and income redistribution methods adopted. The socialist system of jointly possessing and managing social common property based on public ownership constitutes the foundation for establishing common prosperity and shared development goals; it also embodies the value pursuit of the socialist system and provides institutional conditions for achieving common prosperity. Contemporary capitalist countries have been using state intervention and social welfare policies to regulate the gap between the rich and the poor and to reduce social conflicts. However, the inherent polarization between the rich and the poor and the structural imbalance of social interests in the capitalist market economy are determined by the fundamental production relations, which restrict the intensity and scope of the adjustment of the property and income distribution structure. Contemporary capitalist countries have paid a huge price for economic growth (inequality and social disruption). In the process of developing a socialist market economy, China must avoid the most harmful and destructive features of the capitalist system.

#### 3.3 Development of productive forces is necessary for realizing sharing economy and common prosperity

Marx profoundly revealed and highlighted the importance of human material productivity and its development to human society and human development. Historical materialism

understands human production activities as the most fundamental practical activities of human beings. This school of thought also argues that the major content of human production activities is to continuously develop the material productivity of society. Furthermore, it indicates that the purposes and motivations of the general principal activity of human beings engaged in material production activities and all other social activities are to obtain relevant material benefits. Productivity development provides the most important foundation and conditions for progress of human society. Marx and Engels believed that the public ownership of production materials shall be established on the basis of the full development of social productive forces and the enormous enrichment of material wealth in the future. Individuals shall not passively and compulsively obey the old social division of labor, so the opposition between mental and physical labor can disappear. Thus, labor is not only the means of making a living, but also the first need of life for the realization of the comprehensive development of human beings. Through this, the individuals bound by the principle of market equivalence exchange and the power of bourgeoisie can be liberated; the individual characteristics of diversity, equality and freedom emerge; and the “free and comprehensive” development of the individual can be truly realized, thus realizing the shared development and common prosperity of the whole society.

### *3.4 Contemporary value of shared development concepts*

The concept of shared development is crucial for the innovation and development of Marxist political economy in contemporary China, which is the political economy of socialism with Chinese characteristics. First, shared development determines its basic position of people-centeredness as the value orientation of the political economy with Chinese characteristics. Second, the Marxist historical materialism method embodied in the concept of shared development is essential for the construction of political economy with Chinese characteristics. Third, the concept of shared development constitutes the logic thread of socialist political economy with Chinese characteristics and the core for the formation and development of the entire system. In summary, the socialist basic economic system and distribution system constitute the institutional guarantees of shared development; nature of the production relationship determines its level and scope; development of productive forces constitutes its material basis; resolution of major social contradictions constitutes its starting point; micro-agent status of individuals and firms, the decisive role of market factors and the leading role of government regulation are its basic conditions; and its fundamental purpose is to promote the all-round development of people and prosperity for all. Therefore, sharing is the essence of human development, and an important value goal for building a community of human destiny.

## **4. Development path guided by the concept of shared development of socialism with Chinese characteristics**

### *4.1 Development as an all-round development of people*

Starting from the liberation and all-round development of human beings, Marx and Engels revealed the developmental state of human beings in the three major social forms from the perspective of historical evolution. As mentioned, the course of human's all-round development is a natural historical process as the historical development of human society. As per the degree of human individual development, Marx divided human society into three social forms that are progressively advanced. The initial social form refers to human dependence. “In this form, human productivity developed only in narrow ranges and isolated places” (Marx, 1979). This form includes the primitive society, slave society and feudal society, where the productivity is underdeveloped. Personal dependency marks the characteristic of inter-personal relationship in these societies, which has completely stifled

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individual initiative and production enthusiasm, seriously hampering the development of productivity. The independence of human beings based on the dependence on things marks the second form of society, which is equivalent to the capitalist society and the capitalist market economy as proposed by Marx. In this social form, the dependence on things is primarily manifested in the dependence on capital. The pursuit of surplus value by capital promoted the great development of social productive forces, whereby enormous productivity in the capitalist market economy has been fully affirmed by Marx and Engels in the Communist Manifesto. They wrote as follows: "The productivity created by the bourgeoisie in its less than one hundred years of class rule is greater than the total productivity created by all generations in the past" (Marx and Engels, 1972). The development of capitalist social productive forces creates material conditions for a higher-level production form, but capital productivity itself is manifested in the form of alienation. Its production relationship is characterized by the possession without paying others' fruits of labor based on the illusion of equal exchanges and the opposition between capital and labor (Marx, 1979). The third stage marks the "free personality based on the overall development of individuals and their common social productive capacity as their social wealth," which is equivalent to Marx's socialist and communist society. At this stage, human beings enter the "realm of freedom" from the "realm of necessity" and eliminate private ownership and exploitation based on the Community of Freeman. In this social form, on the basis of highly developed productivity, the sublation (develop what is useful or healthy and discard what is not) of alienated labor has been achieved and individuals have been liberated from the enslavement of power and capital to realize full and free development.

Marx stressed that "the second stage prepares conditions for the third stage." The conditions Marx mentioned here include both the material conditions provided by the development of productive forces and the conditions of social relations between people, such as social equity and justice, on-demand distribution, personal freedom of choice and full participation in social public affairs. Here shared development and common prosperity not only are social values and ideas but also realistic social practices. Judging from the relationship among the production of materials, ownership and human development, from the perspective of historical materialism, Marx believed that property rights and ownership are a production relationship related to the development of material productivity as well as contain the basic conditions for human development. Moreover, property rights and ownership break through the outdated social division of labor and the shackles of the machine industry, eliminate and deprive anyone of the power to use the possession of property to enslave the labor of others, rekindle the principle of "personal ownership of laborers" and the Community of Freeman, and finally realize everyone's freedom and all-round development. Thus, Marx pursued the all-round development of human beings, for which the production and development of material goods are merely the material basis.

What is the purpose of productivity development and economic growth? How can socioeconomic development be sustainable? Every country must answer these questions. Galbraith believed that economic development should focus on public goals and attach importance to human development. Amartya Sen also criticized the idea of equating development with GDP, the increase in personal income, industrialization and technology progress or social modernization. He considered these factors as narrow-minded development concepts and, at most, the instrumental category serving human development. Economic development is a social production activity taking people as both means and ends. The Marxist political economy is based on the production of material goods. Marx believed that the need for survival and development is the root cause of human social production activities, in which people are the entities of activities. Therefore, social production activities should be people oriented and geared toward protecting people's

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survival and development. Since the mid-nineteenth century, industrial revolution and industrialization have brought about great productivity and abundant material goods. The materialized development concept has driven countries to take an approach, with over-reliance upon technology while ignoring the human factors and the relationship between man and nature. The long-term development of this mode has elicited widening social gaps, social disruption, overwhelmed ecological environment and tense relationship between man and nature. By the twenty-first century, countries have reflected on this traditional industrialization development mode and formed a new consensus on the development concept with a value goal of economic development for human development. The countries form a set of common value goals and action plans for freedom, equality, mutual aid, tolerance, respect for nature and shared responsibility (Li, 2016). Based on the economic growth and development practice after the reform and opening up, China has formed a people-centered development ideology based on practical experiences. As indicated by Xi (2015), "It is the fundamental position of Marxist political economy to adhere to the people-centered development ideology. Regarding economic development, we must persist in taking the promotion of the well-being and the development of the people and steady advancement toward common prosperity as the starting point and foothold, which must be firmly adhered to while deploying economic work, formulating economic policies, and promoting economic development." The key to people-centered development is to achieve shared development and give expression to the claims for gradual realization of common prosperity.

#### *4.2 Promoting social equity and justice through shared development*

Both the theory of growth and the historical experience of the development of countries reveal that the key to long-term economic growth is to achieve economic transformation, the process of which will inevitably involve the distribution of economic outcomes. Different income distributions will inevitably lead to different distribution patterns, thus affecting the economic welfare of a country. As per the experience of various developing countries, economic transformation and long-term economic growth are not self-solvent with respect to income inequality. The social institutional structure impacts a country's economic growth. If the fruits of economic growth cannot be shared by all members of society but are monopolized by a few people or social interest groups, economic growth will be rid of its universal incentive value. Moreover, observing the ways to achieve economic modernization and successful transformation for developing countries, Western mainstream economics has developed numerous prescriptions based on the experience of Western countries, whereas China has adhered to the socialist road with Chinese characteristics based on its own national conditions. Thus far, China's development path and successful experience have drawn increasing attention. However, as is the case in developed countries, China is also afflicted by inequality, which will, in the next few decades, become increasingly prominent, given that China's economic growth will inevitably slow down Li Shi and Yue Ximing (2016).

At present, the contradictions in the field of income distribution, such as unfair distribution and excessive income gap, were prominent in China. The reasons are complex and diverse: this may be due to deepening reforms or the development process. We can restrain the trend of widening gap to a certain extent and maintain a relatively high-speed economic growth to achieve shared economic development by continuously improving the socialist market economic system and deepening reforms while efficiently handling the government-market relationship in the market economy. China's road choice should thus adhere to the concept of shared development, ensuring "development for the people, by the people, and shared by all" to ensure equity and justice in the field of income distribution and steadily gain common prosperity. Socialism with Chinese characteristics is a process of

constantly pursuing equity and justice and achieving common prosperity. In practice, it requires an institutional mechanism that is compatible with it. According to Marx's historical materialism, there is no universal justice in human society as justice is the product of history. Generally, a fair and just system is designed to create an institutional environment to satisfy the majority of the members of society and motivate their creative work, ultimately promoting economic efficiency. The statutory performance of any system as a production relationship is determined by productivity. In terms of income distribution and property rights construction, we must choose a system with internal consistency to the current development of productivity and economic efficiency.

#### *4.3 Inclusive growth and pro-poor growth*

How can the fruits of economic growth be shared by the people, especially the poor? Since the twentieth century, development economics has summarized the models of "inclusive growth" and "pro-poor growth" based on the growth experiences of some developing countries. The concept of inclusive growth was first proposed by the Asian Development Bank in 2007. Its fundamental meaning is to share economic growth fairly and reasonably, wherein the most important performance is to narrow the income distribution gap, which involves equality and equity. The ultimate goal is to maximize the benefits of economic development for the general public. Related to this is the pro-poor growth advocacy, which focuses on the relationships among economic growth, inequality and poverty. The growth practice in developing countries shows that economic growth alone does not automatically benefit the poor, worse than that, the living standards of the poor may decline with economic growth without the advent of the "trickling-down effect." In this context, people re-examine the relationships among economic growth, poverty and inequality and reach a consensus: the integration of high-speed economic growth with income distribution that is favorable for the poor can lead to the maximized decline of absolute poverty and the so-called pro-poor growth (Zhang, 2013). The pro-poor growth model emphasizes equalizing opportunities for growth, focusing on the poor, achieving full employment and making the growth rate of labor income higher than that of capital returns. It also emphasizes that to achieve a higher and sustainable economic growth rate, a country must – instead of just relying on social security and relief to help the poor – raise the opportunities for poor people to participate in the economic growth process to empower them and enable them to become a driver of economic growth. As a country undergoing a socioeconomic transition period, China must develop labor-intensive industries that can create jobs as much as possible and reduce unemployment. Therefore, the implementation of a rural revitalization strategy to enrich the peasants constitutes a major approach for poverty reduction and the realization of pro-poor growth.

As a recapitulation and generalization of China's path-finding and practical experience, shared development embraces the connotations of inclusive growth and pro-poor growth while also highlighting the distinctive features of China's growth and development path. China's modernization is well underway, and the country is treading a unique path with its own characteristics, with shared development being one of its core values.

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# Economic analysis of China's marketization process over four decades and the construction of the Chinese model and Economics with Chinese Studies

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## Abstract

**Purpose** – Over the past four decades, China has strived to make the market mechanism play a decisive role in resource allocation under the conditions of adhering to the basic socialist economic system. The paper aims to discuss this issue.

**Design/methodology/approach** – On this matter, this paper proposes a three-phase transition hypothesis for the Chinese institutional change models, namely, a *de facto* path, which gives potential to a successful incremental transition of a centralized country from planned economy to a market economy, lies in the incremental transitions of the institutional change models from a supply-oriented model at initial reform to a middle-proliferation model and to a demand-induced model along with the gradual establishment of exclusive property rights, thereby completing the transition to a socialist-market-economic system.

**Findings** – The Chinese economic model's unique connotation is the reason why the solution to this model often baffles both the traditional political-economic logic and western mainstream institutional change theory.

**Originality/value** – This hypothesis corroborates that China's unwavering practice of economic reform has provided unprecedented opportunities and challenges for the development of economic theory. The Chinese model constitutes the source of innovation for the subject of Economics with Chinese Studies.

**Keywords** Socialist-market-economic system, Institutional change, Chinese model, Chinese economics

**Paper type** Research paper

## 1. Introduction

The prototype for the analysis of traditional political economy based on the highly centralized economic system is Stalin's book *Economic Problems of Socialism in the U.S.S.R* (Stalin, 1952). Traditional political economy limits research objects to production relations wherein ownership is a focus and emphasizes the need to expedite the escalation of the ratio of public ownership of production materials. The state allocates resources as much as possible, implementing mandatory plans to restrict commodity–currency relations and limiting or even excluding the principle of material interest stimulus. Egalitarian distribution is implemented. Under the traditional system, the economic inefficiency, distortion of the economic structure, serious bureaucracy, frequent shortages, low labor enthusiasm and other drawbacks have caused serious repercussions on the paradigm of traditional political-economic analysis and strengthened our determination for reform.



After the third plenary session of the Eleventh Central Committee of the Chinese Communist Party, China initiated a historic reform. Over the past four decades, China has undergone an important economic transformation through its reform and opening up strategy. The first is marketization, i.e., the transition from a traditional centrally planned economy to a socialist-market-economic system. The second is industrialization, i.e., the transition from being a traditional small-scale peasant economy to a modern industrial one. The third is internationalization, i.e., the transition from a traditional closed economy to an open one that is incorporated into the process of globalization. The fourth is urbanization, i.e., the transition from an agricultural society to a modern urban one. There is no doubt that marketization is the main line of economic transformation. The focus of reform has been to continuously improve the role of market mechanisms in resource allocation.

With the continuous deepening of reforms, the stance of China's economic community has shifted from being skeptical of the traditional political economy paradigm, to one where China learns from Eastern European economic results with centralization and decentralization as the mainstay elements, and then to the widespread popularity of mainstream western economic systems. We have found that traditional political economy cannot explain why it is necessary to give a decisive role to the market mechanism in the allocation of resources under socialist conditions, while the western mainstream economics cannot explain how to adhere to a basic socialist system under the conditions of a market economy. Although western mainstream economics and traditional political economics are two completely different theoretical systems, they are almost identical in their view of the incompatibility between socialism and the market economy; only logics in argumentation differ. Western mainstream economics believes that exchange is essentially a transaction of property rights. Without private property rights, there can be no real market. Without a market, it is impossible to form equilibrium prices. Therefore, the socialist economy cannot leverage market mechanisms to allocate resources efficiently. Traditional political economy, however, regards the market economy as a patent feature of capitalism. It embraces the doctrine that the public ownership of production materials eliminates the contradiction between individual labor and social labor, and thus the commodity–currency relationship automatically dies out. The market economy will naturally withdraw from the historical stage.

In the past four decades, China has been striving to build a socialist-market-economic system, i.e., striving to make the market mechanism play a decisive role in resource allocation under the conditions of adhering to a basic socialist economic system. This is a great practice that has never been seen before. The Chinese path has accomplished remarkable achievements, both in terms of China's comprehensive national strength and people's living standards. Obviously, practice has gone far before the theory, but the phenomenon of the disjunction between popular economic theory and practice remains quite serious. China's marketization process features not only an important institutional change, but also an important transformation of its economic analysis framework. With a deepening of the marketization process, it has now become the historical responsibility of economic researchers to construct an economic analysis framework and paradigm that are compatible with the real economy.

## **2. Non-compatibility of the mainstream institutional change model from the west on China's reform**

From the perspective of resource allocation, the marketization process from the planning system to the market system denotes a change from hierarchical rules to property right rules. Under the traditional planning system, resource allocation adheres to hierarchical rules. We construct a pyramid-level hierarchical structure, define the position of each agent in this hierarchical structure and further define the resource allocation power that is appropriate to

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this hierarchical position. That is, the higher the agent's rank, the greater the power of resource allocation. In the market economy, resource allocation adheres to the property rights rules. In other words, the extent of an agent's resource allocation power is positively related to the quantity and quality of the assets he or she owns. The higher the quality and efficiency of assets, the greater the power of resource allocation will be. Market economy indicates an economy in which the market mechanism has a fundamental role in resource allocation. The key to the market mechanism is that there are market entities with clear earnings expectations that are related to the flexibility of their budget constraints, which, in turn, are related to the clarity of property rights. Therefore, under the conditions of market economy, it is crucial that property rights are clarified to improve the efficiency of resource allocation.

From economic perspective, to explain which model is best suited for a transitional country to complete the transition from hierarchical rules to property rights rules, popular western mainstream institutional economics believes that radical rip-and-replace reforms should be adopted. In accordance with the interpretation of the new institutional economics, institutions whose primary role is to reduce uncertainty by establishing a stable, yet not necessarily effective, structure for human interaction denote an artificial set of rules for determining people's mutual relations. These relations can be divided into constitutional order, institutional arrangements and ethical norms of behavior. The most important function of such institutions is to establish basic economic order for competition and cooperation by constraining individual behaviors that pursue the welfare of the entities or the benefits of utility maximization. Institutional change indicates the processes of substitution, transition and transaction of institutions. Under a decentralized decision-making system based on private property rights, institutional changes are usually triggered by the needs of a person or group resorting to transformation to seek benefits that are not attainable under the existing system. Therefore, the new institutional economists represented by Douglass C. North generally focus on studying institutional changes from the perspective of demand. The demand-determinant model of institutional change assumes that a single agent pursuing profit maximization always seeks to establish the institutional arrangements and definition of rights that are expected to be in their interests under the given constraints. When the agent discovers the net benefits of creating and utilizing the new institutional arrangements are positive, there is a need for institutional change. Whether such demand can induce new institutional arrangements depends on whether the group of agents that approves, supports and promotes such institutional changes is dominant compared with the power of other stakeholders. If it is obvious that they have the advantage in terms of strength advantage, the original institutional arrangements will be eliminated. The state will then establish the property rights rules that are favorable to the dominant agents through laws and other forms, leading to institutional changes. The demand of agents for institutional innovation is motivated by divers factors such as the relative prices of production factors and products, constitutional order and changes in technology and market size (North, 1994).

According to the western mainstream institutional change model, the key behind the transition to the market system is the creation of institutional conditions for the allocation of resources for the market mechanism by establishing property rights rules. However, the state-owned enterprise system and political centralization are the biggest obstacles to the clarification of property rights. Therefore, based on the neoliberal logic, the "prescription" is to follow the "Washington Consensus" and implement radical reforms, namely, the democratization in politics, privatization of state-owned enterprises in the economy and adoption of shock therapy in economic policies. China does not proceed from *a priori* theories but prefers a market-oriented reform not spontaneously driven by profit-seeking micro-agents. Based on China's specific national conditions, a reform model combining top-level design with trial-and-error ("crossing the river by feeling for the stones") has been

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adopted for top-down implementation through executive orders, laws and regulations under the organization, and leadership of the central power (Communist Party of China's (CPC) Central Committee, the State Council and other national authorities). The model possesses the following characteristics. First, it leverages existing organizational resources to promote market-oriented reforms, that is, it organizes such reforms through leaders in the original hierarchical structure and gradually reduces the role of hierarchical rules in resource allocation in the process of gradually expanding the market mechanisms. Second, the incremental reform seeks to promote market-oriented reforms at the margin without assuming the lead in partaking in the stakes. Third, the model pilots and then promotes; in particular, reform experience is accumulated in the local scope, and the experience is promoted on a larger scale.

In this paper, the author refers to this kind of compulsory top-down institutional change from the power center as the supply-led institutional change model (Yang, 1993), which generally has the following characteristics. First, in the social game of institutional arrangements wherein government entities and micro-agents participate, the government entities constitute the dominant force that determines the direction, speed, order and mode of institutional change. Second, government entities rely on administrative orders, legal norms and interest incentives to plan, organize and implement institutional innovation from top to bottom within a pyramid-like hierarchical structure. Third, actual institutional changes can only occur when the institutional benefits of the power center outweighs its costs. Fourth, under the condition of uncertainty and insufficient institutional supply, to control risks, the power center sets strict entry barriers for institutional innovation, such as the right for reform pilot, which is similar to priority. In this model, the ability and willingness of the power center to provide new institutional arrangements constitute the dominant factor determining institutional changes. Many factors influence the willingness and ability of the power center system; however, the most important factor is the constitutional order, which defines the orientation and form of specific institutional arrangements through clear regulations on the political system and the basic economic system. Thus, the specific institutional arrangements cannot exceed the institutional innovation space clearly defined by the constitutional order. Besides construction order, the institutional supply cost is another important factor that constrains the willingness and ability of the power center to supply institution.

On the basis of the logic of the western mainstream institutional change theory, such a market-oriented reform promoted top-down approach from the power center will face inherent conflict between the target and the model of institutional change. For China's institutional change, the objective is to ensure that the market mechanism plays a decisive role in resource allocation, and thus, property rights rules should be implemented. However, the supply-led institutional change approach adheres to the hierarchical rule. That is, the institutional innovation has to be implemented from top to bottom through the vertical subordinated administrative system, and inevitably, internal conflicts occur between the hierarchical rules and property rights rules. As a result, decentralization of the government's decision-making power – administrative decentralization or economic decentralization – will gradually disintegrate supply-led institutional changes. To avoid this disintegration, a hierarchy must be maintained and the pace of decentralization should be slow. First, with the advancement of decentralization or reform, the authority has a tendency to diffuse. Second, regarding the diffusion of authority, the hierarchical system of vertical subordination has relaxed, that is, the hierarchical rule of traditional one-way dependence has evolved into a two-way-dependent principal-agent relationship. Third, with the decentralization of the decision-making power, the interest-independent micro-agents will "vote with their feet" and deviate from the track of organized institutional change. Fourth, the direct consequences of decentralized authority are, to a certain extent, the

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introduction of property rights rules and market mechanisms. The conflicts between the relaxed hierarchical rules and the unsound property rights rules will definitely lead to chaos in the market order.

Following the logic of the western mainstream institutional change model, under the supply-led institutional change model, incremental reform by itself cannot create sufficient conditions for stock market reform (Yang, 1994). First, incremental reforms do not necessarily diminish the social costs of further reforms and may pose even greater resistance against reforms under certain conditions. The dual system's long-term coexistence has the potential to intertwine old and new vested interest groups, resulting in an upswing of friction costs and inefficient allocation of resources. Second, incremental reforms are not sufficient to change the competitive pattern of established political powers that can determine the strength and direction of stock reform. Third, the institutional increment may be further away from the chosen institutional goals under optimal efficiency. Although, in the initial stage of market-oriented reform, the supply-oriented institutional change model plays a significant role in timely promoting reforms at a relatively low cost, it is bound by hierarchical rules and subject to some insurmountable obstacles regarding the transition to a market economy. The economic obstacle is manifested in the serious inflation triggered by the decentralization reform under government control, and the political obstacle is manifested in the disintegration (due to the decentralization reform under the control of the government) of the hierarchical system that serves to preserve the government authority. When confronted by both the economic and political obstacles, the power center will face a dilemma.

### **3. Reality-oriented case study: the special role of local governments in China's marketization process**

According to the logic adopted by the neo-institutional economics, the supply-led institutional change model, fettered by the economic and political obstacles, will eventually hamper the reform. However, in reality, the marketization process in China has been continuously increasing. So, the following question arises: when top-down reforms face obstacles, which stakeholders play the role of the "first action group" in market-oriented reforms? This question can be answered by reviewing the author's case study of the self-funded economic and technological development zone in Kunshan, Jiangsu. After implementing the fiscal system of "divided income and expenditure, and classified contracts for local and central government" in Jiangsu Province in the early 1980s, the Kunshan Municipal Government, with gradually liberalized economic interests, established a self-funded economic and technological development zone without the authorization of its superiors to attract investment and stimulate micro-agents to create profits (Zhang, 1999). Generally, the establishment of the development zone undergoes the following stages: from the development of horizontal economic associations to the creation of self-funded economic and technological development zones; from the self-funded development zone to being included in the key economic and technological development zones of Jiangsu Province; from the provincial key development zone to one officially approved by the State Council; Economic and Technological Development Zone; and from the "state approval" development zone to the competitor for institutional innovation access.

With the existing theoretical analysis framework, we cannot answer the following questions: Why did the Kunshan Municipal Government officials take the political risk to create a self-funded development zone without the authority of the superior? How does the Kunshan Municipal Government break through the entry barriers of institutional innovation? Why does the higher level of government tolerate Kunshan City to create its own self-funded development zone? Through case analysis, the author discovers that there is a significant relationship between the implementation of the financial contracting system and the changes in local government behavior.

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Under the traditional planning system, China implemented a fiscal system with unified state control over income and expenditure, wherein the local government, as an administrative agent, would continuously have to expand its budget by bargaining with the central government and complete administrative goals set by the higher authorities. After the implementation of market-oriented reforms, to mobilize the enthusiasm of local governments, a fiscal system was implemented to divide revenue and expenditure between the central and local governments, holding each responsible for balancing their budgets. The budget of the local government primarily depends on the following two factors: the scale of fiscal revenue associated with the level of local economic development and the proportion of central and local sharing of fiscal revenue. Given that the share ratio has been predetermined by one-on-one negotiations and will remain unchanged for five years, the size of the budget that the local government can control is positively correlated with the total output level of the local society. After the implementation of the fiscal-contracting system, the behavior of local governments changed, and the system formed a unique competition model in China, that is, competition between local governments over GDP, which has become the most important metric. Developing local economy has become a strong impetus for local government officials, who have become political entrepreneurs. They operate in the political system but seek political promotion through the pursuit of local economic development. With the change in behavior patterns, local governments are motivated to pursue rapid local economy growth and respond to profit opportunities for institutional innovation.

Local governments independent of economic interests have the incentive to create an environment conducive to the local economic development through institutional innovation, but this innovative demand is not easily satisfied. Under the condition of vertical allocation of reform rights, higher level of governments usually formulate institutional innovation schemes based on the dual goals of total social output maximization and monopoly rent maximization. Moreover, to promote reform, they prefer to choose an unbalanced reform strategy that uses existing organizational resources. Concerning the space for reform, the strategy of “first piloting and then promoting” is adopted. From the perspective of the timetable for reform, incremental reform is advanced to stock reform. Pilot units receiving reform priorities can usually achieve double benefits with small reform costs: first, the additional benefits brought about by preferential policies and second, the institutional benefits brought about by the first-mover institutional advantage. The existence of entry barriers provides these benefits the nature of “monopoly rents.” The necessary condition for obtaining the rents is to obtain the priority of institutional innovation from the higher level of government.

Individuals or enterprises find it difficult to directly break through the entry barriers to institutional innovation set by higher level of governments. They can only indirectly demonstrate their needs through the higher authorities in jurisdiction. Local governments, as administrative agents of vertical institutional arrangements, have both incentives and the ability to bargain with higher authorities for institutional arrangements conducive to local economic development. To pursue economic development, at the time, the Kunshan Municipal Government formed a better investment environment than other places by setting up a self-funded economic and technological development zone; it further expanded the scale of investment attraction, thereby taking the lead in local competition. However, here the following questions arise: when the Kunshan Municipal Government's spontaneous institutional innovation demand is inconsistent with the superior government's initial institutional supply willingness, how does the Kunshan Government break through the entry barrier set by the higher government under the given institutional conditions? Why did the superior government tolerate it at first and then endorse the voluntary institutional innovation activities of the Kunshan Municipal Government? The case of Kunshan City

shows the specific path of the local government's voluntary system innovation. First, "Do it with your mouth shut." To seek institutional arrangements conducive to the development of the local economy, the Kunshan Municipal Government, through lobbying or seeking "relationships," has made the eyes of the "key person" with access to the self-funded development zone of Kunshan half shut, thereby "quietly" breaking through the entry barriers. Second, "Speak after finishing the job." The establishment of the self-funded development zone has greatly enhanced the intensity of promotions related to investments in Kunshan City and stimulated local economic development. With the strengthening of economic strength, Kunshan City began to consciously "speak" the performance of spontaneous system innovation through various channels, hoping to gain recognition from the higher level of government by creating momentum and *fait accompli* and endeavoring to obtain formal access. Third, leadership instructions/inscriptions: from "underground" to "over ground." The superior leadership has a significant role in the formal identification of institutional innovations undertaken by local governments. Therefore, local governments will find ways to let the superiors take a stand in formal or informal situations, such as during submission of reports or local inspections to obtain the superiors' inscriptions and affirmative instructions, for external propaganda to subtly legitimize their activities. To some extent, the inscription or instruction of the superior leader is an informal "property right protection." Fourth, "First raise a son, then get a marriage certificate." Unauthorized Institutional innovations were initially considered "illegitimate children." Despite receiving praise from their superiors or the media, if their "accounts" are unreported, the new property rights rules implemented by them will not be under the protection of the state. Therefore, the local government will post-register the "marriage certificate" through various relationships at the expense of part of the incremental income to obtain the "account" of the "illegitimate child," so that the higher level of government can officially recognize its spontaneous institutional innovation.

The extent to which the higher level of government tolerates and even ratifies the local government's spontaneous institutional innovation behavior depends on, in addition to the local government's ability to negotiate based on economic strength, two other factors. On the one hand, it is related to the degree of authority diffusion. The so-called diffusion of authority refers to the fact that the lower level of government manipulates the authority granted by the higher level of government to perform unauthorized actions. In the top-down institutional change, the implementation cost of formal institutional rules is directly proportional to the degree of authority diffusion. On the other hand, it depends on whether the income obtained by the higher level of government surpasses the cost of maintaining the control of access in the institutional structure, which the local government gradually changes in pursuit of potential institutional benefits. When the local government is willing to pay some of the extra income in exchange for the *ex post facto* ratification, and the higher level of government's cost to protect the old property rights structure outweighs the income from the new property rights rules, the latter will tolerate and ratify the former's institutional innovation activities in pursuit of productive profits.

The case of Kunshan City reveals that the implementation of the decentralization and interest concessions and the "dividing of revenue and expenditure between the central and local governments and holding each responsible for balancing their budgets" in the fiscal system can lead to a local government with greater resource allocation rights that becomes a political organization, while simultaneously pursuing the maximization of economic benefits. The change in the negotiation power elicited by the improvement in the local governments' economic strength has led to efforts to rebuild new political and economic contracts. When the local government with independent interests becomes the intermediary link between the supply willingness of the higher-level government system and the innovation demand of the micro-agent system, it becomes possible for one to break through

the barriers to institutional innovation set by the higher level of government. Thus, an agreement can be reached between maximizing the monopoly rent of the higher level of government and protecting efficient property rights structure. This phenomenon has led to the deepening of the marketization process and is referred to by the author as the intermediate diffusion model of institutional change.

#### 4. Market-oriented reform path with Chinese characteristics and reshaping the dynamic mechanism of reform

The officials of the central government and local governments, as well as micro-agents, play different roles in the stages of supply-led, intermediate diffusion and demand-induced institutional changes, so the system experiences echeloned changes. The central government chose the incremental reform because the problem of insufficient information under the established constraints necessitates the trial-and-error model (“cross the river by feeling for the stones”). The local government’s participation in institutional innovation has created a low-cost, low-risk knowledge transfer and accumulation mechanism for the central government, thereby accelerating the central government’s ideological recognition of the market economy; and greatly reduced the possibility of the reform becoming an “explosive revolution,” making the incremental market-oriented reforms continuous in the interaction of central and local government officials and micro-agents, with Pareto improvement and effectiveness. The role of local governments as active participants in market-oriented reforms has made China’s institutional changes moving in a stepwise pattern, weakening the institutional heritage’s constraints on progressive market-oriented reforms (Yang and Yang, 2000).

In such reforms, local governments are considered the “first action group” that actively seeks the potential net institutional benefits. For local government officials, their political promotion generally rests with the level of local economic development, so they have the characteristics of entrepreneurs in the Schumpeterian sense. Moreover, local governments face conflicts between maintaining hierarchical rules and introducing property rights rules while implementing institutional innovations. Under fixed central and local fiscal revenue sharing ratios, their goal of maximizing disposable fiscal revenues relies on the realization of the enterprises’ goal of profit maximization. However, their goal of maximizing government monopoly rent – primarily manifested as career promotion, power stability, resource manipulation, gray income, etc. – is also closely related to the economic development level of the region, which, in turn, depends on the expansion of the company and the improvement of efficiency. Therefore, to obtain monopoly rents, local governments prioritize efficiency in defining and protecting property rights, thus helping to resolve conflicts between the two rules.

Under the condition of promoting the market-oriented reform through administrative decentralization and interest concessions, market competition first manifests itself as competition between localities and then as competition among enterprises. By virtue of their administrative power and economic strength, local governments will strive to help local enterprises to attract scarce resources from the outside and help promote local products. This kind of market competition behavior of local governments has dual characteristics. On the one hand, it has a local protectionist tendency, especially when the locality is at a distinct competitive disadvantage and cannot push through the access barriers to institutional innovation set by higher level of governments. On the other hand, it will leverage various policies to create a preferential investment environment and be willing to define and protect property rights and attract the inflow of resources.

To attract more resources in competition and stimulate local economic development, aside from requiring superiors to provide preferential policies, local governments also have the motivation to build a relatively efficient property rights structure by breaking through

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the access barriers to institutional innovation. A move is expected to attract foreign capital and domestic capital inflow through effective property rights protection and ideal investment environment as well as encourage the generation of productive profits by clarifying the investment income expectation of micro-agents, thereby expanding the residual sharing of local governments. When such institutional innovations promoted by local governments help encourage the agents to create productive profits, the interest-seeking activity of special interest organizations or groups in society may not necessarily reduce social efficiency and total income but might lead to Pareto improvements.

Under the condition that the higher level of government controls the access of institutional innovation, although local government and enterprises have disagreements regarding the distribution of the decision-making power and the distribution of residual claims, they have a strong interdependence concerning the methods they use to compete for monopoly rents associated with priority access rights. In this cooperative game, enterprises, with the help of local governments, gain potential institutional benefits by pushing through access barriers, with local governments sharing these benefits. Therefore, this process of cooperation between local governments and enterprises is actually a process of internalizing external profits by clarifying property rights relations. It has promoted the transformation of enterprises into market competition entities that are autonomous and self-financing (responsible for their own management decisions, profits and losses). In the first-mover reform areas, the reform of the enterprise property rights system is always a step ahead, and the ability of enterprises to capture profit opportunities is strong.

When institutional changes transition from command and control to negotiation and coordination, it is likely that local governments will generate dual effects in China's marketization process. First, the monopoly rent brought by the priority access will induce local government's profit-seeking activities. When one place breaks through the access barriers, other places will follow suit. The breakthrough of the barriers to entry and the disappearance of monopoly rents have weakened the once dominant position of the higher level of government in the supply of institutions. It mainly serves as an *ex post* after-the-fact recognition of the institutional innovations executed by local governments and enterprises. Second, the intermediate diffusion process of institutional innovation is the process of establishing exclusive property rights. The internalization of external profits is realized by clarifying the income expectations of the micro-agents; thus, the residual shares of the local governments and enterprises are simultaneously increased. Once a company gains greater autonomy, it endeavors to limit government intervention in its own ability to capture market profit opportunities, including institutional innovation activities. Although local governments are still motivated to control enterprises, with the establishment of exclusive property rights, the cost of government control over enterprises is exorbitantly high, whereas adopting the strategy of *laissez-faire* (govern by non-interference) can both enhance the vitality of enterprises and enable the government to share surplus. From the principle of maximizing profits, local governments will restrict unreasonable administrative intervention. The catchphrase of "smaller government, bigger social well-being" has been purported invariably at a certain stage in the reform of property rights system in some areas with a rapid pace of reform, where the transformation of government functions evidently outpaces other areas where reforms are relatively lagging behind.

Therefore, the author proposes the three-phase transition hypothesis of China's institutional change model, namely, a *de facto* path, which gives potential to a successful incremental transition of a centralized country from planned economy to a market economy. This hypothesis lies in the incremental transitions of the institutional change models from a supply-oriented model at initial reform; to a middle-proliferation model; and to a demand-induced model that is consistent with the inherent requirements of the market economy, thereby completing the transition to a socialist-market-economic system (Yang, 1998).

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Under the condition of the access barriers of institutional innovation, the three-phase transition hypothesis of institutional change can better reveal why government-led reform can lead to *de facto* marketization. However, when we assess the market-oriented process led by the government from the perspective of normative analysis, we find that the market-oriented reform with government-enterprise partnership elicited by this institutional change model also causes serious problems. Although the government-enterprise partnership provides a dynamic mechanism for government-led marketization, it also has a series of negative effects, including behavioral anomie, “reasonable but unlawful” or “lawful but unreasonable” acts, rampant corruption, overspread of hidden rules such as “playing edge balls” (rule-bending activities taking advantage of legal loopholes) and capital and labor conflicts. For example, the vagueness of code of conduct of political entrepreneurs leads to a rise in corruption. The blind pursuit of GDP by local government officials leads to the neglect of resources, environment, society and other issues, resulting in the decline of local sustainable development capacity. The intensification of competition between locals leads to local blockades, resulting in the so-called “vassal economy” (i.e. a fragmented regional economy that only deals with local interests) and other phenomena (Yang, 2018).

Due to the emergence of a series of negative effects caused by government-enterprise partnership, coupled with the changes in China's economic growth conditions and external environment, the local government-led institutional changes are faced with new challenges to. First, government-led reforms have slowed structural adjustments. In the face of the decline in traditional growth factors, the decline in potential growth rate, and the tightening of the external environment, new growth factors should be cultivated, structural distortions must be rectified and the quality of economic growth ought to be improved by implementing innovation-driven development strategy and advancing supply-side structural reform. Given the construction of new growth models, the sustained growth in domestic demand highly depends on market guidance, and government leadership may undermine the restructuring of market-oriented economy. Second, leveraging the original organization to promote reform will encounter increasing resistance. With the development of the economy, the original organization may form alliances with certain market entities, forming a specific interest group, and the driving force for vested interests to continue reform may decline. Third, the implementation space for incremental reforms is decreasing. New incremental reforms are often non-Pareto improvements, and some people are bound to suffer from the loss of benefits in the reform process. The new reform requires binding government power and increasing government transparency, all of which can detrimentally affect the personal interests of the officials. Fourth, the reform model of piloting first and promoting second is difficult to sustain. The reform of the pilot right in the administrative system plays an important role in mobilizing the enthusiasm of the local government's reform, as the pilot right will bring monopolistic institutional benefits. However, with economic development, the rent-seeking behavior in the wake of such pilots has become increasingly serious, thereby distorting the true cost and benefits of market-oriented reforms.

Recently, we have been resolute in anti-corruption actions against the negative phenomena arising from the government-enterprise partnership which is on the right course. However, since this kind of ironclad anti-corruption has greatly improved the social atmosphere and greatly enhanced CPC's prestige, the incentive compatibility mechanism between local government officials and entrepreneurs through partnership to compete for reform priorities has changed. Thus, the dynamic mechanism of reform under the leadership of the executive power has relatively mutated. Some local government officials are lazy and neglectful of their duties to evade the risks derived from the reform, outweighing the benefits. The innovation-driven development strategy or improvement of structural quality

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through restructuring relies on the deepening of market-oriented reforms. However, the current reforms generally have the phenomenon of “much cry and little wool (much said but little done),” and the root cause still lies in the insufficient motivation for reform. Therefore, after the strategic victory of the anti-corruption campaign, a new round of large-scale reform and large-scale incentive-compatible dynamic mechanism must be established on the basis of stabilizing growth.

The necessary factors to reshape the dynamic mechanism of market-oriented reform are re-clarifying the boundaries of rights between the government and market, establishing a new type of relationship between the government and commerce, and focusing on building a new economic system with “effective market mechanisms, dynamic micro-agents, and appropriate macro-control.” In the process of adjusting interest relations, we will seek the impetus for reform, mobilize the positive factors of all parties and promote the continuous advancement of reform. First, redefining the boundaries of rights between the government and market, the governments shall set boundaries for themselves and resolutely perform their “do’s and don’ts.” The full development of the market economy requires the government to provide corresponding services, and the government must shift from a growth-oriented government to a development-oriented government. Through the government’s own reforms, the traditional interest distribution pattern among the government, enterprises and households will be broken. The functions of the government shall be transformed to avoid the government “contending for interests against the people.” Second, to further deepen the reform of the property rights system, the following three aspects must be included: to further promote the reform of the mixed ownership system of state-owned enterprises under the logic of classified reform (function-based reform), the government must resolutely perform their “dos and don’ts”; the government should develop the private economy and protect private property rights; and the government should deepen the reform of the land system in the process of promoting urbanization. Third, the further improvement of the market system shall focus on the amelioration of the factor price system and the reform of the financial system. The core is the reform of the property rights system of financial enterprises, the marketization of interest rates, the internationalization of the RMB and the independence of the Central Bank. Fourth, economic development must be coordinated with social development to actively promote social reform. Currently, the changes in social structure are primarily manifested as follows. With the development of the network and information dissemination, the perception and pursuits of self-interest are reinforced. The interaction and mutual influence of the interests of members of the society are augmented, shifting from the previous segmentation to become increasingly integrated. The interests of social members are increasingly diversified, and the conflicts of interest of different stakeholders are gradually intensifying, correspondingly requiring diverse and flexible social policies. Thus, economic reforms need to reflect the bottom-up needs of residents, which can better reflect the distribution of residents’ self-interests, the diversification pattern and the flexibility requirements of development. Residents should be encouraged to participate in policy design and feedback on policy practices. At the same time, the entire distribution system must be improved, including initial distribution and redistribution. Moreover, the urban–rural disparity and regional gaps can be minimized through urbanization and regional development policies, and the social security system can then be further improved (Yang, 2014).

## **5. Conclusion: construction of the Chinese model and Chinese economics**

Presently, the achievements of China’s market-oriented reforms are widely being recognized. China’s market-oriented reform is neither a fine-tuning adjustment nor a flag-changing subversion. With a fundamental change to the traditional planning system, it has embarked on a Chinese-style reform path. This Chinese model generally has the following

major characteristics: the reform aims to establish a socialist-market-economic system; the basic institutional framework is to adhere to the ownership structure dominated by public ownership, seeking common development with multiple ownership economies; the economic operation mechanism emphasizes the decisive role of the market mechanism and to enhance the role of the government; the reform method aims to adhere to incremental reforms under the leadership of the Central Committee of the CPC while correctly handling the relationship between top-level design and trial-and-error ("crossing the river by feeling for the stones"); and the environment for reform is to correctly handle the relationship among reform, development and stability.

The "Chinese model," "Chinese experience" and "Chinese road" are receiving increasing global attention. However, summarizing the general economic theory system from the reform path, the opening up and the development model with distinctive Chinese characteristics is difficult under the existing theoretical analysis framework and logic. The theory is gray; however, the "tree of life" is evergreen. The so-called theory refers to the systematic conclusions about the knowledge of nature and human society summarized by practice. It has important enlightenment and reference value for future practical activities. However, given that practice itself is constantly changing, it is imperative for the theory to innovate accordingly and timely. Theory of true vitality does not refer to the pure speculative logic from books to books and from concepts to concepts but to the theoretical crystallization that comes from practice, returns to practice and is proven to be correct by practice. Many of problems raised by the practice of reform and opening up clearly cannot find a solution from off-the-shelf theoretical works. China's reform path can find the answer in neither the traditional political-economic logic nor western mainstream economics. The analysis paradigm based on social person hypothesis and holistic class interest analysis can hardly deduce that the market mechanism shall play a decisive role in resource allocation under socialist conditions. The analysis paradigm based on the economic man (*Homo Economicus*) hypothesis and the individualist cost–benefit analysis can hardly deduce the basic socialist institutional characteristics under the market economy, such as public ownership and people-oriented economy.

China's reform experience tells us that it is dangerous to blindly reproduce the individual "conclusions" of the classic Marxist authors or the theorems of western economics. Therefore, we should step out of the legacy mindset and break through previous theoretical frameworks and dogmas, and face reality based on practice, emancipating the mind, testing and developing existing theories through in-depth analysis of phenomena, and actively promoting the innovation of China's economic research paradigm. Theoretical innovation needs to adhere to the reality-oriented and problem-oriented research attitude and methods. When a conflict arises between theory and practice, it is beneficial to link the theory to practice rather than adapting practice to theory. Reality-oriented research does not imply that theory should be done away with, but it implies that the research should start with the special phenomena arising from China's economic reform and economic development, as well as test the existing theory through in-depth analysis of the phenomena. If the existing theory is insufficient to answer the implied question, we need to reflect on the theory itself until we amend the theory according to reality. The great practice of China's reform has provided unprecedented opportunities and challenges for the development of economic theory. The Chinese model and the Chinese path are the sources of innovation for the subject of Economics with Chinese Studies. Under this circumstance, China's economics discipline should be constructed by summing the experience of China's economic reform and economic development, theoretically and scientifically answering a series of new questions raised in the new historical stage, promoting the innovation and development of economic theory, and striving to construct and develop a theoretical economics system using Chinese characteristics, manner and style.

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# Market-oriented interest rate, deposit insurance system and bank runs

## A dynamic model perspective

Deposit  
insurance  
system and  
bank runs

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### Abstract

**Purpose** – In the transitional process of promoting market-oriented interest rate, China is confronted with an important theoretical and practical issue: how to avoid bank runs and realize the smooth operation of the financial system. The purpose of this paper is to construct a bank-run dynamic model by taking into account a market environment with the transmission of multiple rounds of noise information, a comprehensive consideration of depositors' expectation of return on assets (or earning rate/yields of assets), the efficiency of information processing and dissemination, and the different motives for premature withdrawal.

**Design/methodology/approach** – The authors discussed the dynamic process of bank runs, furnished the ratio and number of each round of bank run, and characterized the corresponding dynamic equilibrium as well. Furthermore, the authors expanded the benchmark model by incorporating the deposit insurance system (DIS) to discuss the action mechanism of DIS overruns.

**Findings** – The results show that DIS implementation has two opposite effects: stabilized expectation and moral hazard, by virtue of its influence over the two types of premature withdrawal motives of depositors; the implementation effect of DIS rests with the dual-effect comparison, which is endogenous to the institutional environment.

**Originality/value** – The policy implications are as follows: while implementing DIS, it is necessary to establish and improve the corresponding institutional construction and supporting measures, to consolidate market discipline and improve the supervisory role of the bank's internal governance mechanism, so as to reduce the potential moral hazards. The financial system reform shall be furthered and the processing and dissemination efficiency of information be elevated to prompt depositors to form stable withdrawal expectations, thereby enhancing the stabilizing effect of DIS.

**Keywords** Moral hazard, Bank runs, Deposit insurance system, Market-oriented interest rate

**Paper type** Research paper



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## 1. Introduction

Since the reform and opening up, the relative development lag of China's financial industry has been regarded as one of the major issues confronting China's economic transition. It is becoming more and more urgent to improve the capital allocation and utilization efficiency via initiating financial system reforms, wherein the interest rate marketization (market-oriented interest rate) reform constitutes an important initiative for financial system transformation (Yi, 2009). However, international experience shows that financial marketization, while improving the efficiency of financial resource allocation, may exacerbate the fragility of the financial system, leading to bank crises and even economic crises (Bekaert *et al.*, 2005). International Monetary Fund (IMF) statistics show that since the prevalence of financial deregulation (liberalization) in the 1990s, more than 100 banking crises have occurred all over the world. Of the 181 member states of the IMF, 130 have experienced different levels of banking crises. How to avoid the banking crisis in the process of promoting interest rate marketization (liberalization) and realize the smooth operation of the financial system is a major theoretical and practical problem faced by the economies in transition.

The experience and research of various countries show that, considering the strong externalities of financial industry, while promoting institutional reforms such as interest rate liberalization (marketization), it is necessary to establish a series of supporting systems, such as deposit insurance systems (DISs), to promote the smooth implementation of financial system reform[1]. China's central decision-making level has been exploring and promoting the introduction of DIS as a supporting condition for the steady implementation of interest rate liberalization[2]. In March 2015, China's State Council promulgated the "Regulations on Deposit Insurance," which was officially implemented on May 1 in the same year, marking the transition from implicit full guarantee (blanket guarantee) to explicit DIS in China. The existing research and practice show that the emergence of DIS mainly stems from the bank's concern about the depositors' bank runs; the potential information asymmetry between depositors will further lead to panic in the banking system and expand the chain reaction of the run, causing systemic banking crisis and extremely adverse effects on economic development. DIS can effectively restrain the behavior of depositors, reduce the occurrence of depositors' run-off (bank run) behavior, and stabilize the financial system reform (Fama, 1980; Diamond and Dybvig, 1983). However, DIS may also cause serious moral hazard problems in banks, mainly in three aspects: First, DIS has not made it necessary for banks to pay higher interest rates to depositors for additional risks of investment. For higher returns, banks have incentives to invest in high-risk projects, thus increasing the instability of bank operations. Second, deposit insurance (DI) institution provides repayment guarantees for banks facing liquidity crisis; hence, DIS weakens the banks' internal governance mechanism, reduces the risk management ability of banks and increases the probability of bank failures. Third, depositors expect DI institutions to provide withdrawal guarantees; hence, their incentives to supervise bank investment behaviors wane, leading to weak market discipline and prompting banks to opt for high-risk investment projects (Demirguc-Kunt and Kane, 2002, 2004). Based on this, while implementing DIS, all countries face a trade-off between the stabilizing effect of preventing bank runs and the potential moral hazard. Furthermore, whether DIS can be effectively implemented is often closely related to the institutional environment. In an economy with a relatively sound financial system, the government intervenes little and provides less guarantees in banking business; thus, the run-off behavior poses a great threat to banks. Therefore, DIS implementation can protect the interests of depositors and the stability of the banking system. However, in the financial markets of transition economies surfeited with government intervention, the government usually acts as a hidden guarantor to exert influence on banking business. Therefore, DIS implementation may lead to serious moral hazard problems. With the gradual advancement of the financial system reform, the government's implicit guarantee mechanism shall be flaw ridden and no longer applicable. On the contrary, the explicit DIS has become the world-wide institutional protocol.

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Then, in the transition period of the financial system, how to establish and effectively implement the explicit DIS is an issue worthy of further study.

Existing research shows that explicit DIS tends to increase the likelihood of banking crises, the more so when the design characteristics of DI is taken into account (Demirgür-Kunt and Kane, 2002). A natural question is why, in the process of marketization of interest rates in the economies with imperfect financial system, DIS implementation is often shadowed by bank runs. It is necessary to discuss the relationship between DIS and bank run in the context of interest rate liberalization. As far as the facts are concerned, DIS first appeared in developed countries in Europe and America, where the economic environment and mechanism of demand faced by DIS are significantly different from developing countries in the transition period (Fan and Cao, 2006). The United States can be taken as an example. When the United States established the explicit DIS, it faced the financial crisis of 1929–1933. Its mechanism of demand was “financial crisis→to establish DIS→to maintain financial stability.” In transitional economies such as China, while implementing DIS, it faces a financial system reform whose mechanism of demand is “to reform financial system→to establish an explicit DIS→to establish a market-based risk management mechanism.” Among them, one of the major measures for financial system reform is market-oriented interest rate reform. Different mechanisms of demand are bound to face different mechanisms of interaction.

Therefore, when we discuss the relationship between DIS and bank run, it is necessary to closely follow this institutional background.

In view of this, this paper constructs a general dynamic model for bank run to analyze the basic logic of depositors' runs in the process of interest rate marketization and further incorporates DIS into the benchmark model to examine the impact of DIS on bank runs. The process is in two steps: First, to clearly characterize the process of bank runs, in the dynamic model, we break down the depositor run process into multiple rounds and the run-off behavior into two types of motivations. Given an expected decline of long-term return on assets (ROA/assets earning rate), in round of the run, the marginal replacement rate of depositors in the two periods of consumption changes, causing them to withdraw money in advance, thereby releasing a signal upon which depositors will process and form new judgments, and decide whether to run in the next round. This process lasts for several rounds, and as a result, banks face the risk of running out of liquidity. It should be noted that the first round of the run is often different from the subsequent run: in the first round of the run, the depositor realizes the improvement of personal welfare by taking out the long-term deposit for consumption in period 1, defined as the first category of motivation; in other rounds of runs, depositors take long-term assets for future consumption, which is a panic behavior, defined as the second category of motivation. Furthermore, the error caused by information asymmetry has a lasting influence, which is endowed by the depositor's choice of time weight while processing information, and it is often related to the institutional environment such as the degree of government intervention and the level of interest rate marketization (Demirgür-Kunt *et al.*, 2008). Then, DIS is introduced into the benchmark model to analyze its impact on the behavior of banks and depositors, respectively, and thus the impact mechanism of DIS on bank-run process and the dynamic equilibrium.

The rest of the paper is arranged as follows: Section 2 reviews the literature; Section 3 constructs a general theoretical model for bank-run benchmark and solves and analyzes dynamic equilibrium; Section 4 introduces DIS to expand the benchmark model and explore the action mechanism of DIS on bank runs; Section 5 concludes and gives policy implications; the proofs of the lemma and propositions in the text are shown in the Appendix.

## 2. Literature review

In the wake of the 2008 world financial crisis, the bank-run problem has once again become a hot topic in academic research. The relevant literature focuses mainly on two aspects.

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First, the decline of the banks' real ROA gives rise to bank runs, which was an emphasis of the actual impact first proposed by Bryant (1980). Second, the D&D Model was first proposed by Diamond and Dybvig, who held that the bank run is based on the herd behavior caused by "Sunspot" (Diamond and Dybvig, 1983), that is, uncertainty of individual behavior in an imperfect market. The rule of "First-come, First-served" stipulated by the deposit contract triggers bank runs, and the restriction of "sequential service" for depositors leads to negative payoff externality effects. Postlewaite and Vives (1987) described bank runs as an equilibrium of a static game with incomplete information; Wallace (1988) pointed out that demand deposits and the "first come, first served" sequential rule are the two essential factors that lead to bank runs; Jacklin and Bhattacharya (1988) compared two types of bank run models caused by panic and real return, and proved that the critical point of bank run depends on the variance of long-term ROA by using square root utility function and the model specification with invariant consumer expectation of long-term ROA; Schotter and Yorulmazer (2009) established a dynamic bank-run model for information transmission, to examine the impact of information externalities and the herd effect in bank runs on the equilibrium outcome. At the same time, a series of studies have been conducted to discuss the relationship between DIS and the risk of bank runs. Diamond and Dybvig (1983) argued that the risk of bank runs brought about by demand deposits would lead to bank failures and real economic losses, whereas the implementation of a DIS would facilitate an equilibrium; Chen (1999) posed a DIS design idea that could eliminate the bank run panic and guide depositors to focus on accurate information. DIS may create moral hazard problems while preventing bank runs, whereas liquidity support policies can prevent bank runs and curtail moral hazard issues. Starr and Yilmaz (2007) studied the bank run in Turkey in 2001 and pointed out that the use of DIS in emerging economies can reduce the withdrawal behavior of depositors who lack information when bank liquidity is uncertain, and thus help prevent the occurrence of bank runs. It can be seen that the existing research has made instructive discussions on bank runs and the impact of DIS on bank runs. However, most of these models are carried out in the context of static information transmission, without considering the dynamic process of information transmission in reality, and especially the potential bank runs in the process of financial system reform in transitional economies. Below we will build a bank-run model based on dynamic perspectives considering the different premature withdrawal motives of depositors and the process of processing and dissemination of expectation bias, to analyze the process of bank runs in depth, which constitutes a helpful complement to the existing research.

With the active promotion of market-oriented interest rate reform and DIS in recent years, many Chinese scholars have embarked upon preliminary research on issues such as interest rate liberalization and the introduction and implementation of DIS. Xie *et al.* (2001) introduced the relevant theoretical research and international comparison of DIS. Huang (2001) divided the risks brought by interest rate liberalization into transitional risk and everlasting risk, pointing out that after interest rate liberalization, deposit interest rates will rise significantly in the short term. Qian (2004) held that the prerequisites for establishing an effective DIS include improving bank governance structure, prudent bank supervision and popularized DI concepts, etc., and proposed effective institutional arrangement measures for DI design. Su (2005) took into account the practical problems existing in China's financial development and made propositions on the nature of DI institutions, sources of funds and payment methods. Wang (2006) studied and summarized the experience of the US Federal Deposit Insurance Corporation (FDIC), and put forward suggestions on the establishment and supervision functions of China's DI institutions. Tang (2008) investigated, from the perspective of DIS in various countries, how to improve the corporate governance mechanism to overcome the potential moral hazard of introducing a DIS. Yao and Xia (2012) put forward the design idea of DIS with minimum cost and incentive compatibility based on the empirical analysis of DIS in Germany, Brazil and Russia. By employing the principal-agent model, Yao *et al.* (2013) discussed the pros and cons of the implicit

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and explicit DIS under systemic risk from the perspective of the internal governance level of commercial banks. It can be seen that the existing Chinese research mainly focuses on drawing on the international experience. It discusses the necessity of introducing DIS and proposes the corresponding design ideas, but rarely involves the relationship between DIS and bank run against the backdrop of interest rate marketization, which is the focus of this paper.

In summary, the existing research mainly considers the economic environment faced by developed economies, and considers less the demand regime (mechanism) for DIS in transitional economies, and the economic environment for introducing DIS. In addition, most of the existing researches use the research framework of the classic D&D model, that is, an idea to explore DIS implementation with the goal of maximizing social utility or the utility of depositors, but lacking consideration of the bank's own behavior. The more realistic situation is that banks, as independent decision-making bodies, have behavioral characteristics that pursue their own utility maximization. Furthermore, in terms of depositor behavioral limits, the D&D model assumes that depositors do not know whether they are spending in the first or second period at the beginning of the period, but in reality, depositors will form the optimal consumption plan through continuous collection and processing of information.

In view of this, this paper will expand the existing model from two aspects. First, the participants' behavioral assumptions are expanded. Assuming that the bank's goal is to maximize its expected utility, a liquidity management strategy is attached and the depositor's consumption decisions are internalized, depending on their expectations for deposit rates in different periods. Second, the existing bank-run model is expanded by the following method. First, the dynamic bank-run model of multi-round noise information transmission is established; the depositor's premature withdrawal motives are divided into two categories, and the impact of long-term ROA distribution, information processing and effect of spreading efficiency on equilibrium is analyzed. Second, the ordering rule in the dynamic model is defined, and the concept of strong equilibrium is proposed to characterize the influence of the uncertainty of the signal obtained by the depositor in each round of the run on the equilibrium result, thereby boosting the reality emulation of bank-run equilibrium. Third, DIS is introduced into the model and the impact mechanism of the system implementation on the dynamic run is analyzed. The results of this paper show that DIS has two opposite effects of forming a stable expectation and causing moral hazard by affecting the two motives of depositors' premature withdrawal, and the strength of the two effects depends on the institutional environment. Whether the introduction and implementation of DIS can improve the efficiency of social financing, reduce the probability of bank runs and promote the smooth transformation of the financial system relies on the establishment and improvement of market discipline, the internal governance mechanism of banks, the efficiency of market information processing and dissemination, and other supporting systems related to the financial marketization reform.

### 3. The dynamic bank-run model

This section expands the existing model to establish a bank-run dynamic model with a wider coverage. The specific analysis idea is to describe the economic environment, as well as the decision-making sequence of depositors and banks, to characterize the behavioral assumptions of banks and depositors, to analyze the specific dynamic process of bank runs, and to define and discuss the dynamic equilibrium.

#### 3.1 Economic environment

Consider an economic environment with three periods (0, 1, 2), where there is a bank and a continuum of depositors in the  $[0, 1]$  range. The bank has proprietary technology for converting period 0 assets into period 1 and period 2 consumer goods, and investing the acquired deposits in two types of assets: short-term security assets and long-term risk

assets, of which security assets can be considered as a storage technology that converts a unit of assets of period 0 into a certain unit of assets of period 1. Long-term risk assets are determined by a specific and uncertain technology, and they can generate  $r$  units of consumer goods in period 2, here,  $r$  is a random variable.

At the beginning, the depositor owns all the assets and the assets are not classified and converted. In period 0, the bank provides two types of contracts: the first type is a demand deposit. If the bank has a sufficient liquidity, in period 1, a unit asset will receive  $R_1$  units of consumer goods; if the bank has insufficient liquidity, the bank's liquid assets will be evenly distributed among depositors. The second type of contract is a fixed time deposit. If the long-term assets held by the bank have a higher ROA, a unit asset will receive  $R_2 (> R_1)$  units of consumer goods in period 2, or  $R_1$  units in period 1; if the bank's liquidity in period 1 is insufficient, it will be evenly distributed among all the withdrawals of period 1. Considering the reality of China's dual-track interest rate system, the ROA  $r$  of long-term risk assets is a random variable, which can be regarded as the equilibrium interest rate in the market of loanable funds. It is the embodiment of interest rate marketization, and the corresponding probability density function is  $q(r)$ . Taking into account the realities of interest rate control, the bank's deposit interest rates of  $R_1$  and  $R_2$  in the two periods change relatively little, and they are subject to the constraints of the ceiling on deposit rates as well as the floor on lending rates (Yi, 2009; He and Wang, 2011). With the gradual advance of interest rate marketization,  $R_1$  and  $R_2$  will be more flexible. The decision sequence of the bank and depositor is shown in Figure 1.

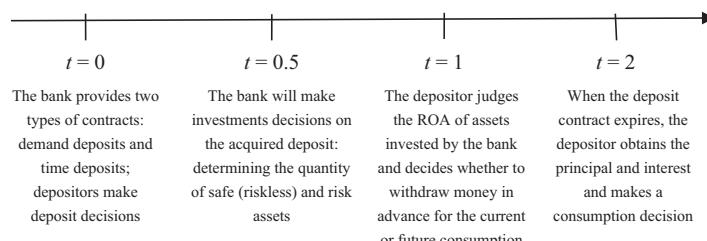
### 3.2 Participant's behavior setting

**3.2.1 Bank.** In period 0, the bank provides two types of contracts to absorb deposits and invests the acquired deposits in  $L$  units of short-term (current) asset and  $X$  units of long-term (risk) assets, respectively. Assuming that the bank is risk-neutral, the goal is to maximize the expected utility by asset allocation of the absorbed deposits. Suppose that in period 0, the information set faced by the bank is  $I_0$ . Given the ROA  $r$  of long-term assets, the bank's problem of maximizing the expected utility is:

$$\begin{aligned} & \max_{\{L,X\}} E[L - D_1 R_1 + \sigma(Xr - D_2 R_2) | I_0] \\ & \text{s.t. } L + X \leq D, \end{aligned}$$

where  $\sigma$  is the bank's intertemporal risk adjustment factor, which measures the expected return and risk preference (appetite) of the bank for long-term investment, and satisfies  $\sigma \geq (1/r)$ , that is, the adjustment of yield of long-term risk assets at least realizes the present discounted value. The optimization problems faced by banks can be further clarified as the following:

$$\max_{\{L,X\}} E[(1-\sigma)r)L + \sigma Dr - D_1 R_1 - \sigma D_2 R_2].$$



**Figure 1.**  
Bank and depositor decision sequence

Since  $1 - \sigma r < 0$  and  $r$  is independent of other variables, it is directly inferred that banks will prefer to invest in long-term risk assets, that is, there is a “maturity mismatch” problem. To ensure the safety of the operation, it is assumed that the bank implements a liquidity management strategy  $\rho(E_1R_1 + E_2R_2)$ , where the parameter  $\rho$  indicates the bank’s pre-judgment of the probability of run-off behavior, and it can also be used to indirectly characterize the depositor’s belief in the long-term ROA. Therefore, short-term liquid assets can be expressed as  $L = \max\{\rho(D_1R_1 + D_2R_2), D_1R_1\}$ , corresponding to the capital required by the government’s banking regulatory policies. According to the Basel Accords, the relevant provisions on bank capital shall satisfy  $\rho D_2R_2 > (1-\rho)D_1R_1$ , so  $L = \rho(D_1R_1 + D_2R_2)$  will be obtained. In this way, the bank’s investment decision becomes the problem of maximizing the expected utility of the additional liquidity management strategy.

**3.2.2 Depositor (consumer).** According to the participant’s decision-making sequence in Figure 1, in the face of the two types of deposit contracts provided by the bank, the depositor will select  $D_1$  units of demand deposits and  $D_2$  units of time deposits.  $D_1$  and  $D_2$  are all functions of  $R_1$  and  $R_2$ , and  $D$  is the sum of the total deposits. The two asset allocations have certain substitutability  $D = D_1(R_1, R_2) + D_2(R_1, R_2)$ . It is assumed that the representative depositor has a utility function in Gorman’s Form:  $u(c_1) + \beta u(c_2)$ , where  $u(\cdot)$  satisfies the Inada Condition,  $\beta$  is a depositor’s intertemporal discount factor. In period 0, the depositor and the bank have the same information set  $I_0$ , based on which the problem of maximizing the expected utility faced by the representative depositor can be expressed as:

$$\begin{aligned} \max_{\{D_1, D_2\}} E[u(c_1, c_2)|I_0] &= [u(D_1R_1) + \beta u(D_2R_2)] \\ \text{s.t. } D_1 + D_2 &\leq D. \end{aligned}$$

Solving the above maximization problem, the Euler equation is obtained,  $u'(c_1) = \beta u'(c_2)$ , namely,  $u'(D_1R_1)R_1 = \beta R_2u'(D_2R_2)$ . It shows that the depositor’s marginal utilities in the two periods of consumption are equal, that is, the marginal utilities of the depositor’s short-term or long-term capital allocation are equal; the expected utility is maximized.

**3.2.3 The dynamic process of bank runs.** Realities and researches have shown that the emergence of bank runs often involves two aspects: the decline of long-term ROA and wrong contractual arrangements. First, two types of premature withdrawal motives are defined: in the face of declining expected long-term ROA, depositors take out long-term deposits for consumption in period 1, which is defined as the Type 1 motivation. As depositors are worried about the safety of bank deposits, they will choose to withdraw money in period 1 for consumption in period 2 in the future, which is defined as the Type 2 motivation. It can be seen that although the depositors are taking out deposits in advance because of the expected reduction in the yield of long-term assets, the Type 1 motivation will increase the depositor’s consumption in period 1 and improve their own welfare, while the Type 2 motivation may cause a bank run panic and lead to economic disturbances. The following two stages will examine the bank-run process caused by the depositor’s two types of premature withdrawal motives.

The following scenario can be considered: depositors have incomplete information about the rate of return on long-term assets  $r$  held by banks. Referring to the ideas of Goldstein and Pauzner (2005), the signals obtained by representative agent (depositor)  $i$  are expressed as  $\hat{r}_1^i = r + e_1^i$ , where  $e_1^i$  denotes the potential error of depositor’s interpretation of the information, which has a probability density function  $q_1(e_1^i)$  defined within the support  $[-e_1, e_1]$ , and accordingly, the probability density function  $q_1(\hat{r}_1^i - r)$  of  $\hat{r}_1^i$  is defined within the interval  $[r - e_1, r + e_1]$ , and  $q_1(\cdot)$  satisfies the condition  $\int_{r-e_1}^{r+e_1} q_1(\hat{r}_1^i - r) d\hat{r}_1^i = 1$ . Lemma 1 gives

the nature of the conditional probability density function of long-term asset return that the depositor judges based on information:

*Lemma 1.* For any depositor  $i$  and  $j$ , if the probability density functions  $q_1(\hat{e}_1)$  and  $q_2(\hat{e}_2)$  of the inference error are independent of each other, then there is a positive number  $\delta$  such that  $f_2^j(\hat{r}_j \pm \delta) = f_2^i(\hat{r}_j)$ , that is, for depositor  $i$  and  $j$ , the inferred information of the long-term asset return is symmetrical.

In period 1, the short-term and long-term deposits of the asset allocation of depositor  $i$  are expressed as follows:  $D_1^i + D_2^i = D^i$ . If the depositor  $i$  observes or predicts that the long-term ROA is reducing, based on the Type 1 motivation, part of the long-term deposit,  $\Delta_1^i \geq 0$ , will be withdrawn in advance in period 1, for the consumption of period 1, and the Euler equation for the maximum expected utility of the depositor derives:

$$u' \left( (D_1^i + \Delta_1^i) R_1 \right) R_1 = E \left[ \beta R_2 u' \left( (D_2^i - \Delta_1^i) R_2 \right) \right]. \quad (1)$$

Here, the right side of the equation can be expressed as:

$$\int_{(r-e_1)}^{(r+e_1)} \beta u' \left[ (D_2^i - \Delta_1^i) R_2 \right] R_2 q_1(\hat{r}_1^i - r) d\hat{r}_1^i,$$

where  $R_2 = (X\hat{r}_1^i / (1-\rho)D_2^i) - (D_1^i / D_2^i)R_1$ .

For any long-term ROA, it is inferred from the above formula (1) that  $\Delta_1^i = g(r, e_1, D_1^i, R_1^i)$ . Only the Type 1 motivation is considered to cause the depositor to withdraw in advance, and therefore only  $\Delta_1^i$  appears in the expected utility function of the depositor in period 1, and the amount of premature withdrawal  $\Delta_1$  is uniquely determined by  $\Delta_1 = \int_0^1 \Delta_1^i(\cdot) di$ . Specifically, in the case that depositor  $i$  regards the signal  $\hat{r}_1^i$  as the ROA distribution center,  $r_1^*$  represents the threshold value of the long-term ROA upon which the bank run will (not) just happen, determined by  $D_2 R_2 = \rho(D_1 R_1 + D_2 R_2) - D_1 R_1 + X r_1^*$ . There are three scenarios to discuss the number of bank runs that occur:

- (1) If  $r \geq r_1^* + 2e_1$ , then  $\Delta_1 = 0$ , namely, when the long-term ROA is high enough, no bank run will occur;
- (2) If  $r_1^* \leq r < r_1^* + 2e_1$ , then  $\Delta_1 = \lim_{D_1^i \rightarrow 0} \int_{r_1^*-e_1}^{r_1^*+e_1} \Delta_1^i q_1(\hat{r}_1^i - r) d\hat{r}_1^i = \lim_{D_1^i \rightarrow 0} \int_{r_1^*-e_1}^{r_1^*+e_1} g(r, e_1, D_1^i, R_1^i) q_1(\hat{r}_1^i - r) d\hat{r}_1^i$ ; and
- (3) If  $r < r_1^*$ , then  $\Delta_1 = \lim_{D_1^i \rightarrow 0} \int_{r-e_1}^{r+e_1} g(r, e_1, D_1^i, R_1^i) q_1(\hat{r}_1^i - r) d\hat{r}_1^i$ .

In the case of a given deposit contract, we further have  $\Delta_1 = h(r, e_1)$ , and  $(\partial \Delta_1 / \partial r) < 0$ ,  $(\partial \Delta_1 / \partial e_1) > 0$ , indicating that the number of runs moves inversely to the long-term ROA and in the same direction with depositors' interpretation error of the ROA information.

In the second period, depositor  $i$  receives a run signal with noise, and the judgment on the long-term ROA is updated as  $\hat{r}_1^i$ . The depositors process the information in the same way as described above, but their expectations for the signal change. At this time, depositor  $i$  expects the long-term ROA as  $r_1^i = r + e_2^i$ , where  $e_2^i$  indicates the error of the inference depositor  $i$  makes based on the information of the previous round. It has a probability density function  $q_2(e_2^i)$  defined within the interval  $[-e_2, e_2]$ , and then the probability density function of  $r_1^i$  is  $q_2(r_1^i - r)$ , defined within  $[r - e_2^i, r + e_2^i]$ . In order to clearly characterize the depositor's information updating process, we consider using adaptive expectation equation to weigh the

information of the two adjacent periods, namely,  $r_2^i = t_1 r_1^i + (1-t_1) r_1^i = r + u_2^i$ , to obtain new inferences, where  $u_2^i = e_1^i + (1-t_1)e_2^i$  is aggregated error and  $t_1$  is the weight the depositor assigned to the first round of information during processing.

The bank-run behavior of depositors under the Type 2 motivation will be considered below. Assuming the number of bank runs to be  $\Delta_2$ , the depositor's consumption decision in period 2 is given by  $E[\beta u((D_2-\Delta_2-\Delta_1)R_2 + \Delta_2 R_1)]$ .  $r_2^*$  denotes the threshold value of the long-term ROA upon which the bank run will (not) just happen, thereby satisfying the following condition:

$$\int_{r_2^i-u}^{r_2^i+u} [X\hat{r}_1^i + \rho(D_1R_1 + D_2R_2) - E_1R_1 - \Delta_1R_1] f_2^i(\hat{r}_1^i | r_2^i = r_2^*) d\hat{r}_1^i = (E_2 - \Delta_1)R_1. \quad (2)$$

Here,  $f_2^i(\hat{r}_1^i | r_2^i = r_2^*)$  indicates the conditional probability density function of the depositor  $i$ 's expected long-term ROA in the case of given information  $r_2^i$  and satisfies the normalization condition  $\int_{r_2^i-u_2^i}^{r_2^i+u_2^i} f_2(\hat{r}_1^i | r_2^i) d\hat{r}_1^i = 1$ .

Consider the homogeneity of information transmission, that is, each depositor has the same judgment on the long-term ROA held by the bank. The above formula (2) derives  $r_2^*$ , that is, if the long-term ROA is lower than  $r_2^*$ , it will trigger a bank run. According to Lemma 1, the ratio of runs can be expressed as a truncated cumulative distribution function, and the following proposition is compiled:

*P1.* Given the required threshold value of the long-term ROA, upon which the bank run will (not) just happen, to be  $r_2^*$ , the depositor's bank-run ratio is  $\lambda_1(r_2^*, u) = \int_{r_2^i-u}^{r_2^i+u} f_2(\hat{r}_1^i | r_2 = r_2^*) d\hat{r}_1^i$ , and the corresponding number of runs is  $\Delta_2 = (D_2 - \Delta_1)\lambda_1$ .

Obtained directly from *P1*, the balance of the depositor's term deposit in period 2 is  $D_2 - \Delta_1 - \Delta_2 = (1-\lambda_1)(D_2 - \Delta_1)$ . Similarly, based on  $\Delta_2$ , the depositors can further update their pre-judgment information regarding the  $r$  in period 3.

Considering a more generalized case, in the  $t \geq 2$  round, based on historical information, the depositor expects the long-term ROA information to be  $\hat{r}_t^i = r + e_t^i$ , where  $e_t^i$  has a probability density function  $q_t(e_t^i)$  defined within the interval  $[-e_t, e_t]$ , and the following defining and sorting rules will characterize the depositors' information structure in different rounds:

*Definition 1.* (Sorting rule): If the depositor  $i$  gets the information  $r_t^i = r + e_t^i$  in the round  $t$ , and the signal received in the  $t+1$  round is  $r_{t+1}^i = r + e_{t+1}^i$ , then they represent a sorting rule  $\omega$ , where  $\Omega$  denotes the set of ordering rules.

In particular, if in the 1st round, the depositor receives the worst signal,  $e_1^i = -e_1$ , and the worst signals in each subsequent round,  $e_2^i = -e_2, e_3^i = -e_3 \dots e_n^i = -e_n$ , then they represent a sorting rule of the worst signal denoted as  $\omega$ . According to the sorting rule, the depositor uses the weighted method of the adaptive expectation equation to estimate the long-term ROA, i.e.:

$$r_3^i = t_2 r_2^i + (1-t_2)(r + e_3^i); \quad r_4^i = t_3 r_3^i + (1-t_3)(r + e_4^i); \quad r_t^i = t_{t-1} r_{t-1}^i + (1-t_{t-1})(r + e_t^i).$$

For any  $n$  round, there is  $r_n^i = t_{n-1} r_{n-1}^i + (1-t_{n-1})(r + e_n^i) = r + u_n$ , where  $u_n$  is the comprehensive error of the depositor's prediction of long-term ROA in the round  $n$ , i.e.:

$$u_n = \prod_{i=1}^n t_i e_1 + \prod_{i=2}^n t_i (1-t_1) e_2 + \prod_{i=3}^n t_i (1-t_2) e_3 + \dots + (1-t_{n-1}) t_n e_n + (1-t_n) e_{n+1}.$$

We define  $\Phi = \{e_1, e_2, e_3, \dots\}$  as the noise sequence signifying the inference error of the depositor on the long-term ROA in different rounds; at the same time,  $T = \{t_1, t_2, t_3, \dots\}$  is defined as the weight sequence, indicating the depositor's weight selection while processing the information from different rounds. Both are the basic elements composing  $\Omega$ , that is, depositors' expectations of long-term ROA are often affected by  $\Omega$ , i.e., the combined influence of noise sequences  $\Phi$  and weighting sequences  $T$ .

Similar to the above analysis, the nature of the conditional probability density function of any round's long-term ROA is discussed and organized into the following Lemma:

*Lemma 2.* For any round  $n, n \geq 2$ , and any depositor  $i$  and  $j$ , if the probability density functions  $q_1(\hat{e}_1), q_2(\hat{e}_2), \dots, q_n(\hat{e}_n)$  of the inference error are independent of each other, then there is a positive number  $\delta$ , such that  $f_2^j(\hat{r}_j \pm \delta) = f_2^i(\hat{r}_j)$ , i.e., for any two depositors  $i$  and  $j$ , their inferred information of long-term ROA is symmetrical.

Define  $r_{n+1}^*$  as the threshold value of the long-term ROA upon which the bank run will (not) just happen at round  $n$ , thereby satisfying the following conditions:

$$\int_{r-u}^{r+u} \left[ X\hat{r}_n^i + \rho(D_1R_1 + D_2R_2) - D_1R_1 - \sum_{i=1}^n \Delta_i R_1 \right] f_{n+1}(\hat{r}_n^i | r_{n+1}^i = r_{n+1}^*) d\hat{r}_n^i = \left( D_2 - \sum_{i=1}^n \Delta_i \right) R_1, \quad (3)$$

where  $f_{n+1}(\hat{r}_n^i | r_{n+1}^i = r_{n+1}^*)$  represents the conditional probability density function of the depositor  $i$ 's inference error on the long-term ROA in round  $n$ .

Consider a more general situation. For any round  $n, n \geq 2$ , the above formula (3) denotes the threshold value  $r_{n+1}^*$  of the long-term ROA upon which the bank run will (not) just happen, that is, when the long-term ROA is lower than  $r_{n+1}^*$ , it will trigger a bank run. Combined with Lemma 2, the ratio of the depositors' bank runs is expressed as a truncated cumulative distribution function, which is organized as follows:

*P2.* For any round  $n, n \geq 2$ , given the threshold value  $r_{n+1}^*$  of the long-term ROA triggering a bank run, the ratio of the depositors' bank runs is  $\lambda_n(r_{n+1}^*, u) = \int_{r-u}^{r_{n+1}^*} f_{n+1}(\hat{r}_n^i | r_{n+1}^i = r_{n+1}^*) d\hat{r}_n^i$ ; the corresponding amount of runs is  $\Delta_n = (D_2 - \sum_{i=1}^{n-1} \Delta_i) \lambda_n$ .

*P2* is a more general characterization of *P1*. Considering the homogeneity of information transmission, each depositor has the same inference for long-term ROA. The depositor's balance in round  $n$  can be directly obtained by *P2*:

$$E_2 - \sum_{i=1}^{n+1} \Delta_i = \prod_{i=1}^n (1 - \lambda_n)(E_2 - \Delta_1).$$

Combining *P1* and *P2*, the cumulative number of bank runs in  $n \geq 2$  rounds is:

$$\Delta = \sum_{i=1}^n \Delta_n = \Delta_1 + (D_2 - \Delta_1) \prod_{i=2}^n (1 - \lambda_{i-2}) \lambda_{i-1},$$

where  $\lambda_0 = 0$ .

It should be noted that in analyzing the dynamic process of bank runs, special attention should be paid to the depositor's inference error (noise) sequence  $\phi$  of long-term ROA and

the weighting sequence  $T$  of information processing. Both are determined by the information processing capacity of the depositor and the efficiency of information dissemination of the economy itself. They are often unrelated to the ROA  $r$  and can be regarded as variables that characterize the financial institutional environment. This paper mainly deals with interest rate marketization (market-oriented interest rate). At different marketization levels, depositors and banks have different interpretations and dissemination efficiency of information, and varied processing capabilities as well, that is, different noise sequences  $\Phi$  and weight sequences  $T$  are used for characterization.

**3.2.4 Dynamic equilibrium.** We first define the dynamic equilibrium of the bank run and then propose a way to find dynamic equilibrium:

**Definition 2.** (Dynamic Equilibrium): There exists a round  $t^*$ , such that at the round  $t \geq t^*$ , any depositor  $i$  will no longer participate in a bank run, i.e.,  $\Delta_t^i = 0$ . Specifically, if the distribution information of this round's signal is given, and the following conditions are satisfied for any depositor  $i$ :

$$\int_{r+u}^{r+u} \left[ X_{n+1}^i + \rho(D_1 R_1 + D_2 R_2) - D_1 R_1 - \sum_{i=1}^n \Delta_i R_1 \right] f_{n+1}(\hat{r}_n^i | r_{n+1}^* = r_{n+1}^*) dr_n^i \geq \left( D_2 - \sum_{i=1}^n \Delta_i \right) R_1. \quad (3)$$

This state is called dynamic equalization.

However, equation (3) may not guarantee that the depositor who got the lower ROA information in the previous period can obtain a higher ROA information in this round. Therefore, it is necessary to consider the problems caused by this uncertainty. In particular, when the signal received by the depositor is invariably  $e_t^i = -e_t$  in any round  $t$ , according to the worst-sorting rule  $\omega^*$ , there is a certain round after which any depositor will stop the run. We thus call it the strong equilibrium state, which is summarized as follows:

**Definition 3.** (Strong equilibrium): If the equilibrium state is independent of the sorting rules, it is called a strong equilibrium.

It should be noted that the strong equilibrium state can only occur when the long-term asset yield  $r$  is large enough and the probability density function of the inference error  $e_t$  has a sufficiently high concentration on the right side of the integration interval, that is, the depositor has a higher probability of acquiring higher ROA signal. It can be seen as a constraint on the sorting rules. For a particular depositor, a higher expected assets earning rate will be received:

*P3.* Given a noise sequence  $\Phi$ , a weight sequence  $T$  and a probability density function  $q_i(\hat{e}_t)$  of the error, there is a dynamic equilibrium and a strong equilibrium if and only if the sorting rule is the worst-sorting rule.

*P3* provides a way to find (strong) equilibrium, for which we only need to verify whether the expected bias of the depositor's long-term ROA satisfies the worst-sorting rule. Given the similarity of other variables, the probability density function  $q_i(e_t)$  of inference error affects the expected value of the left part of the threshold value in equation (3). It can be seen that the form of probability density function of the depositor acquired signal also affects the equilibrium result.

According to the above analysis, the factors affecting the bank runs mainly involve three aspects: first, changing the weight sequence  $T$  of depositor information processing; second, changing the depositor's interpretation of long-term ROA information and dissemination error sequence  $\Phi$ . Both are endogenous in the financial system environment. In the environment with high degree of marketization, the market participants can accurately interpret and disseminate information, and thus the error is small. At the same time, the processing of information tends to be clear and rational, especially if depositor endows more weight to the next period of information. If the market information transmission efficiency is low, the

occurrence of the run still cannot be prevented. Third, changing the probability density function  $q_t(\hat{e}_t)$  of the depositor's pre-judgment information. Furthermore, the sorting rules are often determined endogenously by the depositor's attributes and cannot be easily and accurately identified, and measured by banks and policy designers. Therefore, such uncertainties may also lead to instability in the banking system.

#### 4. Model extension via the incorporation of DIS

This section introduces a DIS to expand the benchmark model and examine the potential impact of DIS implementation on the dynamic equilibrium of bank runs. Suppose that the DI quantity of the bank (depositor) provided by DI regulatory agencies is  $F = \gamma^* D$ ,  $0 \leq \gamma \leq 1$ , that is, when a bank run occurs, the bank (depositor) can obtain a financial aid with a total amount of  $F$ , where  $\gamma$  indicates the coverage (ratio) of DIS and is thus one of the key elements in the design of DIS. Assuming that whether the government implements DIS and the specific DI contract are common information shared by all participants such as depositors and banks, the implementation of explicit DIS will affect the bank's managerial decision-making via its effects on the bank's investment decisions, the depositors' expectations and behaviors commensurate with changes in long-term ROA, and the mechanism of market discipline, etc., thereby affecting the dynamic process and equilibrium of bank runs.

##### 4.1 Changes in the behavior of participants

Under the background of the financial system reform of interest rate marketization, DIS implementation will cause changes in the behavior of depositors and banks and other participants, which, in turn, will affect the bank-run process caused by depositors' expected liquidity shocks of long-term assets held by the bank. This is embodied in Figure 1, which characterizes the sequence of participants' decision-making: at  $t = 0$ , the government begins to implement a DIS, which will influence the bank's investment decisions at  $t = 0.5$  and will have an impact on the depositors' withdrawal behavior at  $t = 1$ .

*4.1.1 Changes in depositor behavior.* When DIS is implemented, it mainly affects the behavior of depositors in two aspects: first, as deposits are guaranteed, depositors may weaken their incentives to supervise the bank's investment decisions, leading to the waning of market discipline mechanism; second, expectations of depositors on the impact of changes on long-term ROA have changed,  $q(\bar{r}, F)$ . With the advancement and improvement of market-oriented interest rate, the depositor's ability to process information will be elevated, and the efficiency of information interpretation and dissemination will also escalate, thereby reducing the depositor's inference error sequence  $\Phi$  for long-term ROA. Meanwhile, the weighting sequence  $T$  used in the information processing process also becomes clearer and more rational, which will enhance the accuracy of the depositors' interpretation and processing of information, making them more patient to fluctuations of long-term ROA in banks, and more likely to hold stable the withdrawal expectations and decisions.

*4.1.2 Changes in banking behavior.* The impact of DIS implementation on bank investment decisions is mainly reflected in the following two aspects. First, it affects the allocation of investment assets of banks, prompting banks to reduce the number of holdings of current assets and beef up the investment amount of risk assets. With the advancement of interest rate marketization, the short-term and time deposit interest rates will be more flexible. Considering the increasing competition in the banking industry, the interest rate on deposits will increase, whereas the interest rate on loans will fall, resulting in narrowing interest rate spreads and more incentives for banks to invest in high-yield and high-risk projects. Second, the guarantee of DIS on behalf of the repayment of deposits may render the banks with loose self-discipline, especially for the economies in transition. The internal governance mechanism of banks is far from perfect; with the implementation of the explicit

DIS, banks will be more motivated to invest in high-risk projects. It can be seen that the above two aspects have invariably boosted the moral hazard behavior of banks.

At this point, bank's investment decision-making behavior that maximizes the expected utility changes. When the amount of DI is  $F$ , the bank's problem of maximizing the expected utility becomes:

$$\max_{\{L,X\}} \int [L - D_1 R_1 + \sigma(X\bar{r} - D_2 R_2)] q(\bar{r}, F) d\bar{r}$$

s.t.  $L + X \leq D,$

where  $q(\bar{r}, F)$  denotes the probability density function of long-term ROA while introducing DIS.

Further, the issue of maximizing the expected utility of banks is re-expressed as:

$$\max_{\{L,X\}} \int [(1 - \sigma\bar{r})L + \sigma D\bar{r} - D_1 R_1 - \sigma D_2 R_2] q(\bar{r}, F) d\bar{r}.$$

As with the benchmark model, since  $1 - \sigma\bar{r} < 0$ , the bank's asset allocation to maximize expected utility is  $L = 0$ , that is, the bank prefers to engage in high-risk investment projects. Therefore, the government usually requires banks to implement a liquidity management discipline through regulatory policies, i.e.,  $L = \rho(D_1 R_1 + D_2 R_2)$ . The difference is that DIS implementation will weaken this discipline. The specific manifestation is that the lowering of the parameter  $\rho$  can be explained by the bank's lowering of the pre-judged probability of the occurrence of the run-off behavior or the weakening of its internal governance mechanism, which will lead to its reduced holding of liquid assets, while adding up the amount of investment on risk assets. Coupled with the narrowing of potential interest margin gains in the process of interest rate liberalization, the banks' incentives for high-risk businesses to pursue high returns have led to serious moral hazard problems. Moreover, when there is insufficient information processing capability, the bank will have an overoptimistic estimate of the stability of DIS, which will lead them to relax their self-discipline and invest in high-risk projects. It can be seen that limited information processing capabilities may also lead to moral hazard issues.

In summary, DIS implementation will have an impact on the bank's investment decisions and depositors' behavior, and it will bring about the opposite dual effects of preventing run-off and eliciting moral hazard. The payment guarantee brought by DIS will decelerate the process of depositors' expectations on bank failures, thus having a restraining effect on bank runs. DIS implementation directly changes the bank's asset allocation decisions while weakening the supervision over banks and depositors, both of which are confronted with moral hazard problems while banks investing more in high-risk assets, and these effects are substantially sustainable. The following section will analyze the impact of DIS implementation on the bank-run process and dynamic equilibrium.

#### 4.2 Bank run and dynamic equilibrium

Continuing the previous analysis, the following section will examine the impact of DIS implementation on the two types of premature withdrawal motives of depositors, which, in turn, affects the process and dynamic equilibrium of bank runs.

*4.2.1 Bank-run process.* First of all, this paper analyzes the process of bank run in the new economic environment of DIS, which is divided into two periods.

In period 1, the depositor has incomplete information on the earnings rate of long-term assets  $r$  and error  $e_1$  in the interpretation of information, and there is a probability density function  $q_1(e_1, F)$  defined within the interval  $[-e_1, e_1]$ . Define the signal obtained by depositor  $i$  as  $r_1^i = r + e_1^i$ , then the probability density function of  $r_1^i$  is  $q_1(r_1^i - r, F)$ . In the new economic environment, the threshold value of the long-term ROA triggering a bank run is

subject to changes. The new threshold is defined as  $r_d^*$ , and it is determined by  $D_2R_2 = \rho(D_1R_1 + D_2R_2) - D_1R_1 + Xr_d^* + F$ .

When depositor  $i$  observes or expects a decrease in the long-term ROA, based on the Type 1 motivation, she/he will take out some of the long-term deposits in advance in period 1 to maximize the expected utility. As per the analysis of the benchmark model, for any long-term asset yield  $r$ , given the deposit arrangement of a depositor, we can invariably get  $\Delta_1^i = g(r, e_1, L; F)$ . It should be noted that both  $e_1$  and  $L$  will be affected by the DI amount  $F$  (a detailed analysis will be made below). Considering the following three scenarios, the number of bank runs that occurred due to Type 1 motivation of the round 1 depositors is discussed:

- (1) when  $r \geq r_d^* + 2e_1$ , then  $\Delta_1^i = 0$ ;
- (2) when  $r_d^* \leq r < r_d^* + 2e_1$ , then  $\Delta_1^i = \lim_{D_1^i \rightarrow 0} \int_{r_d^*-e_1}^{r_d^*+e_1} g(r_i, e_1, L) q_1(\hat{r}-r, F) d\hat{r}$ ; and
- (3) when  $r < r_d^*$ , then  $\Delta_1^i = \lim_{D_1^i \rightarrow 0} \int_{r-e_1}^{r+e_1} g(r_i, e_1, L) q_1(\hat{r}-r, F) d\hat{r}$ .

It can be seen that the depositor's premature withdrawal amount  $\Delta_1^i$  only appears in the expected utility function of period 1 and is uniquely determined by the equation  $\Delta_1 = \int_0^1 \Delta_1^i(\cdot) d\cdot$ .

The following analysis of the impact mechanism of DIS implementation on the first type of premature withdrawal motives mainly involves two aspects. First, DIS implementation will affect the threshold value of the long-term ROA triggering a bank run. As DIS provides guarantee for repayment of deposits, the depositor's tolerance for the decline in long-term asset yields increases, causing the threshold value of long-term asset yields to fall. It can be further inferred that with the increase in the ratio of DI coverage  $\gamma$ , the decrease rate of threshold value will increase. Since  $r_d^*$  is the upper limit to trigger (when it is lower than  $r_d^*$ ) the depositor's bank run, the decline of  $r_d^*$  can reduce the probability of bank run. Second, the bank's asset allocation structural changes can cause moral hazard problems. The bank expects that depositors' attitudes toward fluctuations in long-term ROA will change, coupled with the narrowing interest rate differentials brought about by interest rate liberalization. They will be more preferred to engage in high-yield and high-risk businesses, which will both help the banks to reduce liquidity assets and to augment investment incentives for risky assets. According to the above analysis, the two opposite effects are expressed as the following:

$$\frac{\partial \Delta_1^i}{\partial F} = \underbrace{\frac{\partial \Delta_1^i}{\partial r_d^*} \frac{\partial r_d^*}{\partial F}}_{A: \text{stabilizing effect}(-)} + \underbrace{\frac{\partial \Delta_1^i}{\partial L} \frac{\partial L}{\partial F}}_{B: \text{moral hazard effect}(+)}, \quad (4)$$

where the first part ( $A$ ) on the right side of Equation (4) indicates that DIS implementation affects the threshold value of the long-term ROA triggering a bank run, and thus affecting the premature withdrawal amount of deposits. Given  $(\partial \Delta_1^i / \partial r_d^*) > 0$  and  $(\partial r_d^* / \partial F) < 0$ , then  $A < 0$ , i.e., DIS implementation helps to curb the occurrence of bank runs, which is called the stabilizing effect. The second part ( $B$ ) indicates that DIS implementation affects the probability of bank runs via its impact on the bank's asset allocation changes. Given  $(\partial L / \partial F) < 0$  and  $(\partial \Delta_1^i / \partial L) < 0$ , we have  $B > 0$ , that is, DIS implementation will encourage incentives for banks to engage in high-risk business, leading to the negative effects of moral hazard.

In the second period, the depositor  $i$  receives a run signal with noise, and the judgment on the long-term ROA is updated to  $r'_1 = r + e_2^i$ , where  $e_2^i$  represents the depositor  $i$ 's inference error based on the previous round of information, with a probability density function  $q_2(e_2^i, F)$  defined within the interval  $[-e_2, e_2]$ . Accordingly, the probability density function of long-term ROA is  $q_2(\hat{r}_1 - r, F)$  defined within  $[r - e_2, r + e_2]$ . As in the analysis process of

the third section, the depositor uses the adaptive expectation model to weigh the information of the two adjacent periods to form a new inference. Considering a more general case, we define  $r_{d,n+1}^*$  as the threshold value of the long-term ROA triggering a bank run in round  $n$ , which satisfies the following conditions:

$$\int_{r_{n+1}^*-u}^{r_{n+1}^*+u} \left[ X\hat{r}_i + \rho(D_1R_1 + D_2R_2) - D_1R_1 - \sum_{i=1}^n \Delta_i R_i \right] f_{n+1}^i(\hat{r}_n^i | r_{n+1}^* = r_{n+1}^*) d\hat{r}_i = \left( D_2 - \sum_{i=1}^n \Delta_i \right) R_1 + F,$$

where  $f_{n+1}^i(\hat{r}_n^i | r_{n+1}^*, F)$  represents the conditional probability density function of the depositor  $i$ 's inference error on the long-term ROA in round  $n \geq 2$ , and  $\hat{r}_n^i = r + u_n$ .

Given the deposit composition of a depositor, it can be inferred from the monotonicity of the left side of the above equation that  $r_{d,n+1}^* < r_{n+1}^*$ , that is, DIS implementation will cause a decline of the threshold value of the long-term ROA upon which the bank run will (not) just happen, thus reducing the probability of a bank run. In turn, the ratio and number of bank runs of depositors at any round are obtained, which is expressed as the following proposition:

*P4.* In the case of DIS implementation, for any round  $n, n \geq 2$ , given the threshold value of the long-term ROA triggering a bank run,  $r_{n+1}^*$ , the ratio of bank runs is thus:

$$\lambda_n(r_{d,n+1}^*, u_n, F) = \int_{r-u_n}^{r_{d,n+1}^*} f_{n+1}^i(\hat{r}_n^i | r_{n+1}^*, F) d\hat{r}_i.$$

The corresponding number of bank runs is  $\Delta_n = (D_2 - \sum_{i=1}^{n-1} \Delta_i) \lambda_n(r_{d,n+1}^*, u_n, F)$ .

In the context of interest rate liberalization, the impact of DIS on the second type of premature withdrawal motives of depositors involves three aspects. First, DIS implementation will affect the threshold value of the long-term ROA triggering a bank run, which is similar to the impact of the Type 1 motivation. Second, the inference error of the depositor on the long-term ROA will be reduced, and the weighting process of the information becomes more rational and clear, that is, taking into account the small probability for large deviations, it is given a lighter weight. Conversely, a heavier weight is given to the smaller deviations, which leads to stable expectations and decision-making of withdrawal. Third, the bank may adjust the asset allocation structure and reduce liquid assets, increase venture capital, which triggers moral hazard issues that are similar to the impact of the Type 1 motivation. Specifically, in any round, the impact of DIS implementation on the bank-run ratio can be broken down into three parts:

$$\frac{\partial \lambda_n(r_{d,n+1}^*, u_n, F)}{\partial F} = \underbrace{\frac{\partial \lambda_n(\cdot)}{\partial r_{d,n+1}^*} \frac{\partial r_{d,n+1}^*}{\partial F}}_D + \underbrace{\frac{\partial \lambda_n(\cdot)}{\partial u_n} \frac{\partial u_n}{\partial F}}_C + \underbrace{\frac{\partial \lambda_n(\cdot)}{\partial L} \frac{\partial L}{\partial F}}_B, \quad (5)$$

D:stabilizing effect(-)      B:moral hazard effect(+)

where the first part (*A*) indicates that DIS implementation directly affects the threshold value of the long-term ROA triggering a bank run, which, in turn, affects the ratio of depositors' bank runs. From  $\partial \lambda_n(\cdot) / \partial r_{d,n+1}^* > 0$  and  $\partial r_{d,n+1}^* / \partial F < 0$ , we derive *A* < 0; the second part (*C*) analyzes the impact of DIS implementation on the depositor pre-judgment bias sequence and weight sequence as a channel to influence the bank-run ratio. From  $\partial \lambda_n(\cdot) / \partial u_n > 0$  and  $\partial u_n / \partial F < 0$ , we derive *C* < 0. It can be seen that both results show that DIS implementation has a restraining effect on bank runs, namely, *D* = *A* + *C* < 0. Thus, they jointly form a stabilizing effect. The third part (*B*) indicates the transmission path of moral hazards in banks after DIS implementation when the banks are more inclined to invest in high-risk assets because they expect the DI institutions to provide repayment guarantees for potential crises. At the same

time, the narrowing of bank interest spreads brought about by the advancement of interest rate marketization will strengthen this effect. *Ceteris paribus*, it is bound to increase the probability and ratio of bank runs, namely,  $B > 0$ .

Based on the analysis of the above two periods and multiple rounds of bank-run process, and the results of Equations (4) and (5), DIS implementation has two opposite effects of stabilizing withdrawal expectation and inducing moral hazard, which are mainly reflected in the following three aspects. First, DIS implementation can reduce the threshold value of bank runs when depositors expect changes in long-term ROA, and it can cut down the probability and ratio of bank runs, which are reflected in Equation (4) of Type 1 motivation and the first part of Equation (5) of Type 2 motive. Second, with the advancement of the interest rate marketization, DIS implementation will reduce the depositor's inference error sequence for the long-term ROA, and at the same time, the weighted sequence of weights used in information processing also becomes more rational and clear, thereby reducing the population deviation of the depositor's pre-judgment and reducing the probability and ratio of bank runs, which are reflected in the second part of Equation (5) of Type 2 motive. Third, DIS implementation encourages banks to have greater incentives to engage in high-risk businesses to reap greater yields, and it uplifts depositors' expectations of DIS providing all or part of the deposit payment security, thus weakening their oversight of the banks and eliciting more moral hazard behaviors in the latter. These are reflected in the second part of Equation (4) of Type 1 motivation and third part of Equation (5) of Type 2 motivation. The first and second aspects above show that DIS implementation has a stabilizing effect on bank runs, whereas the third aspect will lead to moral hazard problems in banks. The total effect depends on the strength comparison between the two.

As defined by dynamic equilibrium, we need to determine a threshold round  $t^*$ ; after  $t \geq t^*$  rounds, any depositors no longer initiate a bank run. From the above analysis, it can be seen that DIS implementation can affect the threshold round triggering a bank run. Specifically, the stabilizing effect achieved by DIS implementation can reduce the threshold rounds, so that the bank run ends early. Conversely, the moral hazard effect can augment the probability and ratio of bank runs, and eventually the runs end late. Therefore, policy makers need to integrate and balance the stabilizing effects and moral hazards while introducing and implementing DIS.

## 5. Conclusions and policy implications

As one of the three pillars of the financial safety net, DIS, together with prudential supervision, and the central bank as lender of last resort, promotes the healthy development of the financial system, helps prevent and resolve risks in a timely manner, and maintains the stability of the financial system. In May 2015, the "Regulations on Deposit Insurance" officially came into force, marking the formal entry into the implementation level of DIS that the government and academia have discussed for many years. Then, in the context of interest rate marketization, how to effectively put DIS "in place" and achieve the expected goal is an urgent problem to be studied.

In view of the interest rate marketization, we comprehensively considered the economic environment for banks' investment decision-making and depositors' consumption decision-making. Based on the dynamic perspective, this paper constructed a bank-run model of multi-round noise information transmission, discussed the dynamic process of bank run in stages, and separately considered the two types of premature withdrawal motives of the depositors. The ratio and quantity of bank runs are derived from the fluctuations of long-term ROA held by the bank, the sorting rule of the depositor's pre-judgment error, the information processing and disseminate efficiency under information asymmetry and other factors, and the corresponding dynamic equilibrium is characterized. We further incorporated the DIS into our benchmark model, described the impact of DIS implementation on bank and depositor behavioral decision-making, and then studied the influence mechanism of DIS on bank-run process and the corresponding dynamic equilibrium by analyzing its impact on depositors' two types of

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premature withdrawal motives. The research results show that DIS implementation has two opposite effects of stabilizing expectation and eliciting moral hazards, which are mainly reflected in the following three aspects. First, DIS implementation can reduce the threshold value of bank runs when depositors expect changes in long-term ROA, and it can cut down the probability and ratio of bank runs. Second, with the advancement of the interest rate marketization, DIS implementation will reduce the depositor's inference error sequence for the long-term ROA, and at the same time, the weighted sequence of weights used in information processing also becomes more rational and clear, thereby reducing the population deviation of the depositor's pre-judgment and reducing the probability and ratio of bank runs. Third, DIS implementation encourages banks to have greater incentives to engage in high-risk businesses to reap greater yields, and it uplifts depositors' expectations of DIS providing all or part of the deposit payment security, thus weakening their original oversight of the banks and eliciting more moral hazard behaviors in banks. The effect of implementing a DIS depends on the comparison of stabilizing effects and moral hazards, which rests with the institutional environment, thus requiring policy makers to comprehensively consider the trade-off between stabilizing effects and moral hazards while introducing and implementing DIS.

DIS is an important groundwork system for national finance. It provides institutional guarantee for the reform of the financial system, especially the promotion of interest rate marketization, and it improves the operational efficiency of the financial market. However, in the implementation process of DIS, it is necessary to take into account the moral hazards caused by imperfect supporting policies and measures. This requires proper handling of the dynamic relationship between interest rate marketization, DIS and financial transformation and development. The study has the following policy implications. While implementing DIS, on the one hand, efforts should be made to reinforce the construction of financial regulatory mechanisms, strengthen market discipline, improve the role of the bank's internal governance mechanisms, and reduce the negative impact of potential moral hazards. On the other hand, efforts should be made to further deepen the reform of the financial system, improve the efficiency of processing and dissemination of information, reduce the deviation of depositors' pre-judgment of bank yield information, and encourage depositors to form stable withdrawal expectations in the face of changes in long-term asset yields of banks, thereby enhancing the stabilizing effect of DIS.

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### Notes

1. Given the strong externalities of the financial industry, the financial industry is the most regulated industry, even in mature developed market economies.
2. For the demonstration process of DIS implementation, refer to Su (2005).

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**Appendix**

(1) Proof of *P1*: Proof: by Equation (1), we have:

$$B_i = \int_{(r_i^2-u)}^{(r_i^2+u)} \hat{r}_i f_2^i(\hat{r}_i | r_i^2 = r_2^*) d\hat{r}_i.$$

By Lemma 1, for depositors  $i$  and  $j$ , we have:

$$f_2^j(\hat{r}_j - \delta) = f_2^i(\hat{r}_j).$$

Here:

$$\delta = t_1 e_1^i + (1-t_1) e_2^i - t_1 e_1^j - (1-t_1) e_2^j > 0,$$

and thus:

$$B_i = \int_{r+t_1 e_1^i + (1-t_1) e_2^i - u}^{r+t_1 e_1^i + (1-t_1) e_2^i + u} \hat{r}_i f_2^i(\hat{r}_i) d\hat{r}_i,$$

$$B_j = \int_{r+t_1 e_1^j + (1-t_1) e_2^j - u}^{r+t_1 e_1^j + (1-t_1) e_2^j + u} \hat{r}_j f_2^j(\hat{r}_j) d\hat{r}_j.$$

Let  $\hat{r}_i = \hat{r}_j + \delta$ , and by placing it in equation  $B_j$ , we have:

$$B_j = \int_{r+t_1 e_1^j + (1-t_1) e_2^j - u}^{r+t_1 e_1^j + (1-t_1) e_2^j + u} (\hat{r}_j - \delta) f_2^j(\hat{r}_j - \delta) d\hat{r}_j = \int_{r+t_1 e_1^j + (1-t_1) e_2^j - u}^{r+t_1 e_1^j + (1-t_1) e_2^j + u} (\hat{r}_i - \delta) f_2^i(\hat{r}_i) d\hat{r}_i = B_i - \delta < B_i.$$

Therefore, for depositors with signal  $r_i^2 < r_2^*$ ,

$$\int_{r+t_1 e_1^i + (1-t_1) e_2^i - u}^{r+t_1 e_1^i + (1-t_1) e_2^i + u} \hat{r}_i f_2^i(\hat{r}_i) d\hat{r}_i = B_i < B^*.$$

Here:

$$B^* = \int_{r_2^*-u}^{r_2^*+u} \hat{r}_i f_2^i(\hat{r}_i) d\hat{r}_i,$$

where  $r_2^*$  is the threshold value for a run.

Also,

$$f_2(\hat{r}) = \int_{(1-t_1)(r-e_2)}^{(1-t_1)(r+e_2)} q_1\left(\frac{r-y}{t_1}-r\right) q_2\left(\frac{r-(1-t_1)r}{1-t_1}\right) dy.$$

Thus, the ratio of depositors who conduct bank runs is  $\lambda_1 = \int_{r_2^*-u}^{r_2^*} f_2(\hat{r}|r) d\hat{r}$ . ■

(2) Proof of *P2*:

Proof: Consider  $n = 2$ , let:

$$C_i = \int_{r_3^*-u}^{r_3^*+u} \hat{r}_i f_3^i(\hat{r}_i | r_3^i = r_3^*) d\hat{r}_i.$$

Here,  $u = t_1 t_2 e_1 + (1-t_1) t_2 e_2 + (1-t_2) e_3$ .

As per Lemma 2, let:

$$\delta = (1-t_2)e_3^i + t_2[t_1e_1^i + (1-t_1)e_2^i] - (1-t_2)e_3^j - t_2[t_1e_1^j + (1-t_1)e_2^j] > 0.$$

We have:

$$C_i = \int_{r+(1-t_2)e_3^i + t_2[t_1e_1^i + (1-t_1)e_2^i] - u}^{r+(1-t_2)e_3^i + t_2[t_1e_1^i + (1-t_1)e_2^i] + u} \hat{r}_i f_3^i(\hat{r}_i) d\hat{r}_i,$$

$$C_j = \int_{r+(1-t_2)e_3^j + t_2[t_1e_1^j + (1-t_1)e_2^j] - u}^{r+(1-t_2)e_3^j + t_2[t_1e_1^j + (1-t_1)e_2^j] + u} \hat{r}_j f_3^j(\hat{r}_j) d\hat{r}_j.$$

Replacing  $\hat{r}_i = \hat{r}_j + \delta$  into equation  $C_j$  yields:

$$\begin{aligned} C_j &= \int_{r+(1-t_2)e_3^i + t_2[t_1e_1^i + (1-t_1)e_2^i] - u}^{r+(1-t_2)e_3^i + t_2[t_1e_1^i + (1-t_1)e_2^i] + u} (\hat{r}_i - \delta) f_3^j(\hat{r}_i - \delta) d\hat{r}_i \\ &= \int_{r+(1-t_2)e_3^i + t_2[t_1e_1^i + (1-t_1)e_2^i] - u}^{r+(1-t_2)e_3^i + t_2[t_1e_1^i + (1-t_1)e_2^i] + u} (\hat{r}_i - \delta) f_3^i(\hat{r}_i) d\hat{r}_i = C_i - \delta < C_i. \end{aligned}$$

Thus, for depositors with signal  $r_3^i < r_3^*$ , it derives:

$$\int_{r+(1-t_2)e_3^i + t_2[t_1e_1^i + (1-t_1)e_2^i] - u}^{r+(1-t_2)e_3^i + t_2[t_1e_1^i + (1-t_1)e_2^i] + u} \hat{r}_i f_3^i(\hat{r}_i) d\hat{r}_i = C_i < C^*,$$

where:

$$C^* = \int_{r_3^*-u}^{r_3^*+u} \hat{r}_i f_3^i(\hat{r}_i) d\hat{r}_i.$$

$r_3^*$  is the threshold of the run and satisfies the following:

$$f_3(\hat{r}) = \int_{(1-t_2)(r-e_2)}^{(1-t_2)(r+e_2)} f_2\left(\frac{\hat{r}-y}{t_2}\right) q_3\left(\frac{y-(1-t_2)r}{1-t_2}\right) dy.$$

Therefore, the ratio of depositors participating in bank runs is  $\lambda_2 = \int_{r-u}^{r^*_3} f_3(\hat{r}|r) d\hat{r}$ . When  $n > 2$ , by the above similar analysis process, we obtain:

$$\lambda_n(r_{n+1}^*, u) = \int_{r-u}^{r_{n+1}^*} f_{n+1}(\hat{r}_n | r_{n+1}^* = r_{n+1}^*) d\hat{r}_n : \text{Q.e.d.}$$

### (3) Proof of P3:

Proof: ( $\Leftarrow$ ) Obviously holds. ( $\Rightarrow$ ) For depositors with a signal satisfying  $e_1^i = -e_1, e_2^i = -e_2, e_3^i = -e_3, \dots$ , it can be inferred that no one can get a worse signal. Since all depositors process information according to the same method, it can be seen from the proof process of Lemma 2 and P2 that the expected value of the long-term ROA of the depositor corresponding to the worst-sorting method is the lowest. If the depositor does not run, no other depositors will, and it is thus a strong equilibrium. ■

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# Building a modern economic system: basic framework, key issues, and theoretical innovation

Building a  
modern  
economic  
system

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## Abstract

**Purpose** – The construction of a modern economic system is a symbolic and strategic choice for large developing economies on the path toward high-quality economic development. The paper aims to discuss this issue.

**Design/methodology/approach** – The overall framework aims to adhere to “One Policy and One Mainline” to build an innovation-driven, synergistic industrial system and a “with three-qualities” economic system (with efficient market mechanisms, energetic micro-agents and appropriate macroeconomic regulation).

**Findings** – The strengthening of the real economy and construction of a modern industrial system constitute the material basis for supporting this system and framework. As major decision making and theoretical innovation in empirical practice, building a modern economic system can also contribute substantially toward developing the applied economic theory of socialism with Chinese characteristics.

**Originality/value** – Building a modern economic system in China necessitates, without exception, the construction of various subsystems encompassing industrial, market, distribution, regional development, green development, open and economic institutional aspects.

**Keywords** Modern economic system, High-quality development, Real economy, Economic theory innovation

**Paper type** Research paper

A general guiding principle of China's economic construction in the new era is to shift from the pursuit of a high-speed economy to the pursuit of high-quality economic development to accelerate the establishment of a modernized economic system (Liu, 2018a). This principle is the strategic goal of China's development and an urgent requirement in the crucial period of transforming the development model, optimizing the economic structure and switching the growth momentum. General Secretary Xi Jinping pointed out that building a modern economic system resembles writing a substantial article with not only a major theoretical proposition but also a major practical perspective to be discussed in depth through the integration of theory and practice. An in-depth discussion of this important paper is undoubtedly valuable and effective in grasping the objectives, connotations and key points of building a modern economic system; seeking solid and practical policy measures and actions; or summing up lessons and possible theoretical innovations. This process enriches the valuable collection of the socialist economic theory with Chinese characteristics.



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## 1. Strategic significance of a large developing power's effort to build a modern economic system

The modern economic system refers to an economic concept of high originality that is innovatively proposed by the General Report the 19th National Congress of the Communist Party of China (CPC) based on the idea that “for a country to be strong, the economic system must be strong,” and the wisdom of the entire Party and the country’s citizens. Building a modern economic system, which is the economic foundation of a modernized power, is an important approach to address the major contradictions in the new era by sufficiently emphasizing its role and strategic position.

The major contradictions in Chinese society have undergone profound changes at the new era of rapid development of productivity. These changes are manifested in two ways. First, the people's needs have evolved into the demand for a better life beyond material factors to include improved education, secure jobs and decent incomes, reliable social security, high levels of healthcare, comfortable living conditions, a beautiful environment, and a rich spiritual and cultural life. Second, the problem of addressing backward productivity has evolved into the problem of addressing the imbalance and inadequacy of development and the deficient total supply problem has changed into a structural problem. However, the major social contradictions in the new era also have two characteristics that remain unchanged. The first constant characteristic is that China is still and will remain at the primary stage of socialism on a long-term basis, given the fundamental reality that the country is still the largest developing economy in the world. Therefore, taking full account of this picture, the strategic policy to achieve the Two Centenary Goals aims to focus on economic construction and unswervingly prioritize development in governing and rejuvenating the country. The second constant characteristic is related to the economic attributes of the major contradictions in society. In the past, China's socioeconomic development aimed primarily to overcome the shortage economy, and now, albeit the rapidly developing productivity, the development quality still lags far behind that of developed countries, as reflected in the unbalanced and inadequate structure on the supply side and the upgrading demand structure on the demand side. The major social contradiction in the new era is essentially a contradiction in the levels of development of productive forces. To date, we have adhered to development as the top priority and economic construction as the focus, with a view to addressing the issues of fairness or foulness, structural imbalance and quality rather than solving the problem of the absence or affluence of supply.

At the stage of speed-oriented development, the one dimension challenge is solving the problem of absence or affluence of supply, while at the stage of quality-oriented development, the multidimensional tasks will produce more complex problems, which entails the fundamental upgrade of the idea of economic centered development, with a speed-oriented system being transformed into a quality economic system. We should construct an economic system with the methodology of systematic thinking to tackle the aspects as follows.

First, they differ in terms of their historical conditions and backgrounds. In the pursuit of high-speed development, we are faced with the problem of living standards in poverty or subsistence level, with the shortage economy as its basic feature. The background of the Cold War between East and West also requires China to implement catch-up strategies in an unbalanced manner across departments and regions. In the pursuit of high-quality development, China is in a comprehensive well-off phase that accelerates into the basic modernization stage. The economy is generally overheating, and the unbalanced catch-up strategy should be gradually replaced by a balanced development approach.

Second, they differ in terms of dimensions of development evaluation. The high-speed development stage fits in with a single-dimensional evaluation in which quantity is the main policy pursuit. In the high-quality development stage, a multidimensional evaluation is required, which is not limited to quantity but emphasizes quality as the most fundamental requirement such as the need for a better life in terms of income, education, work, social

security, healthcare, living conditions and environment. Therefore, high-quality development embodies the new development concept in which innovation becomes the first driving force, harmony the endogenous characteristic, greenness the universal appeal, openness the necessary path and sharing the fundamental purpose.

Third, means and tools for implementation for the two are different. In the high-speed development stage, the targets of demand are homogeneous, small in quantity, narrow in scope, and clear-cut. At this point, the efficient management method would be the government speaking for the people's choice, concentrating resources to achieve unbalanced development, and using planned instruments. In the high-quality development stage, the components of the target demands are complex, large in scale, highly variable and have a prohibitive cost of information acquisition. At this stage, endogenous regulation of the market would be the optimal adjustment method. The range and scale of markets and non-markets that correspond to the needs of a better life are expanding. The market failures in the rapidly growing non-market regulation sector call for the government to change its jurisdiction and management functions.

While the small economy can achieve a specialized division of labor and cooperation by embedding into the global economy, thereby establishing an open and modern economic system that relies on external relations, for a large economy such as China, through participating in the international division of labor is also an inevitable step toward establishing a modern power. However, the most important task for China's development strategy is to build an independent and open modern economic system based on the incessantly growing and large-scale domestic demand. This truth is self-evident. Due to the limitation of the scale of domestic demand, small economies do not have the need or capability to build a large number of full-fledged modern industries with economies of scale. To survive, small economies have to abandon multiple industrial fields to leverage external markets on a wide scale and establish dependent relationships with larger and stronger economies in the world. A powerful economy with a large population, such as China, which is concerned with cost savings and economic security, has to acquire and utilize global resources, technology and knowledge by opening up. However, due to the exclusive nature of global economic competition, the core key technologies and knowledge needed for China's industrial development are impossible to exchange in the market or buy with money. These technologies and knowledge must be researched and developed independently. Otherwise, establishing a solid manufacturing industry and a strong military industry is impossible. The long-term stability of the country requires that Chinese people's jobs remain in their own hands, and that China's important and key industrial technologies must also be in the hands of the Chinese.

## 2. Major connotations of construction of modern economic system

General Secretary Xi emphasized that the modern economic system is an organic whole consisting of intra- and interrelationships among all links, levels and sectors of socioeconomic activities. In other words, this organic system consists of workers, peasants, merchants, students, and soldiers, as well as prices, financing, commodities and logistics. All aspects, directions and dimensions are connected by production, circulation, distribution, consumption, investment and reproduction links. This system cannot be understood in an isolated and one-sided manner and must be systematically analyzed in close conjunction with all aspects of the national economy.

In the past four decades, China has adhered to the construction of a socialist market economic system under the general trend of the transition economy. This reform and construction task has resulted in world-renowned achievements. China now appears to be among the world's middle-class developed countries in the next 20 years or so. Although the reform of the institutional mechanism is the basic guarantee, accelerating the development of productive forces through innovation is a fundamental need that calls for a larger and

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grander vision and program. Drawing on the development experience and some useful practices of the developed countries in the world, and according to China's national conditions, this vision and program is to build a modern economic system. According to the economic thinking of General Secretary Xi, the modern economic system primarily includes the following subsystems.

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### *2.1 Industrial system*

This is the foundation and core of a modern economic system. From the perspective of the modern economic growth theory, establishing an industrial system with real economic development as the goal is necessary with scientific and technological (S&T) innovation, modern finance and human resources as input factors. The modern industrial system requires cooperation among these four elements instead of each one competing for its own sake. The overall goal is to continue to grow the real economy. The contribution of S&T innovation in the development of the real economy will continue to increase, the ability of the financial system to serve the real economy will continue to be enhanced, and the role of human resources to support the development of the real economy will be continuously optimized.

### *2.2 Market system*

This is the decisive mechanism for allocating resources in the modern economic system. Only by establishing and perfecting a market system with smooth access, well-aligned openness, full competition and normative order can an economy provide enterprises with an excellent environment of independent management and fair competition, create a space for consumers to freely choose and consume independently, realize the free flow and equal exchange of goods and factors, and lay a micro-foundation for high-quality economic development.

### *2.3 Distribution system*

This is an incentive mechanism for a modern economic system. On the basis of pursuing efficiency, the basic requirements and fundamental indicators of economic modernization consist of distribution and redistribution tools to achieve reasonable income distribution among members of society, gradually narrowing the gap between income and wealth distribution, and promoting prosperity for all and inclusiveness of basic public services.

### *2.4 Regional development system*

This is the spatial layout of the modern economic system. The general requirement is to balance efficiency and equity, and achieve the productivity-layout goal of high utilization efficiency of land and resources, large factor intensity, moderate ecological capacity, continuous urban agglomerations and small regional development gaps.

### *2.5 Green development system*

This is the ecological and environmental basis of the modern economic system and an important part of national wealth. The general requirements are to save resources, be environmentally friendly, achieve green recycling and low-carbon development, and live in harmony with nature.

### *2.6 Open system*

This is the link between the national economic system and the outside world. A high-level open economy is an economy that deeply joins the global division of labor system and has a virtuous cyclical relationship with the world economy. Such an economy not only exports

goods and elements but also absorbs them; it does not only bring products in but also delivers them globally; and it is not only open to the East but is also open to the West and South along the “belt and road.”

## 2.7 Economic system

This is the institutional basis of a modern economic system. It is not only the Western market economic system that represents the modern market economy. The new era of socialist market economy with Chinese characteristics is characterized by giving full play to the decisive role of the market and that of the government to achieve efficient market mechanisms, energetic micro-agents and appropriate macroeconomic regulation.

China is not only the second largest economy in the world, but is also a big country in transition. First, China is still in the process of fully transitioning to the socialist market economic system. The economic systems that support the modern economic system, especially the market system, are not perfect and sound (Ning, 2017). Second, China is a developing country faced not only by underdeveloped productivity, but moreover, the problem of a highly uneven internal structure. From the relatively primitive agricultural and handicraft industries to the world's leading aerospace industry technology, China's industrial technology system has a typical gradient distribution. Therefore, the construction of a modern economic system needs to face the basic national conditions and transform many of the basic strategies that have worked effectively in the past but are no longer adapted to current national conditions.

The first fundamental strategic transformation is to shift the non-equilibrium strategy to a balanced one. The unilateral pursuit of economic speed must evolve toward protecting the ecological environment, developing key technologies, consolidating basic public services and infrastructure, and strengthening factor markets. The second fundamental strategic transformation is to move from increasing the scale of savings and the rate of capital formation to building an innovation-oriented and four-in-one synergistic industrial system. The third fundamental strategic transformation is to strengthen the market-oriented allocation of factors on the basis of market-oriented allocation of commodities. Promoting or accelerating structural transformation in the high-quality development stage is the micro-foundation for building a modern economic system. The promotion of high-speed transformation of structures depends principally on the degree of market-oriented allocation of factors, especially the role of capital markets. The fourth fundamental strategic transformation is to shift the principle of distribution from one that “gives priority to efficiency with due consideration to fairness,” which has been implemented for a long time, to shared distribution based on efficiency. The objective is not only to stimulate consumption and expand domestic demand but also to alleviate social conflicts and prevent development from falling into the middle-income trap. The fifth fundamental strategic transformation, in terms of spatial relations, is to find an equilibrium point in giving priority to industrial or regional policy. The major tasks in this regard are revitalizing the countryside primarily by developing urban agglomerations, building a world-class advanced manufacturing cluster, balancing regional relations and accelerating the integration of economic development in China's major administrative regions. The sixth fundamental strategic transformation is to internalize “greenization,” which meant cost-free and poverty in the past but now means income, welfare and wealth as a cleaner, low-carbon economy. The accounting of green GDP has to be strengthened, the focus should shift from the gross national product to the national ecological output value, and a compensation mechanism for the ecological environment should be built. The seventh fundamental strategic transformation is to shift from export-oriented globalization to one based on domestic demand. This change is a necessary condition for the formation of an innovation-driven economy and also the basic requirement for building an independent and modernized economic system. The eighth fundamental

strategic transformation is to build an economic system and mechanism aiming at high-quality development. The major contents are hardening of ownership constraint (that is budget constraints), construction of a local government mechanism competing for high-quality, an industrial policy that gradually gives way to competition policy and legalization of the government's macro-control system.

### 3. General framework for China's construction of a modern economic system

Building a modern economic system is the top-level design of the central government for China's economic development framework. In accordance with the policies set forth in the report of the 19th CPC National Congress, the overall framework of the modern economic system is to adhere to "One Policy and One Mainline," to build an innovation-driven, "Four-in-one" synergistic industrial system and a "with three-qualities" economic system (Yang, 2017).

Adhering to One Policy means that quality comes first, while efficiency remains a priority. This situation reflects the profound reflection of the CPC on the past development model since the 19th National Congress. China's catch-up strategy has led to world-renowned economic achievements. However, due to the tilting effect of the unbalanced development model, it has left "significant structural imbalances" that plague future high-quality development. The people's ever-growing need for a better life vs the unbalanced and inadequate development has become the major contradiction in society. To this end, we must first rectify the deviation in strategy to shift from the pursuit of a high growth rate to the pursuit of building a high-quality economic system, to achieve the double catch-up in terms of the development speed and the people's livelihood and welfare. This strategic shift, superimposed by China's snowballing aging population, denotes that the development conditions have undergone tremendous changes. One of the most important phenomena is the continuous rise in factor prices. The reason is self-evident: the development speed has been reduced, but the requirements for the people's welfare and environmental protection have escalated, and so does the labor burden factor. In other words, the social cost of development has increased. If this rising cost trend cannot be offset by high-quality development forces, such as S&T innovation and advancement of productivity growth, and cannot shift from the low-cost advantage of the past to the high added-value competitive advantage, then the internal driving force of China's future development will be attenuated. The slowdown in growth rate, coupled with the pressure of cost-driven inflation, will likely lead to a stagflation pattern in China's economic operations and entrapment in middle-income development. Therefore, promoting the three major transformations in quality, efficiency and driving force has become an inevitable choice for adhering to the principle of "quality first while giving priority to efficiency."

"One Mainline" aims to deepen the structural reform of the supply side by promoting major transformations in quality, efficiency and driving force. Addressing the "significant structural imbalance" at the present stage necessitates adjusting the structure to gear up speed, uplift quality, and elevate benefits. This is the only proper course to take to solve the major contradictions in the new era. The major problem in the current economic operation is the existence of such a "significant structural imbalance" between the supply structure, quality system and escalating social demand structure, thereby resulting in overcapacity, resource allocation distortion, inefficiency and dysfunction. To promote the construction of a modern economic system with supply-side structural reform as the main line, the focus shall be placed on accelerating the development of advanced manufacturing, strategic new industries and high-tech industries, and promoting the deep integration of the internet, Big Data and artificial intelligence into the real economy (Liu, 2018). The first step is to cut taxes and charges to reduce the burden on enterprises in the real economy. The second is to relax the administrative control and micro-control on these enterprises to enable them to participate unfettered in the new round of global competition, and let the market mechanism

fully play its roles in self-regulation and self-repair. In other words, governments at all levels need to increase their input in promoting the integration of production factors into the real economy. Institutional innovation shall be geared toward the real economy, and economic policy and work forces shall prioritize the real economy to create a social environment that is characterized by down-to-earth and diligent entrepreneurship development.

The construction of an innovation-oriented and “Four-in-one” synergistic industrial system aims to build an industrial system with coordinated development of the real economy, S&T innovation, modern finance and human resources. The development of the real economy is the guideline and goal. Any unhealthy tendency to break away from the development track of the real economy, which renders self-service, self-circulation and self-reinforcement for the virtual economy, will shake the foundation of the national economy and should be rectified. S&T innovation is the first driving force for the development of the real economy. Modern finance is the blood circulation system that maintains the healthy operation of the real economy. Human resources constitute the primary productive force for building a modern economic system. Section 4 of this paper shall discuss the approaches to build this modern industrial system.

Building a “with three-qualities” economic system necessitates an efficient market mechanism, dynamic micro-agents, and appropriate macroeconomic regulation. Every major progress in the construction of China’s modern economic system comes from bold reforms and innovations in systems and mechanisms that are unsuitable for the development of productive forces. The Chinese economic miracle is a major victory in market-oriented reform. Constantly adjusting and reforming the relationship between the government and the market in the future is the principal path for building a modern economic system based on the following basic principles. First, the government shall play fair instead of playing more. The administrative intervention shall be appropriately reduced through negative lists and lists of authorities and responsibilities. The “better off” standard shall tolerate no nonfeasance, ultra vires, and malfeasance in administration. Second, the Laissez-faire system shall be considered as the biggest “hand,” and the government should perform more “subtraction” in matters beyond the power list. Third, Laissez-faire is not “hands off.” Norms for supervision and arbitration of market activities should be formulated to correct market failures and enable the market entities in non-profit areas to provide sufficient external conditions for market development.

#### **4. Innovation-oriented and synergistic development of the industrial system constitutes the foundation of the modern economy**

The synergistic development of the industrial system consisting of the real economy, S&T innovation, modern finance and human resources (hereafter referred to as “innovation-oriented and synergistic development”) is a new goal of the industrial system construction that the CPC creatively devises from the perspective of factor input. This goal is also a major theoretical innovation in China’s development practice that respects the laws of economic development. This concept emphasizes that growth should enable the synergies of advanced production factors and focus on improving total factor productivity. Furthermore, the production factors invested in the national economy must ultimately be infused into the real economy to encourage the financial sector to serve the real economy and leverage the modern financial mechanism to support S&T innovation and economic growth.

In practice, building an industrial system of innovation-oriented synergistic development entails focusing on three pairs of relationships (Liu, 2018b).

##### *4.1 Relationship between the real economy and S&T innovation*

The general principle is to boost incessantly the contribution of S&T innovation in the development of the real economy. At present, the gap between China’s S&T research level and

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that of the world is smaller than that between the real industry level and that of the world. The major reason for this contradiction may be that China's scientific research is out of touch with the real economy. Another possible reason is that the system is not perfect enough to encourage scientists to transform their research results due to concerns about weak protection of intellectual property rights and lack of support for the industrialization of scientific research results. The gap between S&T achievements and the real economy is an old problem. One way to solve it is to industrialize scientific research activities and serve the real economy in accordance with the laws of the market. However, not all links of scientific research activities can be industrialized. The links can be divided into two stages: the first stage is to turn money into knowledge, which is the domain of scientists, and the second stage is to turn knowledge into money, which is the entrepreneurs' business. The two cannot be confused. In the first stage, we should emphasize the originality and uniqueness of scientific research. However, in the second stage, if the scientific research activities cannot be conducted with a focus on industrialization, then the economic self-circulation process will be blocked, and a serious imbalance will emerge between the real economy and S&T innovation.

#### *4.2 Relationship between the real economy and modern finance*

The general principle is to incessantly enhance the ability of modern finance to serve the real economy. The major problem in current practice is the "hollowing out" of manufacturing, that is, a situation in which excessive financial development affects the healthy development of the manufacturing sector. When the real economy is not real enough and the virtual economy is extremely virtual, the funds operate within the financial system instead of going into the real economy. At the same time, the real economy itself has overcapacity, excessive leverage, low productivity and cannot create a satisfactory rate of return for investors. Therefore, it cannot absorb sufficient development resources. In 2017, the central government was resolute in deleveraging and cutting overcapacity, which enabled many enterprises to get rid of heavy debt burdens, thereby helping the economy to gradually recover its vitality. The phenomenon of "underweighted real economy and overweighted virtual economy" is directly related to the issue of "asset shortage" in China's economic operation, which is manifested in the huge financial needs of the residents vs the limited supply of assets. Thus, the asset price is constantly raised, thereby making the development environment unfavorable to the real economy. The people's demand for a better life includes both material and cultural components along with the need to manage wealth. The added value of wealth constitutes a basic demand after the improvement of living standards. The failure to meet the growing financial management needs of residents constitutes one of the important reasons for the excessive currency inflows and accumulation of bubbles in China's real estate sector. Therefore, an important task to balance the relationship between the real economy and modern finance is to actively develop the latter so that it can provide the society with more quality assets for financial management.

#### *4.3 Relationship between the real economy and human resources*

The general principle is to continuously optimize the role of human resources to support the development of the real economy. We have to revitalize the real economy so that it can attract outstanding talents. The sectors where talents are willing to go are entirely based on personal choices, but from a strategic national perspective, a sector shunned by young people will not have a bright future. The mismatch between human resources and the real economy is one of the main problems encountered in China's revitalization and expansion of the real economy. To solve this problem, we must fundamentally improve the profitability of the real economy and create good material conditions to attract young people who are looking for jobs. The remuneration for technical workers, who are the pillars and future of China's manufacturing industry, must be substantially improved while implementing the chief mechanic system and encouraging workers to hold shares and contribute toward the

fortunes of the company. The social and economic status of vocational and technical education should be escalated to enable craftsmen to live a life of dignity and decency. This development can motivate young people to become craftsmen, thereby helping to revitalize the national real economy.

## **5. Building a modern economic system necessitates solid and effective measures**

The top-level design and basic strategy for the construction of a modern economic system in the new era should be linked with grassroots innovation and needs specific actions and solid and effective policy measures. To this end, we must focus on the following aspects.

### *5.1 Innovation-driven development policies centered on scientific research industrialization and marketization*

General Secretary Xi pointed out the need to “create more leading developments driven by innovation and first-mover advantage.” The shift from the latecomer advantage to the first-mover advantage requires us to master a greater range of new technology sources, and go through the more time-consuming, costly, risky and difficult basic research and industrialization process. We must aim to reach the forefront of global S&T, strengthen basic education and basic research, and achieve major breakthroughs in forward-looking and leading original results.

### *5.2 Rural revitalization policy taking urban agglomerations as the center to drive the modernization of agriculture, rural areas and farmers*

Rural revitalization features not a return to the traditional “agriculture, rural areas, and farmers” pattern, but a shift to modernization in which farms become richer and more farmers become urban dwellers; the comparative earnings rate of agriculture reaches the social average and above-average levels; and the rural areas, led by industrialization, begin to enjoy an urbanized lifestyle, which does not mean turning the countryside into a city but giving it a similar lifestyle through developed infrastructure, education, healthcare, social interactions and cultural activities. Revitalizing the countryside must start with industry, talents, culture, ecology and organization, among other elements. However, relying on the development of continuous urban agglomerations to revitalize the countryside is the most important idea in China’s future development of the “agriculture, rural areas, and farmers.” If the Yangtze River Delta and Pearl River Delta regions have the most successful experiences and typical examples of rural revitalization in China, they can also be the development model that can be chosen for China’s future development of the “agriculture, rural areas, and farmers.” Without urbanization and the development of urban agglomerations, revitalizing the villages alone would be ineffective. Thus, lifting unreasonable restrictions on farmers, encouraging free flow of the population, and improving the social security system by the government are, among others, the most important steps.

### *5.3 Regional coordinated development policies centered on time-space compression, increased density and reduced segmentation*

Differentiated economic policies should be formulated according to the actual situation of each region. For instance, the revitalization of old industrial bases, such as those in northeast China, necessitates rebuilding the incentive mechanism and development momentum through deepening reforms. The developed regions in the east should be required to take the lead in optimized regional development and in launching the second-step strategy of entering basic modernization. In the future, according to the reorganization principle of economic geography (time-space compression, increasing density and segmentation), building urban agglomerations will become the mainstay with a pattern of coordinated development of large, medium, and small cities as well as small towns, to accelerate the process of “citizenization.”

#### *5.4 Three-dimensional all-round open policy centered on building a “community of common destiny”*

At present, a new wave of globalization based on domestic demand is on the rise. China will use its own domestic demand advantage to absorb advanced global production factors to serve the country's development of an innovative economy. The policy mainly includes the following: first, focusing on the “One Belt, One Road”; establishing and improving the global value chain based on China; promoting international capacity cooperation; forming a global network of trade, investment, financing, production and service; and fostering international economic cooperation and new competitive advantages. Second is implementing a high-level trade and investment liberalization and facilitation policy, and fully implementing the pre-established national treatment plus negative list management system. And the third is giving the free trade pilot zones greater reform autonomy and exploring the construction of free trade ports.

#### *5.5 Supply-side structural reform policy centered on reducing corporate burdens and relaxing economic regulation*

Under the premise of maintaining a relatively stable macroeconomic environment, to reverse the “significant structural imbalance” of China's economic operation, we must find the source, path, and motivation for problem-solving through reform, which is to promote government reform through supply-side structural reforms that will inevitably actualize the decisive role of the market in resource allocation. The resulting government reform will have the dual effect of deregulation and reducing the burdens on enterprises (Liu, 2017). This move is determined by the government's reform to cut the size of the government, omit unnecessary functions and affairs, and reduce government expenditures. This dual effect also represents two key issues in the supply-side structural reform, which will inevitably stimulate the expansion of domestic demand and enhance the investment capacity of enterprises and the spending power of the people. This development will play a decisive role in cutting overcapacity, stabilizing investment expectations, increasing people's sense of acquisition, and reducing capital outflows. It will also help China transform its export-oriented global economic development model into one based on domestic demand, thereby promoting an economic cycle of independent innovation, which is expected to result in tremendous kinetic energy for development.

### **6. Theoretical innovation in constructing a modern economic system**

The top-level design and major deployment of the 19th CPC National Congress on building a modern economic system not only proposed many major tasks that require practice and solid work, but also involved major innovations in the economic theory and enriched the valuable collection of socialist economic theory with Chinese characteristics.

The expression of the major contradictions in the new era, as stated in the 19th CPC National Congress Report, is an achievement with major judgment and theoretical innovation in the cognitive category and a great contribution to the development of socialist political economy. In a similar way, the general guiding principle of economic construction, that is, the construction of a modern economic system, which is proposed to solve this major contradiction, is a crucial act of theoretical innovation and a key contribution to the development of the applied economic theory of socialism with Chinese characteristics. The essence of the modern economic system and its contribution to the development and progress of this theory of socialism with Chinese characteristics are mainly reflected in the following four aspects.

#### *6.1 Contribution and innovation to the theory of development economics*

In the past, China's development theory primarily focused on how to boost the savings rate and investment rate under the conditions of backward productivity and shortage economy, thereby accelerating the economic growth. Building a modern economic system, however,

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studies the ways to establish a high-quality economy in response to changes in major contradictions in the new era, under the conditions of “double surplus” of capital and commodities. The problem concerns no longer the shortage but the surplus, no longer the quantity but the quality, and no longer the absence of affluence but the characteristic of being fair or foul. Solving major structural imbalances in economic operations, such as imbalances within the real economy, between real economy and finance, or between real economy and real estate, is important. The policy tools and means used to correct structural imbalances under surplus economy conditions are also completely different from those used in the economic development under the shortage economy conditions; the latter mainly uses methods that promote rapid economic growth, and increase the savings and investment rates, whereas the former requires starting from two aspects: first, to improve the technical level and productivity of the real economy, and perform structural adjustment in pursuit of high quality, and second, to encourage financial innovation in the virtual economy and provide more high-quality financial assets for the growing needs of the society, to make up for the “asset shortage,” stabilize asset bubbles and maintain a balanced relationship with the real economy. These are new issues for development policy and require new summaries and refinements for development theory.

### *6.2 Contribution and innovation to industrial economics theory*

In the past, we have defined the construction of a modern industrial system, in the context of a developing large-scale economy, as comprehensively building a relatively stable modern agricultural foundation, a relatively developed manufacturing industry (especially the high-level equipment manufacturing industry), and a full-fledged and rapidly developing modern service industry. This type of industry system construction aims to divide rather than integrate the links between industrial sectors. Thus, this system lacks the modern market economic awareness of inter-departmental resource flows and the balanced development where equal capital reaps equal benefits, and is prone to the formation of new structural segmentations in the original dualistic economy. The 19th CPC National Congress Report proposes the construction of a “Four-in-one” synergistic industrial system as the material basis of the modern economic system. Furthermore, the report creatively clarified the new goals of future industrial system construction and the synergetic development among various factors from the perspective of factor input rather than departmental division, as well as the general requirements for synergetic development of various factors. Thus, these insights are major innovations that take root in China’s development practice, respect the laws governing the operation and development of the market economy, and contribute to the theory of modern industrial development.

### *6.3 Contribution and innovation to modern economic growth theory*

Although the modern economic growth theory has always emphasized the decisive role of human, intellectual, and technological capital in growth, less research has focused on how to further apply the synergy of advanced production factors (such as S&T innovation, modern finance and human resources), and even less on emphasizing how the input elements of the national economy serve the real economy. This situation is an important reason for the hollowing out of the industry and the bubble economy in Western countries. China’s economic modernization process must attach great importance to this experience and lessons from the development of Western countries. When General Secretary Xi elaborated on the connotation and construction measures of the modern economic system, he repeatedly requested that the vigorous development of the real economy be a solid foundation for building a modern economic system. He pointed out that the real economy is the foundation of a country’s economy, a fundamental source of wealth creation, and an important pillar of a country’s prosperity. Important steps are necessary to deepen structural reforms on the supply side;

accelerate the development of advanced manufacturing industries; promote the deep integration of the internet, Big Data and artificial intelligence with the real economy; and promote the agglomeration of resource factors to the real economy. Economic policy and work forces should prioritize the real economy to create a down-to-earth and hardworking social environment for entrepreneurship development. This condition is an important theoretical guarantee for preventing the emergence of undesirable trends such as “underweighted real economy and overweighted virtual economy” in the track of modern economic growth.

#### *6.4 In the process of building a modern economic system*

China's practice may elicit rethinking on some theoretical propositions derived from Western economic practices in the past, and innovation on this basis to identify new problems and propose new experiences, rules, and conclusions that are closely related to national conditions. For example, the theory of socialist shared distribution with Chinese characteristics is a major innovation in the theory of capital-led distribution. On the basis of the decisive role of the market, the theory of the socialist market economic system that effectively exerts the role of the government is a major innovation of the Western market economic theory regarding the role of the market. The ecological economic theory characterized and directed by the concept of “green hills and clear waters are mountains of gold and silver” (i.e. a green environment furnishes endless wealth) is a major innovation in the theory of industrialization and modernization. The spatial economic theory that balances regional relations by climbing the global value chain and building a world-class advanced manufacturing industry, as well as the open economic development theory based on the “Belt and Road Initiative” and the construction of a global “Community of Common Destiny” are major innovations in the international economic theory that takes developing countries as subjects.

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# Analysis of the innovation and development of the socialist market economy theory

The socialist market economy theory

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## Abstract

**Purpose** – As a major theoretical breakthrough of the Marxist political economy based on the practice of China's reform and opening up, the theory of socialist market economy constitutes an important part of the political economy of socialism with Chinese characteristics. The paper aims to discuss this issue.

**Design/methodology/approach** – Its essence is that socialism (as a social system) and market economy (as a resource allocation mechanism) can be organically integrated to exert the advantages of both at the same time and generate new institutional and systematic advantages.

**Findings** – It has condensed many important theoretical viewpoints, involving major theoretical and practical issues, such as the relationship between the government and the market, the basic economic system, the income distribution system, the operation of the market economy and the opening up to the outside world, which have become the basic principles of socialist political economy with Chinese characteristics.

**Originality/value** – The new practice of comprehensively deepening reform and building a moderately prosperous society in an all-round way is bound to provide an impetus to the deepening and systematization of the theory of socialist market economy.

**Keywords** Development of main theoretical principles,

Political economy of socialism with Chinese characteristics, Socialist market economy theory

**Paper type** Research paper

The socialist political economy with Chinese characteristics (hereinafter referred to as SPECC), featuring the latest achievement of the Sinicization and modernization of Marxist political economy, constitutes an important component of the theoretical system of socialism with Chinese characteristics. In October 1984, Deng Xiaoping pointed out while appraising the "Decision of the Central Committee of the Communist Party of China on Economic System Reform" that: "the Decision is in itself the first draft of political economy integrating the basic principles of Marxism with the practice of socialism in China" (Deng, 1993). After more than three decades of reform and opening up and economic development practice, SPECC has put forward a series of important theoretical principles and viewpoints and began to form a relatively complete logical structure and ideology. The theory of socialist market economy constitutes an important part of the SPECC. It contains a series of important theoretical principles and viewpoints. The following attempts to outline its development context and elementary contour.

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## 1. The theory of socialist market economy is a major breakthrough in Marxist political economy

The introduction of the socialist market economy theory (hereinafter referred to as SMET) denotes a major breakthrough made by the political economy with Chinese characteristics to the political economy of Marxism and a major development of scientific socialism.

In the eyes of the classic writers of Marxism, the future society realizes the public ownership of production materials (Marx and Engels 2009b), and “once the society possesses the means of production, merchandise-oriented production will be eliminated forthwith” (Marx and Engels, 2009b). In the future society envisioned by classic writers, “direct social labor” is a very important category. As labor has become “direct social labor,” how labor time and means of production are distributed for various purposes “does not require the celebrated ‘value’ to intervene” (Marx and Engels, 2009b). Before the October Socialist Revolution (1917), Lenin envisaged: “the whole society will become an administrative office” (Lenin, 2009) which implements “direct production and distribution.” During the Period of New Economic Policy, Lenin introduced commodity exchanges (different from product exchange) into the Soviet economy, and some important changes have taken place in the views of commodities, currencies, private economy and material interests. However, regarding the relationship between socialism and the commodity economy, Lenin’s views have not undergone fundamental changes. He believes that the development of the commodity–currency relationship is only a “gradualist, prudent and devious mode of action” leading to “direct production and distribution” (Lenin, 2009), which is a strategic “retreat.” Moreover, in November 1921, Lenin believed that “there are already some signs that can make people see the end of retreat, which can make people see the possibility of stopping this retreat in the near future” (Lenin, 2009). It is precisely because Lenin’s fundamental view of the commodity–currency relationship has not changed that the highly concentrated planned economic system was quickly established in the Soviet Union in the post-Lenin era.

In the mainstream economic thinking of the West, socialism and the market economy have been sharply opposed. Ludwig von Mises’ *Socialism: An Economic and Sociological Analysis*, published in 1922, systematically demonstrated the incompatibility of socialism and market economy. He believes that “it is impossible to sever the market and its price formation mechanism from the functions of society based on the private ownership of the means of production” (von Mises, 2008). This is because public ownership and production factor markets cannot coexist, and it is impossible to form reasonable prices under public ownership, and there is thus no reasonable economic accounting. The choice can only be “Either socialism or a market economy” (2008). Correspondingly, on the issue of ownership, von Mises (1995) also believed that there are only two options that are incompatible with each other: either the public ownership of the means of production or the private ownership of the means of production. Friedrich Hayek also believed that socialism is incompatible with the market economy as without private ownership, it is impossible to have the motivation and information needed for market operation. Although Oskar R. Lange and others refuted the views of Mises and Hayek and believed that the socialist economy could simulate the role of the market and the price mechanism (Lange and Taylor, 1981), they still deemed socialism and market economy as “a dichotomy of two skins.”

Since the reform and opening up, a major theoretical contribution of SPECC has been to put forward the theory of socialist market economy (SMET), the essence of which is that socialism as a social system and market economy as a resource allocation mechanism can be organically integrated to exert the advantages of both at the same time and generate new institutional and systematic edges.

The formation of the SMET is a process of continuous breakthrough, enrichment and improvement, along the main line of continuous deepening and scientific understanding of socialism and market economy. The deepening of the understanding of socialism is

principally reflected in Deng Xiaoping's relevant important theses. In 1985, Deng Xiaoping pointed out that "poverty is not socialism, socialism must eliminate poverty" (Deng, 1993); in the same year, he indicated that "socialism has two very important aspects, one is to take public ownership as the mainstay, and the other is not to polarize" (Deng, 1993). In 1992, Deng Xiaoping pinpointed that "the essence of socialism is to liberate productive forces, develop productive forces, eliminate exploitation, eliminate polarization, and ultimately achieve common prosperity" (Deng, 1993). "If we understand socialism from this new level of practice, jump out of the shackles of traditional ideas, and liberate and develop social productive forces and gradually realize common prosperity as the essence of socialism, then there is no contradiction between socialism and the market economy. Because, from the point of view of liberating and developing social productive forces, the market economy can greatly expand the space for the development of social productive forces by mobilizing the ingenuity of hundreds of millions of people to create and accumulate wealth." General Secretary Xi Jinping (2013) profoundly corroborated this point: "Theories and practices have proved that market allocation of resources is the most efficient form." From the perspective of gradually achieving common prosperity, the market economy, by facilitating capital accumulation and investment and encouraging innovation, can create a steady stream of new jobs to guarantee the opportunities for most people to earn income; meanwhile, by better playing the role of the government, it can build a starting point for fair competition, correct the bias of market competition, and help the disadvantaged and those at risk. Even some economists in the West believe that socialism and market economy are compatible, and some important goals pursued by socialism can be achieved through market mechanisms. For example, McMillan (2006) held that: "The market is not born to run counter to the goals of society."

The deepening of market understanding is a distinctive theoretical feature of SPECC. The Third Plenary Session of the 11th Central Committee of the Communist Party of China, which opened the curtain of China's economic reform and opening up, proposed "focusing on the role of the law of value"; the "Decision of the Central Committee of the Communist Party of China (CPC) on Economic System Reform" adopted by the Third Plenary Session of the 12th CPC Central Committee proposed that the socialist economy is a planned commodity economy on the basis of public ownership; and the report of the 14th CPC National Congress clearly stated that "the goal of economic system reform is to establish a socialist market economic system," wherein "the market plays a fundamental role in resource allocation under the macro-control of socialist countries." "The "fundamental role" of the market is a qualitative leap in the understanding of the market by SPECC, marking the beginning of the formation of the SMET. Under the new historical conditions, the Party Central Committee with Xi Jinping as the general secretary has greatly advanced SPECC's understanding of the market and proposed a new thesis that "the market plays a decisive role in resource allocation, and can better play the functions of government," thus achieving another qualitative leap in SPECC. This thesis is a scientific summary of the practical experience of China's reform and opening up for nearly four decades. It reflects the successful experience of all countries in the process of seeking economic development and national modernization and will certainly play a crucial role in comprehensively deepening reform and improving the socialist market economic system.

## 2. The important principles and viewpoints contained in the SMET

The SMET has condensed many important theoretical principles and viewpoints, mainly involving major theoretical and practical issues such as the relationship between the government and the market, the basic economic system, the income distribution system, the operation of the market economy and the opening up to the outside world.

### 2.1 *The relationship between the government and the market*

The relationship between the government and the market is a long-standing and ever-renewing issue in economics. Be it the development of Marxist political economy or the evolution of Western mainstream economic thinking, one of its important signs is the re-recognition of the relationship between the government and the market and the reorientation of their role. China's reform and opening up is based on a highly centralized planned economic system, it is therefore particularly important to correctly handle the relationship between the government and the market. The report of the 14th National Congress of the Communist Party of China pointed out that the core of determining the objectives of economic restructuring is the "correctly understanding and dealing with the relationship between plans and markets" (Party Literature Research Center of CPC Central Committee, 2011a); the report of the 18th CPC National Congress further pointed out that "the core issue of economic system reform is to handle the government and the market well; and the "Decision" of the Third Plenary Session of the 18th CPC Central Committee reaffirmed this theoretical and practical principle and outlined clear clues for the establishment and improvement of the socialist market economic system.

How to deal with the relationship between the government and the market? From the conscious use of the law of value in the early stage of the reform to the "planned economy as the mainstay supplemented by market regulation" reported in the 12th CPC National Congress, to the "market's fundamental role of resource allocation under the macro-control of socialist countries" reported in the 14th CPC National Congress, and then to the "market playing a decisive role in resource allocation and better playing the role of the government" purported in the Third Plenary Session of the 18th CPC Central Committee have become basic principles of SPECC, due to which our understanding has been pushed forward in depth.

Scientific understanding of the decisive role of the market and how to better play the role of the government is the key to correctly handling the relationship between the government and the market. First of all, we need to conscientiously understand that "it is the general law of the market economy for the market to determine the allocation of resources" (18th CPC National Congress, 2013). The decisive role of the market is manifested in that most economic resources, whether consumer goods (including important consumables) or production factors, including labor, capital, land, technology, information, etc., need to be allocated through market mechanisms to the most efficient sectors and links. The advantage of the market stems from its ability to: synthesize intricate social preferences and transform them into simple price signals (Lange and Taylor, 1981), to guide market players such as enterprises and consumers to make reasonable choices; effectively transmit and utilize countless scattered and hidden knowledge and information to optimize the allocation of resources; make full use of people's internal incentives to drive resources to keep flowing, make the whole economy full of vitality and stamina; and continuously stimulate innovation and entrepreneurship and facilitate organic entities' constant acquisition of new knowledge and elimination of clichés (Phelps, 2013), thereby creating new economies and exploring new productive forces. In short, the advantage of the market economy lies in its ability to mobilize the wisdom and power hidden among millions of people so that all sources of social wealth can flow in full. Of course, the market is not omnipotent, and it is impossible to expand the decisive role of the market and its principles to the public goods, social, political and ethical sectors. "Market design is not an issue of choosing between the market or the government, but an issue that can only be solved by market plus government" (2008). Second, it scientifically defines the role of government, where the allocation of resources is basically handed over to the market, and the government should withdraw from the complicated resource allocation activities and focus on its due diligence. The government

function is endogenous in the operation law of modern market economy and the institutional regulation of socialism and can be summarized as the construction of four major frameworks: first, the market economy institutional framework, including an ideal rule-of-law order, an effective property rights system, fair and transparent competition rules, and an authoritative regulatory system; second, the overall productivity framework, including large-scale public infrastructure and backbone networks in the sectors of resources, energy, transportation, communications, information, data and ecology, forming the backbone for productivity development and social life; third, the macroeconomic stability framework, which creates a stable market and public life expectation by creating a balanced and stable economic operating environment; and, fourth, the social welfare framework, which prevents social risks and protects basic livelihoods through pension, healthcare, education, unemployment, etc. Of course, in the process of constructing these four frameworks, the government can also introduce and utilize the power of the market to promote resource mobilization and efficiency.

## 2.2 Innovation and development of ownership theory

Ownership constitutes the core of Marxist political economics and is also the core theoretical issue of SPECC. Since the reform and opening up, China's ownership theory has made a series of major breakthroughs, focusing on the deepening and scientific understanding of the public-owned economy, the non-public economy and the relationship between the two, and has had a profound impact on China's reform and opening up process.

In the early stage of reform and opening up, in order to ease employment pressure and activate urban and rural markets, the individual(self-employed) economy was allowed, and then the existence and development of the private economy was allowed, and they were positioned as a supplement to the public ownership economy (POE), while allowing foreign capital to enter to compensate for the funding gap and introduce advanced production and management technologies, thereby opening the prelude to the evolution of China's ownership structure. The 15th CPC National Congress achieved a leap in the theoretical quality of ownership and proposed that "public ownership as the mainstay and co-development of various ownerships" is the basic thesis of the socialist basic economic system. Based on this thesis, some important principles and principles concerning the ownership system in the socialist political economics with Chinese characteristics are proposed, primarily including the mainstay status of public ownership is principally reflected in the dominant position of public assets in the total assets of the society, with the state-owned economy controlling the lifeline of the national economy and playing a leading role in economic development; the form of public ownership realization can and should be subject to diversification, and the shareholding system is a form of capital organization of modern enterprises and can also be used in socialism; establishing a modern enterprise system is the direction of state-owned enterprise reform; and the non-public economy constitutes an important part of China's socialist market economy. In the report of the 16th CPC National Congress, the theory of ownership was further developed. For the first time, the "Two Unwavering" guidelines were put forward, and then they were repeatedly reaffirmed, never wavered and successively formulated a series of policy measures.

Since the 18th CPC National Congress, based on the new historical conditions of comprehensively deepening reform and economic development into the new normal, the theory of ownership has made new developments. The "Decision" of the Third Plenary Session of the 18th CPC Central Committee pointed out that both the public-owned economy and the non-public economy are important components of the socialist market economy and are important foundations for China's economic and social development; the public-owned economic property rights are inviolable and the non-public economic property rights are

equally inviolable; they ensure that all forms of ownership economy use production factors in an equal way, participate in market competition in an open and fair manner, and are equally protected by law; mixed ownership economy is an important form of realization of the basic economic system, improve the state-owned asset management system, reinforce administration by focusing on capital regulation, etc. General Secretary Xi Jinping's (2016, March 4) important speech at the joint conference of the Chinese People's Political Consultative Conference, China Democratic National Construction Association and the All-China Federation of Industry and Commerce systematically elucidated the theoretical and practical principles of China's basic economic system and clarified the vague understanding of the basic economic system, and in particular, the non-public sector of the economy, indicating that "the public and the non-public sector of the economy should be complementary and reciprocal rather than mutually exclusive and counteracting." This speech has consolidated and developed the existing theoretical results. It can be seen that SPECC has formed a relatively clear line of ownership theory and laid a solid foundation for ownership theory for the organic integration of socialism with Chinese characteristics and modern market economy.

Compared with the initial stage of reform and opening up, China's various ownership economies have made considerable progress, and the ownership structure has undergone major changes. The proportion of the POE has declined, but POE's status as the mainstay remains unchanged, still controlling the important industries, key sectors, important links and high-quality assets of the national economy; meanwhile, the proportion of the non-public ownership economy (NPOE) in the output value, investment, employment and total tax revenue has soared significantly, and NPOE has, thus, become an important driving force for economic growth and social progress. Meanwhile, China's economic development has stepped into the "new normal" phase, the economic structure has become more complicated, the uncertainty has increased, the importance of innovation has emerged and personalized consumption is building up. It is necessary to further promote the innovation and development of ownership theory under the new historical conditions and lay the corresponding foundation for maintaining high-speed growth of the economy and implementing innovation-driven development strategy.

First is the scientific understanding and maintenance of the dominant position of the public sector of the economy. From the perspectives of output value, employment, taxation and other indicators, the public sector of the economy (POE) no longer has a quantitative advantage, and people are, therefore, worried about the dominant position of public ownership. In a certain sense, this provides a historical opportunity for us to scientifically understand the dominant position of public ownership. We need to scientifically grasp the dominant position of public ownership from the inherent stipulation of socialism with Chinese characteristics and the inherent law of modern market economy, to keep abreast of the times. The dominant position of public ownership requires a quantitative prescriptiveness[1], but, more importantly, the qualitative prescriptiveness, that is, the dominant position of public ownership, should be principally embodied in the POE, especially the basic framework of the state-owned economy that constitutes the national economy and social welfare. Specifically, the state-owned economy and state-owned capital are primarily distributed in important industries, key sectors and important links that are related to national security, the lifeline of the national economy and the basic livelihood of the people. They form the backbone of economic and social development, and then, through the penetration, enlargement and influence mechanism of the market economy, they have become the "general illumination" covering the entire economic and social life (Marx and Engels, 2004).

Second, scientific understanding of the non-public economy constitutes an important part of the development of modern productive forces. The rapid development of science

and technology can no longer regard the non-public economy and small- and medium-sized enterprises as backward productivity[2]. In the era of large-scale mechanized industry, the expansion of production scale often constitutes the basis of the development of productivity, whereas the trend of modern productivity no longer develops along the unitary direction of large-scale production, but diversified direction of large-, medium- and small-scale production. Flexible use of modern technologies can be practiced, and small- and medium-sized enterprises, and even micro-enterprises, can be a form of enterprise organization that accommodates and utilizes modern productivity. What is more, SMEs have even become an important source of innovation. There is a need to understand the reasons for the existence of the non-public economy based on “diversity,” which is the basic condition for adapting to economic complexity, overcoming uncertainty, stimulating innovation and quenching individual needs. The modern economy relies on the diversity of society to achieve prosperity. Economic vitality also depends on the diversity of entrepreneurs (Phelps, 2013) because a society’s willingness and prowess to innovate and are closely related to diversity of financiers, entrepreneurs, producers, consumers, corporate organizational forms and the forms of social property, which determine the vitality and creativity of a society.

Third is further understanding of the important role of the mixed ownership economy. The mixed ownership economy with cross-shareholding and mutual integration of various capitals will become the bedrock of China’s economic operation, and the shareholding system is an important form of existence of mixed ownership economy. Scientific understanding of the nature of the shareholding system is very important for promoting the development of a mixed ownership economy. The discussion of share capital by Marx and Engels in the past can give us important theoretical enlightenment. Marx believes that the capital of a joint stock company “directly takes the form of social capital (i.e. the capital of those individuals directly united) and is opposed to private capital” (Marx and Engels, 2009e); Engels points out that “capitalist production operated by a joint stock company is no longer a private production, but a production under the care of many” (Marx and Engels, 2009c). Marx and Engels still believe that the share capital of capitalism has the nature of “social capital” and “co-production.” Then, in the socialist market economy with public ownership as the mainstay, the share capital will inevitably, to a greater extent, reflect the nature of “social capital” and “co-production” and become the realization form of the dominant position of public ownership or integrate with the entities of public ownership.

### *2.3 Innovation and development of income distribution theory*

The SPECC has formed a series of important theoretical principles concerning income distribution, involving many aspects such as a personal income distribution system, distribution according to production factors, fairness–efficiency relationship and common prosperity.

Establishing an income distribution system of the primary stage of socialism with “performance-based distribution as the mainstay that coexists with multiple modes of distribution” is a major breakthrough in the distribution theory of Marxist political economics, embodying the essential prescriptiveness of socialism and the operating laws of modern market economy. In the early days of reform and opening up, in order to overcome egalitarianism and emphasize the principle of performance-based distribution, the 13th CPC National Congress proposed to “implement a variety of distribution models with performance-based distribution as the mainstay.” The Third Plenary Session of the 14th Central Committee clearly proffered the income distribution system with “performance-based distribution as the mainstay that coexists with multiple modes of distribution” (Party Literature Research Center of CPC Central Committee, 2011b), thus achieving a qualitative leap in the theory and system of income distribution. In the subsequent development, under the premise of insisting on performance-based distribution, the connotation of various

distribution methods was gradually clarified, and the production-factor-based distribution was introduced. The report of the 15th CPC National Congress proposed to integrate the performance-based distribution with the production-factor-based distribution, “allowing and encouraging capital, technology and other production factors to partake in the distribution of income.” The report of the 16th CPC National Congress put forward the “establishment of principles for production factors such as labor, capital, technology and management to partake in the distribution of income commensurate with their contributions.” The Third Plenary Session of the 18th CPC Central Committee proposed “a sound income distribution mechanism determined by factor markets such as capital, knowledge, technology, and management.” Allowing production factors to participate in the distribution, the residents’ income channels are diversified, and the snowballing non-labor income such as property income has provided a strong impetus for the operation of the market mechanism.

The system of “performance-based distribution as the mainstay that coexists with multiple modes of distribution” is intrinsically consistent with the basic economic system with the “public ownership as the mainstay and co-development of multiple ownership economic entities” and in line with the general principle of income distribution in Marxist political economy, that is, “any kind of distribution of the means of consumption is nothing more than the result of the distribution of production conditions itself” (Marx and Engels, 2009d); it stimulates the enthusiasm of hundreds of millions of people to create wealth, earn income and improve their economic status, driving the constant flow and relocation of production factors such as labor, capital, land, technology and information, thus laying the foundation for the distribution system that is compatible with the operation of the socialist market economy.

For the theory and system of income distribution needs to be further optimized, an important aspect is to deal with the relationship between fairness and efficiency under new historical conditions. Before 2003, our principle of dealing with the equity–efficiency relationship was “giving priority to efficiency with due consideration to fairness[3],” which is closely related to the status of “equalitarian Big-Pot (“everybody eating from the same big pot” – equalitarian treatment of enterprises and individuals regardless of their performances)” and a dearth of economic inefficiency and vitality in the initial reform of China’s distribution system. Since 2004, especially since the 18th CPC National Congress, the principle of dealing with the equity–efficiency relationship has undergone important changes, including “more emphasis on social equity,” “the focus on raising the income level of low-income earners,” “a gradual expansion of the proportion of middle-income earners,” enabling all the people to have more “sense of gain,” etc. At the same time, the understanding of “equity (fairness)” comes closer to its essence. The Report of the 18th CPC National Congress regards the equity of “rights, opportunities, and rules” as the mainstay of social equity. This “equity” concept is not only consistent with the essential provisions of socialism, but also with the inherent laws of the modern market economy, thus laying the foundation for establishing the scientific equity–efficiency relationship.

From the perspective of the whole process of achieving equity, the three elements, in proper order, namely, equity of starting point, equity of process and equity of results, also influence each other. In the modern market economy, given an equal starting point and equal process, the resulting competitive outcome can be considered to be in line with the principle of fairness, and people will recognize and accept this result to a large extent (Buchanan, 1989). Therefore, equity of starting point and equity of process stay at the core of the process of building a fair society. However, this result may include the difference in income and wealth caused by fair competition itself, and this is just where the driving force of economic development lies. The result of fairness needs to be grasped from two aspects: on one hand, the starting point and process forming the results must be fair,

otherwise the results they bring will not be recognized by society; on the other hand, the income and wealth gap from such results should not be too disparate and should not cause polarization. Equity of results has, in addition to its own value gained from relying on the equity of starting point and process, its own independent value. This is because of the following: first, the fairness of the outcome (equity of results) will then affect the equity of the new starting point and the new process. Specifically, the competition results of the previous round or the previous generation often constitute the conditions for competition of the next round or next generation, thus determining the starting point of a new round of competition and the ability to use opportunities. Second, relative equal income and wealth distribution are more conducive to the smooth progress of social reproduction, in particular, the counteraction of consumption (especially that of low- and middle-income groups) on production and the reproduction of labor, affecting the free and comprehensive development of human beings and the liberation of human nature. However, there is a limit to the act of correcting the outcome of fair competition, that is, it shall not undermine the prime power driving economic development and market operations. Therefore, in the pursuit of equity, the first task is to establish the conditions and environment for fair competition, to fully mobilize the potential of people to create wealth and then appropriately correct the results of competition, to control the gap between income and wealth in the society in an acceptable range.

Equity of rights, equity of opportunities and equity of rules are the keys to achieving fairness in the starting point, fairness in the process, and fair outcomes. In order to achieve social equity and promote economic efficiency, we must first ensure the fairness of the starting point and the fairness of the process. For the fairness of the starting point, we must ensure that all sectors of society, especially those of low-income families, have access to fair education. For the government, education policy is the most reliable way to make the country embark on a more equal path of distribution. Education is and will always be a major way out for poor families and children to escape poverty (Meier and Stiglitz, 2003). The nutritional status, labor health status and family living conditions of children in low-income families will also have an important impact on the fairness of the starting point. For process equity, competition rules are required to be fair and transparent, and competition opportunities open. People shall have the freedom to migrate, choose jobs, invest and trade and have the right to equal access to, and use of, production factors. Therefore, opening up the household registration system, eliminating various barriers to entry and exit, developing financial markets, improving information infrastructure, etc., are all important factors in improving process equity. If we achieved starting point equity and process equity, we will be able to achieve socially acceptable outcomes to a greater extent. Based on this, the competition results can be appropriately corrected through measures such as social security, subsidies for low-income groups and poverty alleviation to achieve a higher degree of fairness in outcome. Furthermore, in order to alleviate the consumption gap caused by income gap and wealth gap, we also need to improve the property rights protection system and develop financial markets to encourage wealthy groups to convert most of their income and wealth into investment in the reproduction process. While augmenting the employment and income opportunities for low-income groups, the gap between the actual consumption of social members, as well as the consumption gap caused by the income gap and the wealth gap, will be narrowed, to achieve a higher degree of equity for consumption and welfare.

### **3. Theory of socialist economic operation**

In the socialist market economy, the distribution of labor time and the allocation of production factors are mainly achieved through the role of the law of value, which also greatly affects the distribution of personal income (see footnote 2). Therefore, the SPECC

must study the law of the operation of the market economy. When analyzing it, Marx discussed the general principles of market economy operation and provided theoretical inspiration for us to analyze the operation of the socialist market economy. For example, Marx believed that pro rata (proportional) distribution of social labor is a “natural law,” and this law works through the law of value under the conditions of commodity economy, which has intrinsic consistency in theory with the “decisive role of the market in resource allocation” proposed by China. Marx emphasizes the importance of ownership, freedom and equality in commodity exchange. He believes that “from the exchange itself, individuals and each individual are themselves reflected as an exclusive and dominant (with a decisive role) entity in commodity exchange. Thus, this establishes the complete freedom of the individual: a voluntary transaction; neither party uses violence, which is “in an equal relationship,” “in addition to the provisions of equality, it is also subject to the provisions of freedom” (Marx and Engels, 1979).

SPECC has many important expositions on economic operations. First, the cultivation of a complete market system is emphasized. Marx pointed out: “The market [...] takes the overall form” (Marx and Engels, 1979). Only a complete market system suffices to support the market to play a decisive role in resource allocation. The completeness of the market system means not only that the various markets are complete and well-developed, but also that they are in an organic connection, interaction and tending to general equilibrium. In 1993, the “Decision of the Central Committee of the Communist Party of China on Several Issues Pertaining to the Establishment of a Socialist Market Economic System” proposed to focus on cultivating financial markets, labor markets, real estate markets, technology markets and information markets. In 2003, the “Decision of the CPC Central Committee on Several Issues Pertaining to the Improvement of a Socialist Market Economic System” proposes to develop the futures market. To date, various markets have been existent, and many resources are allocated through the market. Second, the unity, openness and orderly competition of the market system are emphasized. Open up opportunities to market players, endow them with the right to free choice and fair competition, and, at the same time, let them bear the risk of decision making and harden budget constraints; Market rules are open and transparent, and goods and elements can flow freely. Third, implementing effective market supervision. Supervision is the most important microeconomic function of the government to maintain market competition order, eliminate monopoly and ensure the safety of food, medicine, environment and production sites.

The free flow of production factors is the precondition for the law of value, law of supply and demand, and law of competition. A future focus of modern market system construction is to improve the production factor market and enhance the liquidity of elements to stimulate the endogenous power of the market economy. Referring to the averaging of profits, that is, the dynamic process of resource allocation, Marx emphasizes the importance of the following two conditions: First, “Capital has greater activity, that is, it is easier to transfer from one department/place to another.” Second, “labor has more mobility of moving more quickly from one department/place to another.” This requires: “a full freedom of trade within the society, eliminating all monopolies other than natural monopoly,” and “abolishing any law that prevents workers from moving from one production sector to another, or from one production location to another” (Marx and Engels, 2009c). These classic discourses provide important inspiration for the study of the theory of market economy operation in SPECC.

#### 4. The theory of opening up to the outside world

In the political economic system envisioned by Marx, be it the “five-chapter structural plan” or the “six-volume structural plan,” they invariably contain the contents of international economic relations such as international trade and international market, indicating that the

classic writers were already fully aware of the importance of the internationalization of productivity, resource allocation and interest distribution. Marx believes that the international division of labor is the basis for international trade and international flow of capital, which, in turn, strongly promote the international division of labor to a broader, deeper and higher level. Referring to the role of international trade and the international market, Marx pointed out that the world market “prepares ready for civilization and progress everywhere, so that everything that happens in all civilized countries will inevitably affect the rest of the world” (Marx and Engels, 1958); “New world market relationships also cause the exquisiteness and variety of products” (Marx and Engels, 2009f). The law of value also plays an important role in the international market, regulating the distribution of the benefits generated by the internationalization of production among different countries. Among them, countries with advanced technology, high labor complexity and high labor productivity occupy a large share of interests. Thus, “three working days in one country may also be exchanged with one working day in another” (Marx and Engels, 1974). Marx also understood the nature of economic internationalization from the perspective of production relations. He said: “The trend of creating world markets has been directly contained in the concept of capital itself” (Marx and Engels, 1979). A basic principle of Marxist political economy is to grasp the nature of economic globalization from the two aspects of productivity and production relations, which also applies to SPECC.

Since the second half of the twentieth century, the international division of labor has developed rapidly. Not only have the traditional inter-industry division of labor and inter-product specialization deepened, but the intra-industry division of labor and intra-product specialization have also emerged and deepened. The industrial chain has become longer and longer, and labor productivity higher and higher. At the same time, transportation, communications and information technology are developing rapidly. Under the combined effect of these factors, the international flow of products, services and production factors is expanding day by day with faster speed. Production, exchange, distribution and consumption are becoming more and more cosmopolitan. Actively participating in the international division of labor, occupying a favorable position in the international division of labor chain and the formulating international economic rules constitute an inevitable choice for countries to seek competitive advantage and economic development.

Based on the background of economic globalization and China's practice of reform and opening up, SPECC has gradually formed a series of theoretical views on opening up to the outside world. It believes that opening up is a long-term basic national policy that aims to make full use of both domestic and international markets and resources, combine “bringing in” and “going out,” actively participate in international competition and international economic cooperation, play a key role in China's comparative advantages, establish an open, safe and efficient economy with mutual benefit and multi-balance, actively participate in global governance, etc. The main policy proposals include the gradual deep integration into the global division of labor system through the establishment of special economic zones and all-round opening, foreign direct investment and outward foreign direct investment, accession to international organizations such as the World Trade Organization, implementation of the “Belt and Road” strategy, promotion of international production capacity cooperation, etc.

The theory of opening up awaits, nonetheless, to explore a series of important theoretical and practical issues: first, under the conditions of new technology, the rules of international division of labor and industrial evolution, and how to improve China's position in the international division of labor and interest chain, to achieve static and dynamic comparative advantages; second, the role of the law of value in the international market and how to promote a reasonable share of global interest distribution through industrial upgrading and innovation; and, third, the ways to participate in global governance. Compared with the

domestic market, the world market is more volatile, where the State plays an important role, the mobility of production factors is low, there are many barriers and the capital threshold is high. Therefore, the importance of the formulation of rules for competition and participation looms large. SPECC is able to accomplish much on such issues.

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### Notes

1. It should be noted that this quantitative prescriptiveness is not *a priori*, but changes with practice, and is comprehensively determined by the prescriptiveness of the socialist system with Chinese characteristics, the stage of economic development, the decisive role of market allocation resources, the inherent operation of the market and other factors.
2. The Political Economy textbook and some related papers generally link them to the backwardness of productivity and the imbalance of economic development when analyzing the reasons for the existence of the non-public economy and SMEs. This view needs to change with the development of modern productivity.
3. Under the conditions of market economy, the “performance” in performance-based distribution is measured by the amount of value formed by it: whether labor is invested in effective use, and whether value can be formed is also confirmed by the law of value. As for the production-factor-based distribution, it is basically regulated by the law of value, the law of supply and demand, and the law of competition.

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# The US dollar and new imperialism under the logic of capital accumulation

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## Abstract

**Purpose** – The world currency is endowed with two inherent contradictions, namely, the general contradiction of all currencies and the special contradiction between the quality and quantity of the world currency. The paper aims to discuss these issues.

**Design/methodology/approach** – In the wake of the Second World War, the USA, with its strong economic and military strength, established an international monetary system centered on the US dollar (USD). This gave USD the status of “world currency” and bounded it to the US imperialist hegemony with mutual integration and interaction, making it possible for USD capital to conduct international exploitation and wealth plundering extensively around the world.

**Findings** – The contradiction between the capital logic and the power logic, which is inherent in capital accumulation models of the new imperialism, also indicates the inevitable decline of USD.

**Originality/value** – This constitutes an important feature of the new imperialism. However, as a sovereign currency, USD has inextricable and inherent contradictions while exercising its function as the world currency.

**Keywords** Capital accumulation, International monetary system, New imperialism, State hegemony

**Paper type** Research paper

As early as the beginning of the twentieth century, the issue of imperialism aroused the concern of Marxists. Lenin *et al.* (1995) have conducted intensive research on the major characteristics and essence of imperialism the inherent contradiction between imperialism and capital accumulation[1], and the relationship between imperialism and financial capital[2]. Since the end of the Second World War, territorial occupation and colonial rule were gradually replaced by economic control and political intimidation. Imperialism has emerged with a new mask. Works such as the theoretical analysis of “territorial logic” and “capitalist logic” by American scholar David Harvey (2003) and the historical research on supranational economic control and economic laws by American scholar Ellen Wood[3] have fully demonstrated that although imperialism has taken a new form, its exploitative and predatory nature remains unchanged. Lenin’s (1990) argument that “in the field of economic science that studies the changes in the form of modern capitalism, the issue of imperialism is not only one of the most important issues, but can be said to be the most important one” is still of great significance. At the global level, the USA can plunder wealth and exercise imperial hegemony around the world. This is due to the special status of US dollar (USD) as a world currency, which continuously consolidates the imperial hegemony of the USA (Poovey, 1998). Thus, currency is the embodiment of social relations (Lenin, 2009). The USD was by no means predestined to be a world currency, nor is it the



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irreplaceable “Chosen One.” Its power and status are nothing, but the external manifestation of US imperialism. This paper explores the nature and the inherent contradiction of the new imperialism by analyzing the inherent contradictions of USD as the world currency.

## 1. “De-anchored” USD: the inherent contradiction of world currency and its development

The world currency naturally has two inherent contradictions. The first is the general contradiction between all currencies – the intrinsic contradiction between the use value and value, private labor and social labor and the external contradiction between money and commodities (Lenin, 2009), which manifests itself as the contradiction between world currency and foreign trade commodity. The second is the contradiction peculiar to the world currency that the contradiction between the quality and quantity of the world currency. The quality of the world currency refers to the quantity (magnitude) of value represented by the sovereign currency. The magnitude of USD as the world currency must have certain stability, which is an inherent requirement for the world currency to perform its functions. On the one hand, the magnitude of world currency refers to the production or supply of it, and on the other hand, the demand for it. With the rapid growth of international trade, finance and investment, the supply or production of world currency has never kept up with the demand of world currency. This has generated not only the development of the gold exchange system, but also the demonetization of gold and the corresponding contradiction between the quality and quantity of the world currency.

When the fiat currency of a country takes the role of world currency, in order to maintain the stability of a world currency, it is necessary to match the amount of gold reserves and currency issuer. Otherwise, if the quantity of currency issued by a country exceeds by far the amount of its gold reserves – although this excess can enable currency issuers to obtain a certain “coinage tax” – it will generate worldwide inflation and pose questions about the convertibility of the currency. This will trigger bank runs that can evacuate the gold reserves of the country issuing sovereign currency, and eventually overthrow its status as world currency. Given this contradiction, the sustainability of a sovereign currency as a world currency and the relative stability of its monetary value are based on the country’s hegemonic position in the world. When the growth of gold reserves of a country cannot keep abreast of the rapid growth of global economic activities, the order of international economic activities and the interests of currency issuers can only be maintained by the establishment of hegemony.

Based on the history of the world currency, the UK first established the gold standard system of the world currency. The UK was, at that time, the world’s largest industrial and trading country. The British Pound, freely convertible into gold, executed the function of world currency. In the late nineteenth century, the UK’s economic status declined, and the long-term deficit in industrial product exports threatened the convertibility of the pound. To maintain the confidence of other countries in the pound, Britain cleared the deficit by plundering wealth from the colonies (especially India) and conducting illegal trade. After the end of the Second World War, the empire on which the “sun never sets” was already in the doldrums. There was not much left of the gold reserves (about 6.23 percent of the world’s total)[4]. The economic and military strengths were plummeting. Following this, the overseas colonies sought independence. The pound could not maintain its free convertibility into gold and was forced to surrender its position as the world currency. Meanwhile, the USA on the other side of the ocean was not at all dragged down by the war; instead, it amassed fabulous wealth from it. After the war, it aggregated about 75 percent of the world’s gold. With the backing of strong gold reserves and the status of world’s largest creditor country, USD became the world’s major settlement currency. A gold exchange standard is established, that is, USD and gold remain convertible, and other countries’

currencies are pegged to the USD with a certain exchange rate. Nonetheless, this seemingly viable monetary system is no exception to the inherent contradictions of the world currency. With the gradual recovery and rapid growth of the post-war economy of Germany, France, Japan and other countries, these countries amassed a large amount of USD foreign exchange in the international trade market, with a short-term USD debt exceeding the US gold reserves. Uncertainty about the convertibility of USD caused the speculation of USD in the financial market and the demand for exchanging USD to gold from European countries, resulting in the continuous outflow of US gold reserves. In 1971, the USA decided to abandon the convertibility of USD, declaring the decoupling of USD from gold. In 1973, the USD-denominated gold exchange standard collapsed.

The de-anchoring of USD from gold declared the end of the world currency system based on convertible gold. In the absence of other currencies comparable to the credit of USD, the status of USD went up instead of down; thus, USD replaces gold as the main currency of the world reserve (see Table I for details). In the world currency system of non-monetized gold, the floating exchange rate is legalized. However, the floating exchange rate did not solve the inherent contradiction of the world currency. On the contrary, due to the disengagement of convertibility into gold, USD lost its external constraint to maintain its stable value. Although USD performs the functions of the world currency, the circulation of USD rests entirely on the USA. For sovereign countries, currency issuance is often the primary consideration of national economic goals, which encompass, aside from the stability of the currency, other goals such as employment and economic growth. When different targets collide, the US Government is very likely, as it turns out, to sacrifice the indicator of currency stability. This determines the inherent instability of USD as a world currency. With the rapid rise of countries such as Germany and Japan, the unstable USD attracted strong competitors such as the Deutsche Mark and the Japanese Yen. In order to maintain the world currency status of USD, the USA, like the former UK, embarked on the path of state hegemony.

## 2. The “empire’s new clothes”: inequality under the cover of equal transactions

The USD, which acts as the world currency, can be divided into two categories by channel: the official channel of USD and USD used for private transactions. The official channel of USD refers to USD assets held by central banks, including various types of USD bonds. For other countries except the USA, there are three major ways to obtain this type of USD: to directly purchase USD bonds approved by the US Congress and designed by the US Treasury; to buy USD or USD bonds in the international foreign exchange market; and to apply directly for USD loans. The USD obtained through official channels directly forms the country’s foreign exchange reserves, which are used to regulate the international balance of payments and local currency exchange rates. The USD for private transactions mainly exists in the form of notes and cash reserves. Other countries obtain USD through the export of USD-denominated commodities and investment in USD capital. These USD are held privately, or settled or exchanged by commercial banks to form foreign exchange reserves

	1938	1948	1958	1978
Gold	82	33	45	—
Dollar	5	13	27	82.1
GBP	13	53	21	1.6
Others	0	1	6	16.3

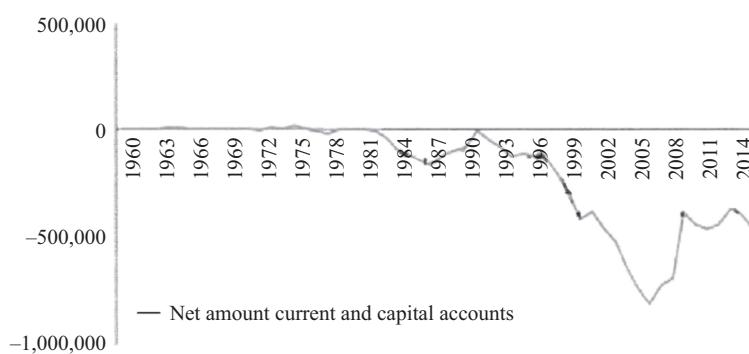
**Source:** Statistics from the IMF’s gold reserves, foreign exchange and trade data, and annual reports, excluding data from international organizations and Soviet countries

**Table I.**  
Composition of the  
world currency  
reserve (unit: %)

in their central banks. Although USD obtained from private channel is issued by the Federal Reserve (FED), it is essentially a debt borrowed by the US Government from the FED with interest payment and future taxes as collateral. As the world currency, USD essentially represents a debt relationship with the US Government, thus the so-called “dollar standard” is essentially the “debt standard.”

The movement of USD, as the world currency can be seen in a circulation pattern centered on the US Government, is moving among central banks around the world. However, this kind of movement is asymmetric. For countries that have obtained an abundance of USD through trade surpluses, these USD are essentially debts. The fluctuations of USD exchange rate will seriously affect the market value of the country's foreign exchange assets. In order to guarantee the security of USD debt assets held, these countries were forced to become fixed buyers of bonds issued by the USA. By the end of January 2016, US treasury bonds accounted for half of China's foreign exchange reserve[5]. Since the first trade deficit in 1976, the USA has seen a persistent deficit (see Figure 1). As the size of the US trade deficit continues to expand, the movement of USD between the USA and its creditor countries is characterized by a steadily reinforced one-way net outflow that deviates from the USA. For countries with serious shortages of USD reserves to obtain sufficient USD for international trade and other needs, they needed to obtain USD loans through mortgage of their own assets, consequently becoming countries in debt to the USA. These countries often have to sell domestic assets for debt service repaying capital and interest, thus, further losing the ability to obtain USD through export earnings in international trade. Therefore, the size of their debt is constantly increasing. The movement of USD between the USA and US debtor countries is characterized by a continually reinforced one-way net inflow toward the USA. In both movements, the USA is an absolute beneficiary. For the former, low-interest loans were obtained without reimbursing, and for the latter, high-interest payments were reaped at low-cost USD.

The USD circulates globally as a world currency and essentially working as an agent to rape various economic benefits worldwide. In the international trade market, the liberal trade advocated by neo-liberalism is based on the establishment of an unequal exchange system with the USA at its core. The USA promotes the expansion of neo-liberalism around the world, persuading or forcing developing countries to abandon their protection over markets for goods and services so that USD capital can take advantage of cheap labor in developing countries and possess privatized assets. With its huge capital scale and technological advantages, USD capital has incorporated developing countries, which have become suppliers of cheap labor and commodities, into the global manufacturing and distribution system centered on USD capital through direct investment or outsourcing production and vertical division of labor.



**Source:** Based on data released by the US Bureau of Economic Analysis

**Figure 1.**  
Trends in credits and  
debts of current  
account, US  
international  
balance of payments  
(1960–2014)

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While enjoying cheap goods, the USA has retained the surplus value of workers produced by other countries in the form of reflux of USD capital (Hausmann and Sturzenegger, 2007).

This unequal exchange system is not only reflected in the division of labor but also in the monopoly of USD on commodity pricing and currency. Even when industrial production capacity and the gross value of tradable commodities decline in the USA, the USD can still participate extensively in international transactions unrelated to the USA, serving as the most important pricing and trading currency. Therefore, when USD exchange rate fluctuates greatly, the domestic capital of the USA will not be affected and will seek benefit at the expense of other countries. Former US Secretary of State Kissinger wrote in *Years of Upheaval* (1982) that the two oil price hikes in the 1970s were driven mainly by the USA. US policymakers used the embargo imposed by the Organization of Petroleum Exporting Countries (OPEC) to rocket oil prices up, which was unanticipated by OPEC. The purpose of the USA was to change the balance of payments in the three major economic zones: Europe, the USA and Japan. The USA estimated that Japan and Western Europe would face greater difficulties than itself in dealing with the rocketing oil prices. The USA had gained enormous benefits from the crisis of its own making and in the process, successfully reduced its deficit (Halevi and Varoufakis, 2003).

In the international financial market, the free flow of USD has become a tool for the redistribution of wealth. The USA has used various means to promote the opening of financial markets in developing countries and to incorporate other countries into USD-centered international financial system, further strengthening the USD-centered international currency system. The goal of the US promotion of financial liberalization is not to stimulate wealth production, but to redistribute world wealth and income, thus achieving a “predatory accumulation” (Harvey, 2003). In the increasingly unified global financial market, the USA, as the world’s largest capital-owner and investor country, can influence the flow of capital and the redistribution of world wealth through the adjustment of interest and exchange rates. When the USA cuts its interest rates, its capital will flow to countries with good economic development momentum and will divide the surplus value created by workers in other countries in the form of industrial capital or interest-earning capital. Once the USA raises its interest rates, this capital will carry the surplus value of the goods back to the USA, actualizing the transnational flow of wealth. When USD appreciates, USD-denominated debt will increase, and the debtor country will have to sell its assets to pay the principal and interest. When USD depreciates, USD-denominated debt will shrink, and USD-denominated assets held by the creditor countries will suffer serious losses. Considering that the USA is both a debtor and a creditor country, it is both a capital exporting destination and a capital reflux destination. The USA can tailor its monetary policy to the needs of its own economic development, and realize its monetary policy objectives by transferring other countries’ wealth. In the 1970s, in order to improve the US balance of payments, USD depreciated sharply, leading to two oil crises and worldwide inflation. In the 1990s, to stimulate the sluggish domestic economy, USD rate hike attracted capital to return. As a result, the capital flight and debt increase in Southeast Asia triggered the Asian financial crisis. After the financial crisis broke out in 2007, compared with the limited effect of the European Union and Japan’s monetary policy, the US quantitative easing policy has achieved remarkable results in large part due to the benefit of USD status as world currency. The quantitative easing policy generated the expectation of a USD rate hike, which prompted the flow of international capital to the USA, saving the US capital market, which was deeply affected by the subprime mortgage crisis. After the US domestic economy improved, the exit of the quantitative easing policy rendered USD interest on the rise, boosting the appreciation of USD and reducing the external debt burden of the US Government. At the same time, in the process of economic recovery in the USA, other countries have suffered huge losses due to sudden and large capital outflows and huge changes in international debt, and even fallen into crisis.

The USD is not only a tool for transferring wealth from other countries, but also for exporting the crisis and protecting USD world currency status. Since the 1990s, the degree of financialization in the USA has escalated (Epstein, 2006). The USD capital has penetrated into the industrial and financial sectors of other countries, making countries closer to each other, even if the US economy declines. Since other nations' financial markets are deeply related to the USA, it is difficult to give up USD to choose other currencies as the world currency. This was particularly evident after the 2007 financial crisis. Even though the instability and weakness of USD became a consensus, other countries were forced to continue to hold cheap credit for USD because of their massive USD assets (Davis, 2010).

It should be noted that in the asymmetric movement of its world currency, USD can plunder wealth on a global scale through the form of multinational corporations and financial capital. The fundamental reason lies in the support of state hegemony. In the international trade market, the core position of the USA is not solely based on technological advantages but also, most importantly, on the support of political and military power. Under the coercion and attack of the US military that USD has guaranteed its position as the main currency in the world trade of mainstay commodities such as oil (Vasudevan, 2009). In order to ensure the risk return of overseas USD capital, the USA exerts strong protection over its interests overseas through political pressure, strict intellectual property rights and flexible market access thresholds. Since international organizations such as the World Trade Organization, the World Bank and the International Monetary Fund are under the control of the US Government, when the interests of USD capital are threatened, other governments are under various pressures and investors from the USA can enjoy overseas supreme power. In the financial market, the US Government has forced developing countries to open up financial markets and give unimpeded access to USD capital through a carrot-and-stick (coercion and inducement) approach, while forcing intervention in other countries' financial markets. The USA adjusts USD interest rate and exchange rate pursuant to the interest that appeals to US capital, regardless of the interests and protests of other countries. A strong state hegemony is the foundation for maintaining the world currency status of the USD.

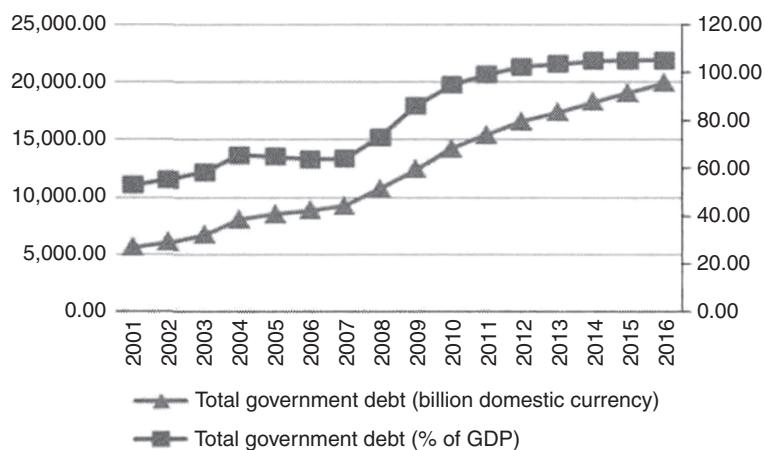
### **3. The USD impasse: the desire for unlimited accumulation of capital and the continual waning strength of the USA**

In order to cope with the inherent contradictions of the sovereign role of world currency, the US hegemonic support of the USD status created a new model of capital accumulation. By collecting coinage tax, exerting unequal exchanging and manipulating financial markets on a global scale, the USA plunders the wealth produced by other countries, but the series of contradictions in this new imperialist capital accumulation model also predict the inevitable decline of the US hegemonic status.

First, there is a contradiction between the increase in USD debt and the need to maintain domestic low inflation. The above analysis of the movement of USD as a world currency shows that in order to meet the demand for USD in international trade investment, the USA needs to loan USD to abroad or release USD by maintaining a trade deficit for a long time. Under the Bretton Woods system, the US economic strength is far ahead of other countries. Coupled with USD linked to gold, the USA is more inclined to export USD through external loans and aid, and then recover USD through trade surplus. After the 1970s, the US economy was in a relative downturn, and the USA relied on exporting USD through trade deficits and then recovering USD through capital backflow. Although this effectively guarantees the demand for USD from other countries, as the size of USD deficit continues to expand, the circulation of USD snowballs, which in turn increases the pressure on domestic inflation in the USA. In order to release inflationary pressures, the USA, in addition to exporting inflation through the outflow of USD, is also trying to control the level of domestic price and the rising trend of wages. Since the Reagan administration began to suppress

trade unions and lower wages in the late 1970s, the USA has taken the reduction of wages of workers as an important tool for preventing inflation. To effectively control wages, the USA does not hesitate to sacrifice domestic industrial entities, and transfer industrial capital to overseas by means of global industrial division of labor, and then obtain cheap goods produced overseas in the form of imports to reduce the cost of reproduction of domestic workers' labor. This led to the decline of the US real economy, further exacerbating the current account deficit, which in turn pushed up USD's debt size (as shown in Figure 2). This mode of operation, in which economic prosperity is maintained by debt and the world's working class is squeezed to maintain domestic capital profits, spreads the risk of inflation to the world. When inflationary pressures reach the critical point that the world economy can bear, the USD collapse will inevitably sweep the world.

Second, there is a contradiction between the excess of USD capital and insufficient domestic investment. Given the USD status of world currency, USD capital can reap without sowing, without the need to go through the process of commodity production and circulation, and participate in the division of global surplus value in the form of financial capital, and reap high profits (Krippner, 2005). The pursuit of surplus value or the maximization of profits is the sole purpose of capital. Participating in the financial market has become the starting point of the US industrial capital decision making. This has two consequences: on the one hand, capital accumulation serves financial interests rather than social reproduction, the real economy is, thus, in a state of stagnation or even recession; on the other hand, the huge wealth absorbed by financial capital generates huge investment demand, but there is not enough physical property for financial capital to invest and trade in a securitized way. Excess capital becomes idle (along with the surplus labor) because of the inability to see a profitable way out. After the 1990s, under loose financial control, this surplus capital constantly created financial derivatives such as options, futures and swaps targeting virtual properties such as stocks, interest rates and exchange rates, which created the illusion of economic prosperity. The outbreak of the subprime mortgage crisis fully exposed the fragility of the capitalist economic order that relied on virtual capital, and the unsustainability of the US "de-industrialization" development model. Compared with the fact that the US manufacturing output value accounted for more than 40 percent of the world's output value at the end of the Second World War, this value was less than 20 percent in 2015[6]. Although Obama called for the return of overseas capital during his



**Figure 2.**  
Total US Government  
debt and its ratio  
in GDP

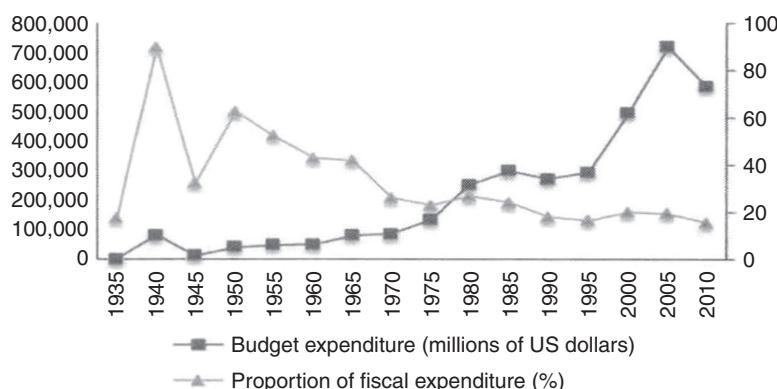
Source: World Macro Economy Database

tenure to achieve “re-industrialization,” the effect is limited. The share of US manufacturing in GDP fell from 13.2 to 12 percent between 2010 and 2015. The newly inaugurated US President, Donald Trump, hopes to encourage the revival of real economy through a preferential tax system, but will USD capital give up the previous effortless profit model of relying on the financial capital movement?

Finally, there is a contradiction between hovering military spending and high budget deficits. David Harvey (2003) once quoted the German-American political theorist Hannah Arendt's point of view: “a never-ending process of growing property must be based on a never-ending process of growing power that the accumulation of capital is limitless only if it is embodied in a political structure of ‘unlimited Power’ that can assume the necessary task of protecting a corresponding accumulation of property”. The nature of capital is accumulation, and the infinite accumulation of capital necessarily requires the support of ever-expanding state power. In order to decrease the growing desire of USD capital, the USA plunders wealth in the form of world currency capital and continues to expand military spending. In his letter to Congress, Trump said, “Without Safety There Can Be No Prosperity.” This shows that the support behind the US economic prosperity is its military strength. In the wake of the Second World War, to ensure USD status and the interests of USD overseas capital, the US defense spending budget has generally maintained a growing trend. Although the US defense spending budget has declined slightly between 2010 and 2015, it still far exceeds that of other countries. In 2016, the US defense spending budget rose again, reaching \$605bn, more than the sum of the budgets of China, Russia, Germany, Britain, France and India. Corresponding to the growing huge military spending is a record-breaking national budget deficit (as shown in Figure 3). The pressure of domestic inflation and the depreciation of USD caused by the growth of the budget deficit shows that the US deficit is unlikely to increase in an unlimited way. The space left for further expansion of US military spending is getting smaller and smaller. Maintaining the infinite expansion of domestic capital through military power is full of contradictions and dangers. Unless the economic strength of the USA is always at the level of a superpower, the era of USD capital will be terminated once the accumulation of political power falls behind the infinite accumulation of capital (Harvey, 2003).

#### 4. Future envisaged: the establishment of a new order

As a sovereign currency, USD has always been bound with US state power, owing to its inherent contradictions since it became the world currency. With political hegemony and strong military power, the USA supports the plundering and accumulation of USD capital in the world.



**Source:** Based on data from the US White House budget report

**Figure 3.**  
The proportions of US defense budget expenditure in fiscal expenditure and total US assets (1949–2010)

It is a new imperialism with occasional wars and eternal oppression. This seemingly stable capital accumulation model is doomed to be “unsustainable” because of its irreconcilable internal contradictions. However, this inequitable and irrational capital accumulation system will remain and continue for a certain period of time before this contradiction intensifies and eventually causes the USD-centered world currency system to collapse.

Nixon's Finance Minister, John Connally, had a famous saying: “The USD is our currency, but your problem.” As the world's largest trading country, the second largest economy and the largest USD foreign exchange reserve country, China does not have the corresponding currency recognition and rulemaking rights. China is one of the biggest victims of the “USD problem.” In this current unequal USD-centered world currency system, China needs to participate in the international cooperation since the reform and opening up and actively integrate into the globalization process with developed capitalist countries at the center. After the RMB is included in the special drawing rights currency basket, it is necessary to continue promoting the internationalization of the RMB and enhance its status and role in the global trade and financial system. This will not only ensure the national interests of China, it will also ensure the active participation of the world's largest developing country in the reform of the unequal international monetary order.

The peaceful development of the world requires the establishment of a new world currency order of equality and mutual benefit, which must not only overcome the inherent contradictions of the sovereign role of the world currency but also surpass the limitations of a single sovereign state in issuing world currencies, overcome the contradictions caused by the predatory accumulation of capital in the world, and transcend the logic of capital accumulation. New imperialism is still capitalism in essence, combating the unequal new imperialism must, therefore, be based on criticizing and opposing capitalism. As a socialist country, China needs to propose a “Chinese program” to improve the world monetary system. Moreover, while promoting imperial capital accumulation, new imperialism has also intensified the contradiction between capital and labor, imperialist countries and other countries. Therefore, the establishment of a new order in the future will also depend on the united struggle of the global working class and the cooperation of developing countries.

### Notes

1. (Germany) Luxemburg (1959); (Soviet) Bukharin (1983).
2. (Germany) Hilferding (1994).
3. (USA) Wood (2006).
4. (USA) Triffin (1997).
5. The data come from the US Treasury estimates since the foreign exchange reserves constitute state secrets, and there is no specific detailed information.
6. According to the World Bank statistics.

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# Scientific and technological innovation related to real economic growth

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## Abstract

**Purpose** – Innovation is the fundamental driving force for the long-term sustainable development of an economy. After four decades of rapid economic growth, China is facing crises related to a demographic structure of “aging before getting rich,” industrial overcapacity of low-end products and environmental and resources constraints. This paper aims to discuss these issues.

**Design/methodology/approach** – Based on logical analysis and recapitulation of previous empirical research, this study presents the conclusion.

**Findings** – Scientific and technological innovation, as strategic support to improve social productivity and overall national strength, must be placed at the center of the country’s overall development.

**Originality/value** – The development model that preys upon cheap resources for extensive growth is unsustainable. Thus, the country needs an urgent strategic switch to drive its economic growth through research and development innovation and original technological advancement.

**Keywords** Business environment, Real economy

**Paper type** Research paper

## 1. Introduction

Innovation is the fundamental driving force for the long-term sustainable development of an economy. After four decades of rapid economic growth, China is facing crises related to a demographic structure of “aging before getting rich,” industrial overcapacity of low-end products, and environmental and resources constraints. The development model that preys upon cheap resources for extensive growth is unsustainable. Thus, the country needs an urgent strategic switch to drive its economic growth through research and development (R&D) innovation and original technological advancement. In 2017, the report of the 19th National Congress of the Communist Party of China pointed out that “innovation is the first driving force for development and the strategic support for building a modern economic system.” This report proposed to deepen scientific system reform, establish a market-oriented scientific and technological innovation (STI) system with enterprises as the mainstay, enhance industry, academia and research collaboration to support small and medium enterprise innovation and promote commercialization of scientific and technological achievements.” Therefore, STI, as strategic support to improve social productivity and overall national strength, must be placed at the center of the country’s overall development.

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In this context we have noticed that, on the one hand, the investment in innovation of Chinese enterprises is increasing year by year. The “Statistical Bulletin on National Science and Technology Funds Inputs in 2016” shows that the R&D expenditures of various enterprises in China amounted to 1,214.4bn yuan, up by 11.6 percent (and 3.4 percentage points in terms of the annual growth rate) year-over-year (YOY). The contribution of enterprises to the growth of R&D funds in the entire society was 83.8 percent, up by 12.7 percentage points YOY, and the status of innovation gradually became prominent. However, the innovative activities of many Chinese enterprises remain at a low level, with outputs mainly focusing on micro-innovation in areas like utility model and appearance design or applied technology development, while lacking cutting-edge and basic research and key technology in strategic areas.

The recent ZTE ban (i.e. a denial of export privileges against Zhongxing Telecommunications Equipment Corporation of China) has sounded the alarm. In April 2018, the US Department of Commerce announced that the Chinese telecommunication equipment supplier ZTE breached some of the provisions of its settlement agreement (by instrument fraud and exportation of equipment to Iran). Thus, ZTE would be banned from purchasing components from US companies within the next seven years. Although ZTE has ranks among the top 500 companies in the world and enjoys the market leading position in China, its hardware equipment, spare parts, layers of operating systems and applications used in its business activities are highly dependent on supplies from US technology companies such as Google, Qualcomm and Texas Instruments. This ban may bring ZTE to the verge of bankruptcy. Given this dilemma of one of the strongest R&D companies in China, other Chinese firms may face challenges in the future. Although the ZTE ban was finally lifted under the condition that China would pay large deposits and meet other requirements, the US-initiated trade war against China has shown signs of further expansion, which may seriously affect the realization of the “Made in China 2025.”

This condition shows that if enterprises are unable to implement independent innovation, although the international division of labor may be a “cost-effective” solution in the short term, it may affect the speed and quality of economic growth in the long run due to the lack of competitiveness in high-end technology. Where national interests are at odds, the low-tech countries would merely be at the mercy of the developed ones. This situation means that how to motivate Chinese companies to encourage corporate R&D and innovation at present and in the future is a crucial factor in overcoming short-term technological problems, countering overseas pressure and promote long-term economic growth.

The enterprises and industry sectors involved in the aforementioned discussion are the main battlefields in the transformation and upgrading of China’s real economic development at present. These enterprises and industries also highlight the dual challenge in promoting real economic development as the foundation of China’s development. On the one hand, the real economy must be transformed and upgraded with high-quality capital, manpower and technological input. On the other hand, not only the overall economy lacks innovation, but the phenomenon of “underweighted real economy and overweighted virtual economy” in the capital and talent sectors also results in a shortage of input in the real economy. Therefore, promoting the development of the real economy is a crucial task.

What is the relationship between the development of the real economy and STI? Premier Li Keqiang clearly stated in the 2017 Report on the Work of the Government that “the real economy, as has always been the foundation of China’s development, has a top priority to accelerate the transformation and upgrading,” and has enlisted “innovation-driven transformation and upgrading of the real economy” as one of the nine “key tasks.” We believe that the interdependence between STI and the development of the real economy is manifested, aside from the reliance of the latter on the former, in their identical requirements for the development environment. Therefore, solving the challenges faced by the real

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economy and promoting STI are two sides of the same coin. They invariably involve the relationship between the government and the market to improve the business environment.

This article aims to examine the relationship from the following perspective. Section 2 clarifies the concepts of the real and virtual economies and demonstrates why the fundamental path of the development of the real economy is to transform and upgrade, and then to explain the dependency of real economic development on STI. Section 3 focuses on the long-term and high-risk characteristics of STI to discuss the challenges that may be encountered in the process. This section also posits that the environmental conditions required by STI and real economic development have much in common, namely, a fair, transparent, predictable and stable business environment in the long run. Section 4 proposes strategies to promote STI. Aside from studying the business environment, this section also analyzes and compares the specific effects of various innovation policies based on previous research results. Section 5 provides a brief summary.

## **2. Transformation and upgrading as the development path**

To discuss the relationship between STI and the development of the real economy, we must first clarify the concept of the real economy. The most useful definition of the real economy is that of Liu (2015), who compares the real economy with the virtual economy and defines the latter as an activity that directly generates money from money; correspondingly, the value-added activities generated on the basis of directly creating social wealth constitute the real economy. The concept of the real economy is different from the common “physical” or “sectoral” concept, because the distinction between the real economy and the virtual economy is based neither on whether the production and distribution of the material goods is being conducted nor on the corresponding sector of production, but on whether the value-added activities of monetary capital take goods and services as a medium and ultimately create new wealth. Therefore, activities in non-manufacturing sectors (such as logistics and finance) that can further add value to goods and services are also an important part of the real economy. By contrast, activities in the traditional sectors (manufacturing or agriculture) that are solely for the purpose of asset appreciation and wealth redistribution fall into the virtual economy, such as price speculation on certain agricultural products. The classification of the activities in the real estates is a typical example of how this concept can be applied: the construction of real estate commodities and the provision of property management, to offer the use value of goods and services, create new wealth for society. Thus, these activities belong to the real economy based on the above definition, whereas those solely for real estate speculation, which are intended to earn profit from rising house prices, redistribute wealth without creating new social values. Therefore, those activities belong to the virtual economy.

The distinction between the real and the virtual economy is important because, first of all, it clarifies the decisive role of real economy in China’s economic development. As the main force of direct value creation, the real economy is the fundamental driving force for the development of all economies. The virtual economy characterized by “money making money,” if overdeveloped, will not only distort the rational allocation of production factors but also cause “exsanguinating (blood drawing)” damage to the development of the real economy, but will also generate economic bubbles arising from price distortions, thereby harboring serious economic and social risks. Therefore, it is crucial to revitalize the real economy as the foundation of development of the overall development of China’s economy and society.

The distinction between the real and the virtual economy is also important because it is closely linked to innovation activities. The development of the real economy is bound to create new wealth for society, so the related innovation activities directly contribute toward the growth of social wealth. By contrast, the virtual economy aims to distribute and redistribute

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social wealth; consequently, the related innovation activities only directly affect the distribution, rather than adding up, of social wealth. Of course, innovation in the virtual economy may also provide different incentives by changing the distribution of wealth corresponding to real economic activities, thereby affecting the level of these activities and influencing the creation of social wealth. However, this effect is indirect, and it comes into play via real economic activities. In other words, if innovation in the virtual economy does not contribute to real economic activity, such innovation cannot have a positive impact on social wealth creation. Therefore, innovation activities in the real economy are much more important.

The fundamental path toward the development of the real economy in the new era is transformation and upgrading. In the past few decades, the development model has helped China's economy to improve its industrialization and urbanization levels relatively fast. However, in the context of changes in internal and external conditions such as population structure, resource environment, technology level and domestic and overseas markets, the development model characterized by high input, high consumption, high pollution, low output, low quality and low efficiency needs to be transformed into a development model characterized by low input, low consumption, low pollution, high output, high quality and high efficiency. In other words, the transformation is from extensive and extended economic growth to intensive and inclusive economic growth. This condition requires the Chinese economy to shift from low value-added production to high value-added production. In other words, it is necessary to realize the transformation and upgrading of China's economic development.

To achieve this goal, the key is for the production process rather than the industry category to shift from low value-added to high value-added production. Clarifying this point is conducive to overcoming several common misconceptions. The first is that transformation and upgrading means eliminating traditional industries and turning to emerging ones, which would result in blindly chasing new industries and dismissing even the advantageous traditional ones as sunset industries. Although the development of emerging industries is an important way to transform and upgrade the industrial structure, it is not the only way. Traditional industries can still upgrade their product quality through internal R&D innovations, thereby providing new impetus to the development of modern economic systems. The second misconception is that the transformation and upgrading involves reducing the proportion of the manufacturing industry and raising that of the service industry, mainly because the energy consumption of the manufacturing industry and the resulting pollution level are higher than those of the service industry. Of course, the features of energy consumption and pollution determined by industrial characteristics are unquestionable, but as the saying goes, one "cannot give up eating for fear of choking." Thus, withdrawing from the manufacturing industry would be unwise because this industry has an important supporting role in the national economy. The correct approach is to develop and deploy advanced technologies within the manufacturing industry to reduce energy consumption and pollution emissions while increasing efficiency.

The aforementioned tend to generate the third misconception, which argues that the transformation and upgrading must rely on the guidance of government regulations as well as funding and policy support, and in particular, industrial policies. Under the influence of this view, achieving industrial restructuring and upgrading in some places is believed to involve the fast establishment and growth of emerging industries regardless of local objective conditions that may lead to overcapacity. This overcapacity will then drag down the healthy transformation and upgrading of the economy. Some places engage in a "one size fits all" development approach, which requires the added value of the tertiary industry in all cities in a region to reach a certain ratio, even exceeding that of the secondary industry. This condition contradicts the fact that the resource endowments and development advantages of different cities vary; thus, this economic plan is far from reasonable. Although the added value of the tertiary industry outpacing that of the secondary industry

is an important manifestation of the transformation and upgrading of the industrial structure, it is neither a decisive standard nor a unified requirement for all regions and cities. For example, for megacities where education, healthcare, wholesale and other tradable sectors have obvious equal-scale effects, the development of tertiary industries is more suitable. By contrast, small and medium-sized cities are more suitable for developing manufacturing industries because of the advantages of lower land and labor prices.

In fact, the essence of “transformation” of industrial structure is to transform the “type” of driving forces of economic growth, that is, from high input, high consumption, high pollution, low output, low quality and low efficiency growth to low input, low consumption, low pollution, high output, high quality and high efficiency growth, turning extensive growth into intensive growth, rather than simply switching the industries. No inevitable connection exists between the transfer and transformation of an industry. Transferring an industry does not necessarily entail a successful transformation, and likewise, transformation does not necessarily entail transfer. An upgrade of the industrial structure incorporates not only the upgrading between industries, such as the evolution of the industrial dominance from the primary industry to the secondary and tertiary industries, but also the upgrading within an industry itself. In other words, the degree of processing and reprocessing within an industry gradually deepens, achieving technology intensification and continuous improvement of production efficiency. Only by correctly understanding these connotations of industrial structure transformation and upgrading can we avoid deviations in practice.

Based on the requirements of economic development in the new era, an overall transformation and upgrading includes structural changes that have an inter-industry as well as intra-industry nature. In contrast to the inter-industry structural changes, the more important transformation and upgrading is the intra-industry quality improvement, product upgrading and STI. Regardless of the history of China’s economic reforms or the economic development of the world’s manufacturing powers, the inter-industry upgrading is invariably accompanied by the improvement of intra-industry production efficiency and product quality. Although the emergence of certain technologies has increasingly intensified the competition in the traditional manufacturing industries such as textile, coal and steel, Germany, Japan, Switzerland and other countries maintain their traditional advantages in high-end manufacturing, such as that of precision machine tools, and their top position in the core technologies they have mastered. Recognizing this fact can help cultivate and promote the value of craftsmanship, including enrichment of the traditional spirit of seriousness, responsibility, dedication and meticulousness, thereby advancing mass innovation and entrepreneurship.

To sum up, the fundamental source of economic growth is the continuous creation of social wealth. The long-term driving force of economic growth in a country is the development of the real economy, in which innovation activities constitute the perpetual motion of economic growth. The specific manifestation of effective innovation is the successful transformation and upgrading of the real economy, which is reflected in the structural adjustment between different industry types and within specific industries. To ensure all-round transformation and upgrading in a true sense, enterprises cannot rely solely on government leadership and efforts. A market-oriented approach is necessary. Based on this approach, institutional construction and policy incentives can be formulated and implemented by the government to guide enterprises in making their own choices.

### 3. The connotation of STI and challenges in STI process

As mentioned, the fundamental path toward the development of the real economy is transformation and upgrading, which depends on STI. Therefore, promoting the development of the real economy necessitates the promotion of STI by solving the

challenges that may be encountered in this process. To fully understand these challenges, we first discuss the characteristics of STI from the concept of innovation. Innovation refers to new ideas, equipment or methods that can help meet higher or potential needs. Thus, innovation is manifested as new technologies, products and processes, or as novel ways of organizing and managing production, or as new marketing and business models. Based on the given definition, the aforementioned features of innovation constitute the features of STI. Innovation can be divided into three types: knowledge, technological and management innovation led by modern science and technology. Specifically, knowledge innovation refers to the original scientific research activities that propose new ideas (i.e. new concepts, ideologies, theories, hypotheses, methods and discoveries). Technological innovation refers to new production technologies and upgrades on existing technologies for practical application. Management innovation refers to the process by which organizations formulate creative ideas and translate them into useful products, services or operation methods, often because of new management elements (methods, tools or models) or combinations of factors that are introduced into the enterprise management system to effectively achieve organizational goals.

Some innovative activities (such as those in the financial, real estate and other sectors, where the only target is asset appreciation via price fluctuations) are not directly involved in providing products or services to the real economy. Innovation activities that do not lead to the creation of new social wealth should be classified as the virtual economy. STI does not include the innovation activities corresponding to this part of the virtual economy and the management innovations thereof. Financial innovation (including corresponding management innovation) and innovation at the macro-level of management, such as institutional innovation, can indeed indirectly influence the level and quality of STI through the incentive mechanism that influences the innovation entities. Ultimately, however, what plays a decisive role in promoting long-term economic growth is STI, just as the healthy growth of a national economy depends on the development level of the real economy in which the activities directly create value.

Compared with other investment activities, innovation activities require greater investment and a longer cycle and involve greater risk. Therefore, higher requirements are imposed on the business environment, particularly for STI. Therefore, compared with other types of innovation, such as financial innovation, the development and realization of STI involves longer cycles. Meanwhile, the success of STI is based on the creation of new social wealth and plenty of innovative behaviors cannot increase productivity and social value. These failed innovations are the costs and risks that innovators must face. By contrast, financial innovation as a virtual economic activity takes the transfer of wealth as a direct goal, so even if new value and wealth are not generated, some participants still benefit from it and become the beneficiaries. This condition continues to provide new impetus for such innovations. However, these innovations must realize their redistribution of wealth in the short term. Therefore, such rent-seeking financial innovations have a short cycle as their living conditions are completely different from those of STI. Some of the financial activities participate in the production and value-adding process of the use value by providing the funds needed for the real economy, and therefore pertain to the real economy. Thus, the corresponding innovation activities should not be classified under financial innovation of the virtual economic activities.

Therefore, STI as a long-term development momentum of the real economy and financial innovation as a virtual economic activity have diametrically opposite requirements for the business environments. STI needs a fair, transparent, stable and predictable business environment so that the return on long-term investment can be assured. The financial innovation in the virtual economy, however, is aimed at the short-term rapid appreciation of assets, and the focus is on the profitable contingent opportunities to be obtained, the

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frequency of which can often be positively correlated with the rate of change in the business environment. A fair, transparent, predictable and long-term stable business environment constitutes a necessary condition for the advancement of STI. This condition is consistent with the development requirements of the real economy, but it is not an important prerequisite for virtual economic activities.

STI activities first need to be supported by “public knowledge input,” namely, basic research to acquire new knowledge without any specific commercial application. Basic research has obvious public-good characteristics. On the one hand, once new knowledge and technologies generated by basic research are published, the discoverer or inventor faces difficulty in preventing others from using such knowledge or technologies or in profiting from the innovative outputs developed by others using relevant knowledge and technology; this situation is called non-excludability. On the other hand, the use of basic research results is not affected by the increase in the number of users; this situation is called non-competitiveness. Stiglitz (2014) pointed out that the “pace of innovation is related both to the level of investment in innovation and the pool of knowledge from which innovators can draw,” that is, to the amount of “public goods” information that researchers can use for free or at low cost. Therefore, promoting STI activities should solve the problem of public goods supply, which may require government intervention.

Furthermore, strong positive externalities are involved in STI activities. Therefore, private supply is often insufficient, and the government may need to intervene through subsidies to boost supply. The positive externalities of R&D innovation activities are manifested in conditions where enterprises have invested substantial resources in innovation activities, but new knowledge and new technologies generated by the innovation process may be used by other enterprises, rendering the social benefits generated by R&D and innovation activities of enterprise higher than the private income it generates. If enterprises cannot fully reap the benefits of innovation, then the incentives will be restrained, thereby leading to insufficient social investment and affecting long-term economic growth. The positive externalities of innovation make the private benefits of innovation lower than the social benefits, so that the innovation incentives of enterprises are not enough to make them choose the best innovation input level in society. To solve this problem, the government often compensates for the market failure by providing enterprises with fiscal and taxation policies such as subsidies for innovation, tax incentives, reductions and exemptions. Financial innovation as a virtual economic activity, however, does not face these problems because it does not produce positive externalities.

STI activities also require investment in the form of external funds. Therefore, STI requires the support of the financial system. Numerous studies have shown that most STI activities are subject to financing constraints, the mitigation of which plays a pivotal role in stimulating enterprise innovation. Due to the prevalence of information asymmetry in financial markets and the particularity of innovative investment, STI financing costs more than general projects (Hall and Lerner, 2010) because of the particularly serious information asymmetry in STI activities. Specifically, because of the inherent uncertainty of innovation activities and the complexity of technology activities, innovators are much more aware of innovation activities than outside investors, that is, a wide information gap exists between innovators that need capital investment and the potential providers of funds. In other words, information asymmetry occurs in the investment process of STI, thereby leading to market failure that hinders the development of innovation.

#### **4. Strategies to promote STI and real economy**

As mentioned, the transformation and upgrading of the real economy must rely on STI instead of simple model innovation or financial innovation. In particular, STI can directly affect the production efficiency of real economic activities such as the production and

provision of products and services. Consequently, the same production materials yield higher output. Thus, STI is the decisive factor in determining the total supply. By contrast, business model innovation can be understood as new ways and means to effectively integrate market demand, thereby helping to meet potential needs and achieving higher levels of market equilibrium, while financial innovation aims to help effectively match the key channels of market supply and demand by providing new financial products and services. Specifically, it is manifested in providing more efficient ways to create an exchange platform for capital supply and demand through identifying and monitoring investment projects and redistributing investment risks.

According to the framework of production function, the role of STI is to push up the production possibility curve, whereas the simple model innovation and financial innovation aim to make the economic operation move from within the production possibility curve onto it. Both are indispensable for economic growth, but STI is not only the fundamental driving force for the development of the real economy, but also the basis and premise for financial and model innovation to promote such development. Therefore, the following discussion focuses on how to promote STI. Furthermore, given the commonalities of STI and the development of the real economy, including the need for long-term stable business environment and long-term financial resources, most of the discussion in this section has guiding significance for the development of the real economy.

How to improve the supply of STI is a key issue that all economies need to address. First, clarifying the various challenges faced by STI is necessary, along with planning strategies with a definite purpose. In addition to the features of STI activities described in Section 3, if intellectual property right (IPR) protection is leveraged to promote STI, then monopolistic behavior may occur. Therefore, promoting STI requires addressing these challenges, including typical market failures.

#### *4.1 Streamlining administration and delegating power to lower levels to create a transparent and stable business environment*

In view of their long-term and high-risk characteristics, STI activities require a transparent, fair, stable and predictable business environment. The establishment and improvement of law-based protection, such as high-level property rights and contracts, is the best way to achieve this objective. This condition requires real transformation of government functions by streamlining administration and institute decentralization, reassigning economic activities that can be effectively regulated by market mechanisms, and transferring government functions to effectively provide a system to create high-level property rights and contract protection.

Our study finds that the government can boost market competition of STI intermediary organizations by effectively reducing the access barriers to them in the innovation markets, thereby improving the current level of STI. Specifically, the cancellation (at substantial ratios) of administrative examination and approval projects by all provincial science and technology departments has promoted enterprises to apply for invention patents, and also played a role in encouraging enterprises to conduct high-quality innovation. This promotion effect applies mainly to private enterprises and businesses that are subject to high financing constraints. We also found that the cancellation of such projects reduced the cost of patent applications by decreasing the access barriers for patent agents and agencies, further stimulating corporate innovation (Long and Lin, 2018a).

#### *4.2 Provide an appropriate level of IPR protection*

IPR protection constitutes an important institutional arrangement for promoting STI activities. Simply put, IPR protection is a system that helps innovators recover their

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innovation costs and obtain investment returns by granting them a monopoly on the production and sales of new products for a certain period of time. As a result, innovation is encouraged. The monopoly rights granted are IPR, including patents, copyrights and trademarks, which provide property rights protection for technological inventions, artistic creations and product creditworthiness (goodwill), respectively. As discussed, knowledge products belong to the category of knowledge and information, and they have the characteristics of public goods. Knowledge products can be used by many users simultaneously, i.e. these products have commonality. Second, once the knowledge products are made public, their creators cannot prevent others from using them, i.e. they are not exclusive. These characteristics determine that makers of knowledge products often cannot profit from their sale as the makers of other products do. However, innovative behaviors are time-consuming and costly in terms of manpower and materials. If innovations do not bring corresponding economic benefits, then innovators lose their motivation and the source of innovation will be exhausted.

Therefore, all countries protect intellectual property products, such as technological inventions through laws on patents, copyrights and trademarks. During the period when exclusive rights are granted to the knowledge products, innovators can either obtain monopoly profits by exclusively producing and selling their products, or reaping use fees (royalty payments) by selling the right to use IPRs, or earning transfer fees by selling IPRs to other companies. These and other derivative rights (including pledge rights and mortgage rights) provide innovators with effective incentives to make IPR protection a major means of promoting innovation. Earlier models of relevant economic theories also inferred that stronger patent protection would lead to an increase in innovation speed (Kamien and Schwartz, 1974; Waterson, 1990; Klemperer, 1990; Gilbert and Shapiro, 1990).

On the other hand, IPR protection, while stimulating innovation, also brings about drawbacks of monopoly, such as compromising consumer welfare and hindering future innovation. From a static perspective, monopolistic producers will reduce production and sell goods at a price level far above the cost of production to maximize profits, so that a large number of reasonable market demands are not met[1], thereby resulting in reduced social welfare levels (Nordhaus, 1969). From a dynamic perspective, each successive invention builds essentially on its predecessors, whereas IPR protection can hinder future innovation for various reasons (Scotchmer, 1991; J.E and Maskin, 2009). First, the fees charged by existing owners of innovations can increase the cost of future innovations. Second, existing exclusive licensees of innovations may prohibit others from using existing innovations to maintain monopolistic benefits, thereby reducing future innovation. In addition, because the defined scope of IPR is unclear, existing exclusive licensees of innovation may also use patent thickets to protect their monopolistic rights, thereby intensifying the negative effect on future innovation (Hall and R.H, 2001; Shapiro, 2003) [2]. Therefore, a country needs to determine the level of IPR protection that suits its needs and formulate relevant laws and regulations according to specific conditions of economic development and innovation capabilities. Various industries may also need to deal with different levels of protection.

Studies have shown that compared with the stage of economic development and the ability to innovate, China's current level of IPR protection has much room for improvement. Specifically, a variety of local policy experiments related to improving the IPR protection level have played an important role in promoting innovation. The local copyright free registration system implemented in 2004 by Dehua County in Fujian Province significantly improved the performance and innovation level of local ceramic enterprises, especially those with high dependence on copyright protection (Wang and Long, 2016). In 2012, the pilot implementation of patent enforcement insurance in 20 prefecture-level cities across China increased the patent litigation, patent value and innovation level of enterprises in the pilot areas (Long and Lin, 2018b). Long *et al.* (2018) further provided the following empirical

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evidence: a higher level of IPR protection can enable the authorized patents of local listed companies to bring greater market value to the enterprises and thus promote the level of innovation thereof.

## Real economic growth

### 4.3 Expanding the universal coverage of incentive policies for innovation

Aside from improving the institutional environment such as property rights protection, the government can also promote corporate innovation through various policy incentives with different levels of coverage. Depending on the level of coverage, financial subsidies or tax incentives can be provided for all innovation activities, or tax incentives or subsidies can be implemented for innovations in specific industries. When selecting the level of policy coverage, governments have to consider not only the fundamentality and externalities of the innovation activities involved but also the possibility of rent-seeking behavior. The following general principles can apply. First, the more fundamental research, the greater the positive externalities; thus, conducting wider-coverage tax benefits or subsidies is reasonable. Second, with greater likelihood of rent-seeking behavior, conducting wider-coverage incentive policy is more reasonable.

Our previous research (Long and Wang, 2015) aimed to quantitatively evaluate the patent incentive policies of local governments in China, and found that these policies have boosted patent applications and authorizations but elicited a decline in the average quality of patents. In other words, policy measures such as fiscal and tax incentives have produced unexpected negative effects, which may result in a phenomenon of “curing the symptoms, not the disease.” Although the tax incentives or financial subsidies applicable to the applicant enterprises have the advantages of low cost for short-term implementation and quick policy effect, they may have unanticipated negative effects, including quality degradation caused by information asymmetry in innovative behavior, and acts of corruption and resource waste caused by rent-seeking.

In comparison, the “Patent Box” and other taxation systems applicable to all R&D innovation inputs are tax incentives with inclusive characteristics, which can avoid behaviors such as corruption and rent-seeking and negative effects. However, the inclusiveness of these incentives necessitates substantial adjustments and revisions to the taxation system, rendering high costs for the short-term implementation, which may slow down the policy actions. Therefore, the centennial plan for China’s new era of economic development proposes the requirements for seriously exploring the feasibility of the “patent box” policy, which is a tax incentive for IPRs such as patents. Through taxable income reduction and exemption of the enterprises’ earnings from intellectual property or products with IPRs, the Chinese government can motivate enterprises to conduct R&D and IPR commercialization. This policy is still in the exploratory stage. However, given the importance of innovation activities in addressing trade disputes, the government should speed up their exploration and implementation.

The experience of the UK, France, the Netherlands and other mature economies should be used as a reference along with China’s national conditions to analyze the advantages and disadvantages of implementing the “patent box” policy in China. In the aforementioned mature economies, the “patent box” policy can encourage enterprises to commercialize IPRs, prevent the IPRs of innovative enterprises from flowing abroad and maintain the competitiveness of their own IPRs. Furthermore, the “patent box” policy may result in a reduction in short-term fiscal revenue, an increase in the complexity of the tax system and even international tax competition. Therefore, this policy should be examined and applied cautiously. In addition, in policy implementation, a variety of factors should be considered to maximize the advantages. As the policy is a tax incentive for corporate IPRs, the setting of tax rate and tax base, and the scope of intellectual property covered (whether trademarks and copyrights are involved), should be considered to balance the IPR revenue and tax losses and circumvent possible international tax competition. Finally, the direction of the

“patent box” policy should be guided to encourage corporate R&D and innovation. The government should strengthen the guidance over the “patent box” policy, such as restricting the location and technology source of patents, stimulating enterprises to improve their profitability, beefing up investment in innovation, and avoiding the near-sighted business practice of “acquisition–holding–selling.”

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### *4.4 Promoting financial innovation to support finance*

Promoting STI also entails resolving the problem of high capital investment requirements which are financing difficulties due to information asymmetry. In China, the challenge is that the financial industry cannot provide effective screening and monitoring services, and corresponding financial innovations cannot provide relevant financial products based on STI, thereby failing to guarantee the capital investment required by STI. Therefore, effective promotion of STI should be accompanied by the acceleration of financial reforms and the healthy development of the financial services industry.

At present, the difficulties encountered in China’s economic development are highlighted by two sets of issues. First is the structural imbalance of the real economy, insufficient investment in some real economic sectors and overcapacity in other real economic sectors. Second is the sluggish growth of the overall real economy vs the overheating tendency of the virtual economy. The reason is that the production and service industries that should provide logistics and financial services for the real economy have gradually deviated from their role of social wealth creation and focused on wealth redistribution. The deeper root of the problem lies in the fact that with the development of China’s economy and the accumulation of residents’ wealth, the demand for investment in assets has grown rapidly, but the supply of corresponding investment products, especially high-quality investment products, has continued to be deficient. In this case, the need for supply-and-demand equilibrium leads to a rapid and continuous increase in the price of investment products, so that the benefits of changes in wealth distribution far outweigh the benefits of wealth creation for a long time.

The solution to China’s underweighted real economy and overweighted virtual economy should include various policy combinations and relevant reforms in the financial sector, specifically generating high-quality investment opportunities and projects through STI in the real economy, as well as furnishing more high-quality assets based on and guaranteed by solid economic growth facilitated by financial innovation. These strategies can help the financial industry restore its original role of deploying financial resources and serving the real economy. Such solutions can also reduce asset prices and the virtual economy’s preemption of financial resources. Furthermore, these solutions can reduce interest rates, decrease the operating costs of the real economy and support the promotion of STI.

### *4.5 Recommendations to promote fundamental research and its application*

The general challenges faced by science and technology innovation activities and possible solutions are discussed above. In view of the two major types of STI activities, this subsection discusses the specific difficulties encountered in the process of conducting STI, such as basic research and the transformation of achievements and exploring how to solve these difficulties to promote STI activities.

*4.5.1 Ways to encourage basic research and innovation.* In the field of basic research, the characteristics of scientific research and innovation activities as public goods are particularly prominent. The results of basic research are usually new knowledge and new ideas presented in the form of textbooks, monographs and academic papers. Basic research has enormous value and the potential for widespread dissemination and impact, with significant spillovers over applied innovation and economic growth. Boudreau and Lakhani (cited in Stiglitz, 2014) used theoretical analysis and evidence from experimental economics

to show that academic research, patent systems, open-source technologies and other “technical disclosure” methods involving intermediate processes contribute to the development of subsequent R&D and innovation. Basic research involves a cycle that is much longer than that of other studies, and it is no picnic to reflect the value of each scientist, causing greater difficulty for the creators of basic research results to earn corresponding compensation or economic benefits. Therefore, basic research has typical public-good characteristics, where private supply under market conditions is likely to be insufficient. Thus, the government should focus on subsidizing basic research.

Moreover, with a wide research scope, it is impossible to foresee the prospects and directions of new knowledge and new fields. In particular, innovative research in the true sense often occurs in unexpected fields. As a result, the selection mechanism for predicting the success rate of innovative projects beforehand is difficult to build. In addition, discriminatory preferential policies will also lead to inventors’ rent-seeking behavior, i.e. the scarce talent and time resources will be merely used to influence the results of the selection mechanism rather than investing in truly innovative activities. Therefore, government investment in basic research should apply the principle of universal benefit and increase the scope of funding while also moderately reducing the quantity of and funding for talent projects.

In summary, first, support for and investment in basic research should be increased at all levels of government to improve the long-term stable support mechanism for universities, research institutions and scientific research personnel. Second, the universal-benefit financial subsidies must be vigorously promoted, the number of talent projects and reporting costs must be reduced to cut the cost of rent-seeking brought by talent selection. Third, the reform of scientific research projects and fund management must be deepened so that the autonomy of scientific research personnel in using funds can be ensured. This suggestion can benefit the promotion of research and innovation activities.

*4.5.2 Measures to promote the applications of fundamental innovations.* Unlike basic research, the application of innovations is more likely to bring direct economic benefits to innovators or outcome converters. Thus, government subsidies or interventions would not be necessary. However, several countries have had a history of low conversion rate of results from research projects that are funded by the government. To solve this problem, the US passed the Bayh–Dole Act in 1980, which has achieved obvious results and significantly improved the conversion rate of scientific research. The key to the effectiveness of this Act is to empower the responsible person with the ownership of IPRs, such as patents generated by government-funded research projects.

Since 2000, the Chinese government has successively issued a series of reform on ownership policies that are related to the patents supported by public funds. Since the policy is highly similar to the US Bayh–Dole Act in terms of specific implementation rules, scholars often refer to it as the “Chinese-version BD Act.”[3] Using empirical research, we examined the impact of the BD policies of 31 universities of the “985” Project in China on the number of patent applications, authorizations, renewal rates, citations and conversion contract value, with a comparative analysis in relation to the non-BD policies (patent application subsidies, job title promotion incentives, cash award for authorized patents and others) (Long and Yi, 2018). The empirical results show that after the promulgation of the Chinese version of the BD policies, the number of patent applications, authorizations and renewal rates of universities adopting the BD policies have been improved in the long run, whereas the number of citations and value of patent-conversion contracts exhibited short-term growth. Thus, the “Chinese-version BD Act” has, to a certain extent, provided an effective incentive for inventors by granting them partial patent ownership.

However, the incentive role has room for improvement. The incremental reform has left the Chinese-version BD Act with a lag in its effect of improving the number and quality of patents

in colleges and universities. The nature of state-owned assets of university patents has repeatedly become an institutional barrier to the patent-conversion process. Since the inception of the Chinese-version BD Act, the patent conversion income of colleges and universities increased significantly in the short term. However, with the increase in the number of patent conversion cases and the value involved in litigations and disputes over rights, responsibilities and interests have become increasingly apparent. Under the existing school leadership responsibility system, patent conversion needs to be signed and approved by the school leaders before they formally come into force. The lack of a fault-tolerant mechanism may lead the school leaders to bear the political risk of state-owned assets being undervalued. These concerns have caused many conversion projects to be put on hold. The disputes of interests between enterprises, universities and inventors in the conversion of results have become another major obstacle. On the one hand, enterprises have the motive to not realize the distribution of income according to the contract after the project becomes profitable. Universities and inventors are often at a disadvantage with the knowledge and experience of law and business, and cannot win the benefits they deserve. On the other hand, disputes also exist in the distribution of interests between some universities and inventors. According to a survey, the equity acquired by the inventor in the patent conversion is usually held by the university asset management company, and the inventor has no right to transfer or sell it (Chang, 2017).

On February 26, 2016, the State Council promulgated “Several Provisions on the Implementation of the Law of the PRC of China on Promoting the Transformation of Scientific and Technological Achievements,” including the exemption clauses aimed at eliminating colleges and universities’ concerns about the loss of state-owned assets and further strengthening the independent decision-making power of universities. Specifically, these provisions require the establishment of a collective decision-making system for leading groups on major issues in the transformation of scientific and technological achievements, with a view to removing the decision-making responsibility of unit leaders in the pricing of such achievements due to changes in follow-up values. Therefore, the Chinese version of the Bayh–Dole Act is expected to play a crucial role in stimulating the innovation of university researchers in the foreseeable future.

## 5. Conclusion

This study has argued that the bedrock of economic development lies in the development of the real economy, whose fundamental path is transformation, upgrading and STI. Given the involved high risks and long cycles as well as the nature of STI as a public good, the STI process needs to address multiple challenges, ranging from maintaining a stable expected return through high-quality business environment, to solving “market failures” including public goods, externalities and information asymmetry through institutional arrangements or policy interventions.

Based on previous empirical findings, this study concludes that the promotion of STI requires the following conditions: a transparent, fair, stable and predictable business environment; high levels of IPR protection; fiscal and tax incentive policies with universal coverage; and financial innovation based on STI and the characteristics of the real economy. These conditions must be aligned with the long-term development of the real economy.

## Notes

1. The reasonable market demand corresponds to the demand where the price is above the marginal production cost.
2. The patent thicket phenomenon refers to “a dense web of overlapping intellectual property rights that a company must hack its way through to actually commercialize new technology.” This kind

of difficulty in commercialization can be achieved through the jungle, which leads to insufficient use of patents, thereby resulting in the waste of social resources.

3. The “Opinions on Strengthening the Protection and Management of Intellectual Property Rights Related to Science and Technology” promulgated in 2000 decentralized the ownership of university patents back to universities. However, since most Chinese universities are government-owned institutions, the patent results of scientific research projects funded as intangible assets are bound by the regulations governing state-owned assets. The implementation of patent transformation requires the approval of multiple levels of administrative departments. As the aforementioned documents do not give colleges and universities the right to dispose patents, the decentralization of patent rights is mere lip service. In 2002, the State Council promulgated “Several Provisions on the Management of Intellectual Property Rights of Research Achievements in National Research Projects,” further liberalizing the independent decision-making power of colleges and universities on the implementation of patents, and explicitly requesting rewards and payments for scientific researchers. This policy is relevant to the core contents of the US Bayh-Dole Act and is therefore considered as the Chinese version of that law.

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# Recapitulation of the relationship between economic thoughts and realities

Doctrine of the Mystery of China's Growth

## Reflections on the prevalence of the westernized “Doctrine of the Mystery of China’s Growth”

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### Abstract

**Purpose** – It is rather common for China’s current academic circles to use western doctrines that originated *in situ* to explain China’s economic problems, a suspicion of scenario misplacement may thus arise. The root cause lies in the lack of reflection about the current relationship between economic thoughts and realities. The paper aims to discuss these issues.

**Design/methodology/approach** – Correctly understanding economic thoughts associated with the brand of “that era” and effectively deducing its characteristics is of great significance to finding new features of this era and constructing new ideas with the characteristics of “this era.”

**Findings** – This motif is exactly the keynote on which to base the study of economic history and economic thought.

**Originality/value** – In a period of major historical turning points, the economic realities on which the economic thinking about that era (the era of economists) relied was undergoing major changes, and re-emphasizing the ancient topic of the relationship between economic thoughts and economic realities became particularly urgent.

**Keywords** Characteristics of the times, Economic thought, Economic realities, Scenario misplacement

**Paper type** Research paper

### 1. Introduction

At present, there is no doubt about the “Chinese growth miracle” after the country’s economic reform and opening up. Many economists have explored the source and driving force of this “miracle” while describing and summarizing China’s economic reform process. Generally speaking, research by western economists in their circles at home or abroad have concluded a wide range of influences as being responsible. Therefore, drawing on western mainstream theories, even applying them “indiscriminately in China, using standards *in situ* to gauge the Chinese practices, and explaining the Chinese experience with neoclassical dogmas” (Cai, 2018), has made for a rather common cognitive model, which shall be referred to in this paper as the “westernized doctrine of the mystery of China’s growth.”

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The Industrial Revolution is a watershed separating human history (North, 1981). After this revolution, humans bid farewell to traditional agricultural society and entered an industrial one. Accordingly, the comprehensive rise of the West since the Renaissance has manifested the tremendous progress of human society. The summation of its historical experience constitutes a precious asset of human understanding. However, as Mei Junjie pointed out: the ideas of “laissez-faire, market mechanism and invisible hand” were by no means all pioneered by Adam Smith. There were scholars who had proposed similar ideas before but remained obscure mainly because they were not in line with the needs of the British national interest at the time, and the fundamental reason why *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776) is famous is that the UK in the mid-eighteenth century had established industrial technology advantages through its industrial policies and, hence, were eager to open markets in other countries, while Smith’s free trade proposition fit this need precisely, in the name of “mutual benefit,” tempting other countries to open up the industrial products market from the UK (Mei, 2014). Returning to a more recent historical scenario, as early as in the dawn of the nineteenth century, List, an Economist at the German Historical School, pointed out that Smith’s free trade was not the ultimate goal, but rather a means of promoting the aggrandizement of British national wealth. Smith covered, with subtle dexterity, the protectionist policy that brought prosperity and power to the UK with a subterfuge of cosmopolitanism. The aim was to preserve the established international competitive advantage of the UK, in order to prevent other countries from achieving prosperity through the same means (List, 1841). This shows that economic thought not only reflects the economic changes at that time, but also fundamentally reflects the ideological side, while covering up the real situation in order to protect self-interest. This scenario reminds us that, as historical scenes drift away, historical and dialectical thinking shall be applied to critically reflect and examine the past economic issues and theories.

It should be emphasized that the focus of this paper is not to explore the “mystery of China’s growth” itself, nor to comment on western economic theories, but to reflect from a cognitive perspective on the unintentional or intentional misplacement or absence of scenarios in the cognitive model of the current “Chinese growth miracle,” based on the collation and analysis of theoretical issues. While learning, understanding and applying western economic theories, the later generations shall try to recapitulate the historical scenarios that produced and accommodated them, to clarify the background of their origins, lest the scenarios become gradually blurred while history slowly drifts away. It is exactly the major purpose of this paper to recapitulate the long-standing issue of the relationship between economic thought and reality.

This paper intends to show that the thoughts of that era have the imprint of that era and, in turn, it is the imprint of that era that formed that epoch-making thinking. However, when the economic realities that the economic thoughts of that era relied on were consigned to be history, undergoing major changes during critical historical turning points, recapitulating the ancient topic of the economic thoughts-realities relationship is particularly urgent. In the historical process, the only constant is change itself. Therefore, it is of great significance to correctly understand the economic thought that has been imprinted in that era, effectively deducing the characteristics of its times and look for new characteristics of this era and construct new ideas with them, which is exactly the keynote for studying economic history and economic thought.

On the one hand, the reason for using the term recapitulating is to explain, on the one hand, that this paper aims only at the phenomenon of the current fashion of the westernized doctrine of the mystery of China’s growth, reiterating the ancient topic of thoughts vs realities that merits attention. On the other hand, this paper only presents this issue that has been turned a blind eye to, and the in-depth argument that awaits joint efforts by the academic community.

Thinking about the relationship between economic thought and reality is inseparable from economists and the process of economic development. In general, modern economic growth models and theories originated in the West. The debate on China's growth miracle after the reform and opening up also focused on benchmarking a series of conditions proven to be successful in the western industrialization. Therefore, this paper takes this as a main line for analysis.

## 2. The reconstruction of economic order: the birth of economists and the era of the economists

The birth of the Economists and the era of economists are epoch-making. History and reality show that while the ideas and insights of the great economists would incite the world, their mistakes would be enough to bring woe upon it, too (Heilbroner, 1986). Therefore, to understand the long-term economic development process from a cognitive perspective, we must first pay attention to the creators of economic thought. The era of economists was born in the West. The French Revolution of 1789 marked the end of the European Knights era and was replaced by the Era of the Economists and human calculators (Burke, 1790). Heilbroner (1986) also discovered this interesting phenomenon in his research: the history of written records spans 6,000 years, and even before the era of the Pharaohs, human beings struggled with economic problems. For centuries, multiple philosophers, scientists, historians, artists and heaps of politicians emerged, but there was no economist who dominated the stage before Adam Smith (1723–1790), after whom economists have been transformed into the stars of academia and even society as a whole.

How was the Economist and the Era of the Economists and the born? This story should start with the motif of the socioeconomic order, which has long been concerned with all walks of life. In society prior to Adam Smith, the economic order was geared by tradition or command, which was repealed simultaneously with the European Knights Era by the French Revolution of 1789. A plain and chaotic modern society is coming who would have thought of asking about the arrangement and design of a poor family, the desperate and tragic look of a speculator in bankruptcy, masses on the streets protesting inconstant policies or a fruit merchant smiling at his customers however, the great economist's belief is that these seemingly unrelated clues can be woven into a magnificent tapestry that, seen from a distance long enough, can be regarded in this colorful world as orderly, turning the clamor of noisy voices into a harmonious chorus the economists are eager to explore the order and significance of social history (Heilbroner, 1986). They found a new way to turn a plain and chaotic modern society into an orderly one, that is, the market, which restructures the socioeconomic order with its unique charm, and yet confuses all: on the one hand, the rules are surprisingly simple each does what he deems to be his best job everyone has to fight for the greatest personal financial benefits; on the other hand, social economy is not only orderly, but it can do any job in the society – dirty or decent – that can be done and social welfare can continue to improve (Heilbroner, 1986). Attracted by the mystery of the market, Adam Smith wrote the *Wealth of Nations*.

Then, in the major issue of restructuring the socioeconomic order, why were the major discoveries made by economists represented by Smith, rather than earlier economists?

The answer also has to do with Smith's era, where two major revolutions occurred: one is a relatively mature stage of the scientific and technological revolution, and the other is the Industrial Revolution that has just begun. The Newtonian scientific revolution established the belief that order and coordination shaped nature, just like the wishes of God before, Newton's science fully and effectively explained nature. Through systematic analysis, people cannot only discover these natural laws, but also discover the laws governing human society. Natural laws could guide the economic system and people's various activities. This notion was revolutionary in the era of Smith (Bruce, 2000). The Industrial Revolution made

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Britain the most efficient and powerful country in the 1870s. British entrepreneurs became stronger and stronger, and the labor force emerged. The monopoly and administrative power of national and local governments emphasized by mercantilism were under an increasingly strong impact. Although Smith and his colleagues in the early industrialization period did not fully realize the significance of this phenomenon and the future direction of its development, they have realized that manufacturing, trade, invention and division of labor have achieved substantial progress (Bruce, 2000).

Accordingly, how can the major issue of the reconstruction of a socioeconomic order be of epoch-making significance that consummated in Smith and the Era of the Economists? The answer is likewise attributable to Smith's era.

As represented by Smith, these great economists are not only attractive in personality, but also bestowed with ideas branded by their roots. Heilbroner (1986) referred to these famous economists as "worldly philosophers" (by "worldly" he means economists, and by "philosophers," thinkers), the most secular desire of all human activities – the pursuit of wealth – was included in their philosophical schemes – this is the most brilliant, fascinating and important insight of these thinkers, because the years before and after 1500 AD belonged to two distinct eras. From 1500 AD to date, markets and trade have expanded rapidly, the monetary economy has replaced the natural economy or the self-sufficient economy, and countries with unified markets have become dominant forces. A completely different picture is: in the era before 1500, there was almost no trade. Most products were produced for community consumption rather than for market exchange at first; although money and credit existed in ancient times, they were far from being widely utilized; strong nations and integrated national economies had not yet fully formed. Commensurate with the "ethical philosophy era" before 1500 AD, the "economics" of "that era" was called "oeconomicus," standing for "household management and agriculture." Aristotle (384 BC–322 BC) expresses economic thoughts by distinguishing between "natural and unnatural acquisition behavior." He believes that natural acquisitions included farming, fishing, hunting and other activities that provide essentials for human life. Non-natural acquisition behavior referred to activities that acquire items well beyond their own needs, which he opposed. Plato (427~347 BC) pointed out the benefits of human specialization in *The Republic*, which is the origin of Smith's thought on division of labor. During the Middle Ages, St Thomas Aquinas (1225–1274) proposed the concept of a fair price, at which neither the buyer nor the seller could obtain benefits from (or take advantage of) the other party (Bruce, 2000). Therefore, it was the era imprinted with "the desires of these secularities" that fashioned the economists of that era and their epoch-making economic thoughts. In other words, Smith became Smith because his thoughts responded to the demands of "that era."

### 3. The "westernized" study of the rise of the west

The modern economic growth pattern originated in the West. Why did the rise of the West or the Industrial Revolution bring about this kind of growth pattern, first occurring in western Europe – especially the UK? Since the mid-eighteenth century, western scholars have explored incessantly to date, with extremely rich theories. For the research works since the mid-twentieth century, be they historians or economists, the half-century of progress has challenged economic historians who have been involved.

#### 3.1 Summary of doctrines and evaluation

Regarding doctrines, the contributions of many scholars have divided them principally into the following categories: first, the natural-environment doctrine represented by Charles Montesquieu, Jared Diamond and David Landes. Second, The religious-influence doctrine represented by Max Weber and Lynn White. Third, the population-control doctrine represented by Thomas Malthus and Michael Postan. Fourth, the Oriental-despotism

doctrine represented by Karl Wittfogel, vs the European-free-market doctrine represented by Adam Smith. Fifth, the private-property-rights doctrine represented by Douglass North. Sixth, the agricultural-pioneer doctrine represented by Maurice Dobb, Robert Brenner and Patrick O'Brien. Seventh, the proto-industrialization doctrine represented by Franklin Mendels and Joel Mokyr. Eighth, the economic-history doctrine represented by Rondo Cameron and Larry Neal. Ninth, the technical-invention-and-communication doctrine represented by Lynn White and Joel Mokyr (Guan, 2009).

In summarizing the above research, western scholars are trying to prove the existence of a “British miracle” or a “European miracle” from various angles, while trying to explain that the reason for this miracle as being entirely due to internal factors present in Europe. Some unique phenomenon or many of them in European history led to the Industrial Revolution and the rapid economic growth of the modern West, since forming different stages of the same incremental, historical process (Pomeranz, 2000; Guan and Zhang, 2017). In short, through the process of the Industrial Revolution and modernization, Europe has long ended up being superior to other parts of the world in terms of race, natural environment or rational culture. This thinking summarizes one of the main lines of this study.

### *3.2 Summary and value from the perspective of the evolution of topics for discussion*

From the perspective of the evolution of topics for discussion, there is little detailed collation. Here we combine the disciplines of history and economics to sort out a rough contextual outline as comprehensively as possible.

*3.2.1 History.* In the 1950s and 1960s, studies on the Industrial Revolution focused on the events that took place in Britain in the eighteenth century. At that time, the concentrated study of the UK gave people a new understanding of the concept of the Industrial Revolution, originally the “revolution” was not a sudden increase in the rate of economic growth, but a gradual instead of a revolutionary acceleration process (Van Zanden, 2009). Given that it has been a gradual and continuous process, just when did it start?

The discussion in the 1980s and 1990s triggered the re-examination of the history of the Industrial Revolution in western academic circles from the end of the twentieth century to the beginning of the twenty-first century. The discussion of the first economic globalization and China (Zhang, 2012) and the analysis of the divergence between China and the West and its causes have also been carried out in depth. Among them, Frank (1998), Pomeranz (2000), Wong (1997), Goldstone (2008), Lee and Feng (2001), Li (2000) and other “California School” economic historians and social-historical scholars have reversed the story of “the rise of the West” and no longer see it as a process of continuous progress in Europe and stagnation in other regions. They even believe that the rise of the West may be only a short-term temporary phenomenon, because other countries are catching up with, even outpacing the western countries in economic fields. With the rise of the West, the research perspective of the successful realization of industrialization in the West is undergoing an expansion from British history or European history to global history, and from the modern society of the Industrial Revolution to the traditional society before it.

In the twenty-first century, the rise of “global history” research has triggered some further reflection on the “Western European model.” How to correctly treat the “Western European experience” has become one of the major concerns in current western academic circles. For this reflection and transformation, as well as its causes and challenges, Barraclough (1987) wrote a summary on the state of world historiography after the Second World War, “For the recent fifteen to twenty years, the progress of historical science is an astonishing fact.” However, according to the records, 90 percent of historical works published in recent years, regardless of research methods and research objects, or conceptual systems, are completely following suit. Like some industrial sectors in

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established developed countries, history is only content to rely on inherited capital to continue to use collections of machines. The most important reason for this situation lies in the “rooted psychological barriers” of historians, that is, “historians will not be willing to give up their habits and rethink the basic principles of their work.”

*3.2.2 Economics.* After the Second World War, the wave of mathematics represented by econometrics, linear programming, game theory and general equilibrium analysis swept American economics academia. Indeed, scientifically oriented neoclassical economics became the mainstream, and other schools that advocated government intervention were completely marginalized. It is undeniable that this wave of mathematics, known as the “formalist revolution,” is of great significance to the development and improvement of the system of economic theory, which makes economics more formal. But it is precisely this more precise, scientific orientation that has enabled neoclassical economics to gradually become the mainstream and consolidate its position. Nonetheless, its deficiencies in excessive pursuit of formality and universality, while neglecting the economic particularities of various countries, loom large. Accompanied by the Industrial Revolution is the evolutionary path of the Industrial Revolution research topic, from the initial UK-based British experience, to the ascended “Western European model” of economic transformation, which was then haloed as a universally applicable model. This outcome typically reflects the profound influence of neoclassical economics on the cognition of western economic history.

Furthermore, under the influence of the formalist revolution of economics, the economic historiography in the 1950s and 1960s also appeared in the revolution’s research paradigm – the revolution of econometrics historiography – which has made some progress in quantitative research and integration with economic theory, but has also generated some problems. For example, ignoring the verification and interpretation of historical data often excludes many institutional factors that cannot be quantified from the research framework; replacing the historical causality of the real world with mathematical relations; and even manipulating data, using historical data to cater to the needs of neoclassical economic theory. These troubles have limited the development of economic history to a certain extent (Guan, 2014). As Solow (1985) puts it, contemporary economics is disengaged from history and reality, while bending it while building models. Contemporary economic history, like economics, is also about integration, regression, as well as time-series variables instead of thinking. Economics learns no much from economic history, a field which gains little from the former other than to be hurt by it.

#### **4. Westernized “doctrine of the mystery of Chinese growth”**

The Era of the Economists and economists were born in the West, so did the models and theories for modern economic growth. After the advent of neoclassical economics experienced the waves of mathematics occupied by the mainstream of western economics, their disciples were also widespread on Chinese soil. The Chinese growth miracle occurred after the reform and opening up. Therefore, in explaining the mystery of China’s growth, it would be naturally inevitable to learn from western mainstream theories. At present, the debate on the “mystery of China’s growth” in economics with Chinese studies extends a view of the rise of the West coupled with misunderstandings and a westernized perspective in order to discuss the miracle of Chinese growth. This fact led to the author naming the singularity a westernized doctrine.

##### *4.1 The origin of the mysterious doctrine on the Chinese growth mystery from the evolution of the research topic*

In discussing the Industrial Revolution, “why Europe achieved industrialization, but Asia did not” is always a baffling issue, the specialized discussion of which can be traced back to

the nineteenth century. In the process of discussing the causes of the Industrial Revolution, Smith (1776) and Malthus (1798) expressed the view that the huge differences between Europe and Asia in terms of economic, political and demographic systems began to take shape. In the twentieth century, with the continuous expansion of the theories of Max Weber (1905) and Douglas North (1981), the view of the gaping chasm between Europe and Asia prevailed and, from the end of the twentieth century to the beginning of the twenty-first century, continued to play an important role, never ceasing to expand (Jones, 1981; Landers, 1998). Another important topic pertaining to the Industrial Revolution is, "Why did the Industrial Revolution take place in the UK, instead of France and any other country?" and further, "So far, why have only a few countries successfully reproduced the rise of the UK?" In this regard, the most popular response nowadays is the interpretation advanced by the new institutional economics, represented by Acemoglu and Robinson (2012), who explored institutional conditions in long-term economic growth. Be it the interpretation of the differences between Europe and Asia, or the recent interpretations of the different institutional conditions in long-term economic growth, they invariably try to prove that these are the advantages unique to Europe or the UK. China does not have a series of political, cultural, economic, religious and social conditions that enabled a scientific and technological revolution in the West. China is "nothing more than" an imitator of modern western civilization[1].

Obviously, in the current interpretation of the "Chinese Growth Mystery," the western scenario, rather than the Chinese one, has become the starting point for thinking about issues in China. Therefore, we refer to it as the westernized doctrine of Chinese growth mystery.

#### *4.2 Exploring China's economic growth from within the Chinese scenario*

The current reflections on the western European experience brought about by global history studies in western settings reveal some doubts about the explanatory power of such settings. So, then, what about the interpretations of the contemporary or even future China, which is far from western historical scenarios?

Rethinking western experience, western Historian Paul E. Cohen (1984) has a clearer interpretation that the study of Chinese history in the West, especially in the USA, being shrouded by "West-centrism." This view holds that industrialization conforms to the needs of social and historical development, a premise of such industrialization perennially lacking within Chinese society, whereas the "Western invasion" is needed to provide these conditions, and is regarded as the driving force for the development of modern Chinese history, with a western society framing the view of China's historical development. When western historians talk about "Western shocks," they often ignore the confusing and contradictory nature of the modern West itself. In fact, there are many influences from the East in the development of modern western civilization. Similarly, modern China has indeed been affected by western shocks, but this must not be seen merely as some passive "reaction." To correctly understand the history of China in the nineteenth and twentieth centuries, we must not only regard it as a product of external forces, but also of internal evolution. The stances and perspectives would best be set within China, delving into its history itself; doing so is exactly what Cohen emphasized in *Discovering History in China*.

The continuation of this idea and explaining the mystery of China's 30 years of reform and opening up also requires "entering into the Chinese scenario." Concurrent with the growth of China's economic miracle in the 1980s, cross-country regression began to be widely used in the study of the determinants of economic growth. The explanatory variables used in transnational regression are generally the socioeconomic characteristics of the sample country and its policies. So, how many of these transnational regressions can be used to explain China's economic growth potential? In such regressions, Dwight Perkins (2005) showed the

importance of transnational effects, some of which are indeed unchangeable – for example, geographical factors. Yet most of the transnational variables are changing over time, such as natural resource abundance, political stability, education and regional spillover effects, etc. Moreover, the simpleminded addition of variables in the growth equation does not lead to the conclusion that China's growth potential is better or worse than other countries. Doing so shows that, albeit undeniably, that some aspects of western experience and even transnational research are universal, the economic development of human society is manifested more by the diversity and complexity of time and region, and therefore necessitates more "scenarios" and, in particular, "historical scenarios." What is more, China has undergone an industrialization exploration process for a century and a half. Therefore, it is emphatically necessary to interpret China's growth miracle by "going to the Chinese scenario" and looking at it against the backdrop of historical changes.

### 5. Recapitulation of the relationship between economic thought and reality

In the two-and-a-half centuries since the Industrial Revolution, economists and the Era of the Economists took shape in the West, so did the modern economic growth models and theories, which have gradually established their extensive influence, uncovering China's growth mystery. Up to the moment, western countries have reflected on western models through paying attention to cognitive factors and cognitive models. This kind of reflection is subverting the views of economic thought and economic reality in traditional epistemology.

The relationship between economic thought and economic reality as an old topic, and that economic thought is the result of, and reflection of, economic reality, with economic reality being the essence and cause of economic thought. With the continuous development of the industrialization process in the West and the investigation of the prehistory of industrialization, economists have different views on the above epistemology. The study of the history of economic reasoning by K. Pribram (1983) suggests that although the content of economic thought will be affected by changes in the socioeconomic environment at that time, such changes will ultimately be traced back to changes in the mode of subjective reasoning, which has been given a status superior to those of the other objective socioeconomic factors. The later research of North (2005) also turned the perspective to cognition, advocated the explanation of human consciousness and integrated cognitive components into an analysis to seek an understanding of how the knowledge acquired by individuals and society influences the process of change culturally and institutionally. The argumentation of traditional epistemology and K. Pribram is not the focus of our discussion. Here we especially emphasize the importance of subjective thinking and cognitive mode factors in socioeconomic development. At present, along with the industrialization of the West in the past two-and-a-half centuries, China and other late developing countries have succeeded in catching up with western economies. The changes in the world's economic structures have become increasingly apparent, and the stages of world economic development are also quietly changing. In this context, it is particularly urgent to recapitulate the relationship between economic thought and economic reality, and reflect on the root causes of the popular phenomenon of the westernized "doctrine of the mystery of China's growth" from the perspective of cognition, and illuminate the path leading to China's economic growth based on Chinese history and its "scenario" within the wave of globalization.

#### 5.1 The value of economic thought in "that era"

The above analysis of the birth of economists and the Era of the Economists shows that the thinkers of "that era" inevitably bear the brand of that era, which has accomplished the thinkers of that era. The ideas relevant to the society at the time and that were able to

answer or solve problems at that time would be preserved and spread, and topics and opinions irrelevant to that society would be gradually phased out. Therefore, some knowledge about that era is necessary for us to understand why people thought the way they did things at the time. In the era before the sixteenth century, there would be no Smith, and Ricardo's theory of comparative advantage, neither of which would have any major significance. After the 1930s, the traditional view that the market economy could automatically generate full employment also lost its former glory. Thus, the social, political and economic environment defining the substance of the questions economists and the content of an economic theory mainly pertained to a particular era (Stanley, 2000). As Galbraith (1958) puts it: "Thoughts are essentially conservative, they don't succumb to attacks by other ideas, but they succumb to the huge impact of the environment they can't cope with."

The economics community thinks so, and the history circles corroborate. At the beginning of the 1929 when the theory of the *Annales d'histoire économique et sociale* was founded, there were two major tendencies in the western historiography and social sciences academia: one was to describe individual phenomena, especially political activities; the other was to introduce natural science research methods into the social history discipline to conduct separated analysis of the political, economic and social aspects of objective reality. The founders of the Annales School advocated a "comprehensive history" to expand the scope of historical research, and at the same time, connecting historiography with social sciences, attaching importance to analysis and synthesis, emphasizing vertical or horizontal research and preferring "problem-oriented history" or "comprehensive history" became the defining characteristics of the scholars of that School. The rise of traditional historiography and the Annales School reflects the change in western social culture and ideological structure, the root cause of which comes from changes in contemporary western society. As Iggers (2009) puts: at the end of the nineteenth century and the beginning of the twentieth century, the Lanke historiography model was widely rejected worldwide, or at least substantially revised. This was the reaction of the social reality: highly industrialized and politically separated people to the historical situation.

In this regard, an interpretation in the sociology of knowledge becomes more explicit. In the wake of a series of critical developments by scholars such as the Frankfurt School, Robert Merton, Thomas Kuhn and the Edinburgh School, knowledge sociology has become an important method for our empirical and critical research on various academic ideas and knowledge. Knowledge sociology emphasizes that people's imagination, thinking and spiritual communication are direct products of people's material actions. It is not consciousness that determines life, but life that determines consciousness (Marx and Engels, 2009). All thoughts and academic theories are formed in a specific historical environment. Therefore, the research on the generation and development an ideological theory should analyze its relationship with social groups, and explain what kind of idea they have and why it developed, no? (Scheler, 2000). From the structural or epistemological level, when and where the social structure begins to appear in the conclusion's structure shall be tested. Moreover, in what sense the former specifically determines the latter, and the ways in which social relations are investigated through the methods of depiction and structural analysis to affect the actual thinking will be as well (Mannheim, 2011).

From this perspective, economics, as a cultural superstructure, is closely related to the economic foundation and political, social and cultural environment of each country. It is a social product formed under specific historical and socioeconomic conditions. If we do not consider economic issues and the historical context in which they are analyzed, we cannot fully understand these issues and the corresponding analysis (Pribram, 1983), and this is precisely the major research purpose of economic history and economic thought.

### 5.2 The value of economic thinking transcending “that era”

Smith became the symbol of the birth of the Era of the Economists because his thoughts responded to the demands of “that era.” However, some economists, such as G.J. Stigler (1965), have suggested that the nature of the economic system has not changed much in two-and-a-half centuries since Smith’s time. If the appropriate environmental conditions are the main determinants of the formation of economic theories, then the progress of major economic theories in recent centuries can be greatly advanced. Even Keynes’s *General Theory* can find a clear basis for practice in the Napoleonic Period, the 1870s, or the 1990s. Therefore, the environment at the time played only a minor or even stochastic role in the development of economic theory, although in some cases, the initial environmental factors have a significant incentive for specific theories, such as Ricardo’s theory of rent. Soon the professional re-presentation divorces them from the situation at the time, until the initial situation had no obvious relationship with the essence or application of the theory. The author has described these theories that have been professionally described and gradually moved away from the situation until they are not clearly related to the original situation as economic thoughts transcending that era.

Therefore, how do we understand the value of economic thinking beyond “that era”?

Nowadays, it has become common sense for us to understand “economic development being a process,” and the connotation and extension of economic growth and economic development. Especially, with the development of specialization, there is a clear and meticulous division of disciplines in the study of the economic development process. For example, some problems encountered in economic life are manifested as local and occasional short-term disturbances, which are usually the research objects of economic cycle theory; some are global and long-term trends that must occur according to certain laws, and become the research object of economic growth theory or economic history (Cai, 2016). But in fact, in retrospect, the proffering of the “economic development or economic growth as a process of historical change over time” is in itself epoch-making.

In the preface to the Japanese version of Schumpeter’s *Theory of Economic Development*, he mentioned that Marx is different from contemporary and former economists, precisely because of his perspective that the specific process of economic development is generated by the economic system itself. In any other respect, Marx simply adopts or modifies the concepts and propositions of Ricardo’s economics, but he holds the concept of economic development placed in the secondary Hegelian context as entirely his own creative idea. It may be exactly because of this fact that generation after generation of economists have converted and returned to Marx, although they may find that he says a lot that may be criticized. In his *History of Economic Analysis* manuscript, Schumpeter proposed, in his (Marx’s) general schema of thought, development was not what it was with all other economists of that period, an appendix to economic statics, but the central theme. And he concentrated his analytic powers on the task of showing how the economic process, changing itself by virtue of its own inherent logic, incessantly changes the social framework – the whole of society in fact (He tried to put forward that) “Marx’s theory is evolutionary in a sense in which no other economic theory was: it tries to uncover the mechanism that, by its mere working and without the aid of external factors, turns any state of society into another.”

The statement is a purely economic theory that economic change is not only determined by various external factors that promote the equilibrium of the economic system from one equilibrium to another[2]. It can be seen that Schumpeter canonizes Marx’s views on the process of economic development and believes that this facet reveals his greatness. On that point, they are birds of a feather flocking together.

So why then did Schumpeter return to the concept of economic development that Marx explored more than half a century ago? In fact, this is directly related to Schumpeter’s era. Through stable policies and elastic markets, industrialized developed countries had

overcome the severe over-capacity of the economic depression during the 1930s, and learned how to obtain higher productivity that, anew, became the focus of attention. Therefore, after the Second World War, academic achievements abounded in studying economic growth and development. In the 1950s, the first generation of economic growth theories, such as the Solow model, focused on capital accumulation and exogenous technological progress changes as a major growth factor. In the 1980s, a group of economists, represented by Romer and Lucas, proposed the endogenous growth theory, that is, the new growth theory, based on rethinking neoclassical growth theory. Endogenous growth theory emphasizes that economic growth is primarily an outcome of endogenous forces of the economic system (such as endogenous technological changes) rather than external forces (such as exogenous technological changes), and attaches importance to the study of knowledge spillovers and human capital accumulation, etc.

The new growth theory, which was built on the basis of theoretical models after the 1930s, triggered something in the thinking of western history scholars that led them to re-examine the history before the Industrial Revolution through the end of the twentieth century to the beginning of the twenty-first century. These models are likely to shed new light on the long-term causes leading to the Industrial Revolution. Van Zanden (2009) linked the theory of new growth with economic history and studied the development patterns of human capital formation and knowledge accumulation in the centuries preceding the nineteenth century. The study found that the growth of knowledge accumulation and the increase of human capital investment through education preceded the emergence of modern economic growth.

It can be said that the new growth theory that transcended "that era" has brought about a breakthrough in the study of economic history, only in that it seems to have returned to "that era." Furthermore, we will have to wait and see whether the breakthrough in economic history will continue to incubate new theories of economic growth that go beyond the development of this era.

The above analysis of economic research on growth theory and its momentum on economic history studies show that, there is no right or wrong in the thoughts of "that era" and those transcended it. The only difference lies in that, some theories are clearly and directly generated from the major events of the time, while others are derived from the incessant exploration of knowledge (Bruce, 2000) which is, seemingly, totally detached from the scenarios at the time as historical scenes continue to drift away.

For human society, both explorations have their rationality. The dual exploration of theory and practice is the cornerstone of the advancement of human society. The study of economic history in the twentieth century and the practice of China's socialist market economy have shown that there is no inevitable one-to-one correspondence between market economy and capitalism (Guan and Zhang 2017). For the mystery of China's growth and whether it is sustainable in the future, on the one hand, it is necessary to "go to China" and understand China's long-term economic development in its long history. On the other hand, under the tide of economic globalization, it is necessary to "sail into the new era" in order to effectively recognize the characteristics corresponding to the thoughts of "that era," fully absorb the essence of economic thoughts that transcend it, and thus completely getting rid of the shackles of "that era" in economic thought. Only then will scholars enter into the "Chinese scenario," and actively set "new agendas for the new era."

## Notes

1. Available at: <http://nse.pku.edu.cn/articles/content.aspxnodeid=49&page=ContentPage&contentid=661.22>, May 2017
2. Schumpeter, J. (2017), Ten Great Economists: From Marx to Keynes, The Commercial Press, Beijing.

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# Domestic demand-based economic globalization and inclusive growth

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## Abstract

**Purpose** – The purpose of this paper is to propose policy recommendations that resort to the domestic market to achieve inclusive growth from an open perspective.

**Design/methodology/approach** – How will economic globalization based on domestic demand affect economic growth and income distribution in an open and large country? With the aim of discussing the mechanism of the impact of expanding domestic demand on the inclusive growth from an open perspective, this paper incorporates the Global Value Chains vs National Value Chains (GVC-NVC) competition, which is triggered by foreign investments attracted by the domestic demand scale into an endogenous growth model with “Schumpeterian Innovation.”

**Findings** – Theoretical analysis indicates the following findings: although domestic demand-based economic globalization can promote transnational inclusive growth across countries, it is not conducive to national (domestic) inclusive growth; the impacting effect of domestic demand scale on inclusive growth across countries is subject to the moderating effect of the development maturity of the labor market; and the impacting effect of domestic demand scale on national inclusive growth is subject to the joint moderating effect of the development maturity of the labor market and labor skill structure.

**Originality/value** – First, this paper examines the impact of domestic demand-based economic globalization on the inclusiveness of economic growth from an open perspective, which deepens the existing theory of intra-product specialization and inclusive growth. Second, the paper puts the sequential production process into Schumpeterian growth model and reveals the mechanism that domestic demand affects inclusive growth. Third, the study finds that the enhancement of labor market efficiency, transfer payments to low-skilled labor and the creation of a fair competitive market environment will contribute to the globalization of a domestic demand-oriented economy, which provides a policy-making basis for government sectors.

**Keywords** Inclusive growth, Domestic demand, Economic globalization

**Paper type** Research paper

## 1. Research questions

In the post-financial crisis period, as the developed economies generally fall into the long-term “new mediocre” and Trump’s hope of “deglobalization” to reconstruct the Global Value Chains (GVC), accelerating the deployment of the Chinese market has become a strategic focus for foreign capital and China’s domestic firms (Brandt and Thun, 2010). Due to different environmental factors, institutional conditions and social standards, customer demand patterns vary substantially across countries (Porter, 1998). Therefore, to fully tap the demand capabilities of local customers, multinational corporations (MNCs) have no option but to develop their global R&D centers in China so as to create products more tailored to Chinese users by strengthening cooperation with local partners and universities[1]. Meanwhile, Chinese local enterprises’ concept of “seeking development with foreign trade” has also undergone substantial changes under the impact of Sino-US trade wars, given especially the

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“ZTE Event” (a denial of export privileges against the Zhongxing Telecommunications Equipment Corporation of China: ZTE Corporation). A new consensus has been gradually reached by Chinese industry circles, purporting to rely on the domestic market to develop the domestic economic cycle, resort to independent R&D to master key core technologies and construct the National Value Chains (NVC) in order to facilitate competition and development.

The above background essentially indicates the changes in the connotation of modern economic globalization. The traditional export-oriented economic globalization has brought about a rapid expansion of the world's aggregate wealth. However, the imbalance of development between developed and developing countries under the global sourcing led by MNCs loom large under the impact of the crisis. Under the new backdrop, the strategic orientation for China to acquire a new round of global dividends manifests in an in-depth implementation of the strategy of expanding domestic demand, and then using the scale advantage of domestic demand to connect with the global market – a move that maximizes the “siphoning” of the global advanced elements and achieves a rebalancing of Sino-US economic development (Liu, 2012a, b). It is also in this strategic context that the Chinese Government has successively issued the “2018 National Negative List” and the “2018 Free Trade Zone Edition of Negative List,” with the aim of attracting high-quality foreign investment and high-end innovation elements by substantially relaxing the access restrictions on the foreign investment market[2]. This is essentially an in-depth transformation of the governance system of international labor division and the market relationship within the industrial organizations, enabling China to construct – based on the local market – the NVCs by which to break through the MNCs’ “enslaving” governance structure. This also helps China realize the industrial transformation and upgrading mechanism based on the domestic market to establish independent R&D, brands and national sales channels. With the transformation of global governance from an “enslaving network” to a “balanced network,” the market relationship between domestic and foreign enterprises has also shifted from the “cooperative game” between high- and low-end processes in GVC, to the “competition game” wherein domestic and foreign enterprises, respectively, complete production based on NVC and GVC, along with preemptive moves in the local market. The changing rules of economic globalization and the transnational division of labor have induced the adjustment of methods to create globalization dividends and the distribution rules, and these naturally have a profound impact on the economic development of open economies.

Different from the single development goal that only focused on economic growth in the past, the inclusive growth aimed at achieving economic growth and the improvement of people's livelihood has increasingly become the primary goal of economic development. In his speech at the opening ceremony of the Davos Forum in the summer of 2017, Chinese Premier Li Keqiang emphasized the importance of inclusive growth, pointing out that only inclusive growth can achieve a balanced and sustainable development. Furthermore, Premier Li Keqiang stated that achieving inclusive growth is of economic and social significance. The concept of inclusive growth covers two dimensions of efficiency and equity. If a certain factor promotes economic growth while making the relatively poor groups benefit more, it can be said that this factor brings inclusive growth (Zhang and Wang, 2016). The inclusive growth under the open perspective is also manifested in the notion that the benefits of economic globalization benefit a high number of developing countries and regions. This is not only the inherent requirement of the deepening development of modern economic globalization and international division of labor, but also a precondition for all countries – including developed countries – to have sustained access to the benefits of economic globalization (Fang *et al.*, 2012). Therefore, exploring the impact of domestic demand-oriented economic globalization on inclusive growth is more realistic in the context of the growing Sino-US economic and trade frictions.

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The above phenomena thus raise three questions that require theoretical research and empirical tests. First, can domestic demand-based economic globalization promote the realization of transnational inclusive growth? Given that the developed countries are the main beneficiaries of the previous round of economic globalization dividends and that China is the largest developing country in the world, this paper will focus on the impact of expanding domestic demand strategies on domestic economic growth. This paper shall also investigate whether the strategies generate more global dividends to China, while promoting sustained economic growth. Second, how will the domestic demand-based economic globalization contribute to the domestic labor market while promoting homeland economic growth? Considering the phenomenon of skill differentiation in the domestic labor market and the difference in the demands for diversified skill labors by MNCs' respective localization strategies, this paper shall focus on the mechanism and influence of the expansion of the domestic demand strategy on the domestic skill premium, and then the internal income distribution structure of the labor factor. Third, what kind of policies must be formulated to ensure the simultaneous international and domestic inclusiveness of economic growth and further promote the current economic globalization into a new stage of development that is more dynamic and sustainable? Regrettably, these issues have not been systematically studied in the literature, even though the answers to these questions can deepen and enrich the existing theory of economic globalization as well as provide practical guidance for the Chinese economy with deep structural adjustment and economic transformation.

Based on the aforementioned questions, this paper attempts to incorporate the GVC-NVC competition, which is triggered by foreign investment attracted by the domestic demand scale into an endogenous growth model with "Schumpeterian Innovation." Then, starting from the two dimensions of efficiency (sustainable economic growth and household income level) and equity (transnational economic growth convergence and domestic income distribution gap), we comprehensively explore the impacts of expanding domestic demand scale on inclusive growth. Theoretical analysis and empirical tests reveal the following: domestic demand-based economic globalization is conducive to the realization of transnational inclusive growth, but it is not conducive to the realization of domestic inclusive growth, and the effect of domestic demand-based economic globalization on transnational inclusive growth is subject to the moderating effect of the development maturity of labor market, such that the more mature the labor market and the higher the skill structure of the labor force, the more conducive they are to the realization of transnational inclusive growth, while also being unfavorable to the realization of the domestic labor market's inclusive growth.

Compared with the existing literature, the innovation of this paper mainly manifests in three aspects: innovation in research perspective, innovation in research methods and new findings related to the promotion of inclusive growth. First, in terms of innovation in research perspective, based on the perspective of efficiency and equity, this paper examines the impact of domestic demand-based economic globalization on the inclusiveness of economic growth from an open perspective, and refines and deepens the existing theory of intra-product specialization and inclusive growth. Second, in terms of innovation in research methods, the incorporation of the "process production function" reflecting the "vertical division of labor based on specialization" into the endogenous growth model with "Schumpeterian Innovation" reveals – through a rigorous mathematical model – the action mechanism for domestic demand scale to trigger the value chain competition, which, in turn, affects the domestic economic growth convergence and income distribution structure, thereby strengthening the relevant frontier literature. Third, the study finds that policies for enhancing labor market effectiveness and promoting inclusive growth that increase transfer payments to low-skilled labor and the creation of a fair competitive market environment contribute to the development and deepening of the globalization of a domestic demand-oriented economy, thus providing a policy-making basis for government sectors.

## 2. Literature review

There are two major types of literature directly related to the study of this paper: one is the study of the inclusive growth effect of export-oriented economy, and the other is the pathway and mechanism of leveraging domestic demand to achieve inclusive growth.

### 2.1 Research on the inclusive growth effect of an export-oriented economy

Since the implementation of the reform and opening up, China has seized the “decentralization and fragmentation of the production process” and the historic opportunity of the GVC division of labor driven by the MNCs’ “global allocation of value appreciation links.” By implementing the export-oriented economic globalization strategy, China has realized the “explosive growth” of foreign trade (Dai and Jin, 2014), especially commodity trade, and the so-called “China miracle,” which has maintained rapid growth for several decades, thereby successfully completing the transition from the low- to the middle-income stage[3] and becoming the world’s second largest economy. However, while GVC promoted the expansion of the economic gross scale of developing countries, the accompanying problems of inadequate inclusiveness, such as the uneven distribution of international interests and the widening gap in domestic income distribution, have caused wide spread concern (Piketty, 2012; Bank, 2003; Basu, 2007; Joseph, 2012). From the perspective of the degree of transnational inclusiveness[4], the increasingly global intra-product specialization does not necessarily benefit the various countries indiscriminately (Zhuo and Zhang, 2008). The difference in the technical content of processes and the export added value of GVC leads to significant gaps in the revenue earned by economies at different segments of the GVC. Statistics show that the technical level and value-added content of China’s trade exports are far lower than those of developed countries, such as the USA and Japan (Ni, 2017). More seriously, the blockade and blocking strategies adopted by MNCs upon enterprises in latecomer economies trying to climb the high-ends of GVC have further cemented the increasingly differentiated growth performance (Liu and Zhang, 2009; Humphrey and Schmitz, 2012). From the perspective of inclusiveness within countries, under the influence of the factor endowment structure the factor intensity of production processes (Acemoglu, 2009), and the selective technological progress (Eicher and Turnovsky, 1999), the GVC labor division will also impose a complex impact mechanism on the growth equity and development inclusiveness of participating countries. The negative substitution effect of process transfer on the low-skilled labor force in developed countries may lead to the deterioration of the situation of the unprivileged population. However, the factor-demand creation effect caused by the expansion of the high-tech sector in developed countries can, in turn, promote the improvement of the welfare of the bottom population. The transfer of processes in the real world is also accompanied by capital and technology flows. If the labor-intensive processes transferred by MNCs are still high-tech or capital-intensive in the host country (Feenstra and Hanson, 1995), then the technology spillover and the market competition and technology spillover effects caused by the entry of MNCs may, on the contrary, promote the emergence of the skill premium in developing countries (Ge and Luo, 2015), thus leading to a further widening of wage differentials (disparity) in different sectors of society.

### 2.2 Research on the pathway and mechanism of leveraging domestic demand to achieve inclusive growth

With regard to the process by which China has climbed the high-end of GVC and achieves inclusive growth, previous studies have emphasized the “great power advantage” (Li and Ouyang, 2016) based on the size of population and demand, and the urgency and necessity

of accelerating the construction of the network system and governance structure of NVC based on local market demand (Liu and Zhang, 2009). On the one hand, the construction of NVC is a key measure for local enterprises to break through the “low-end blockade” of the GVC chain and achieve sustainable development. Under the double squeeze of the “high-end backflow” in developed countries and the “mid-low end divided flow” in developing countries, China’s manufacturing sector faces a serious impact. Through the internal links and external dependence formed by NVC (Athukorala and Kohpaiboon, 2010), not only can China leverage (siphon) the international advanced production factors to enhance the endogenous growth capacity of local enterprises and make up for the shortcomings of local enterprises’ lack of development initiative (Liu, 2012a, b), the country can also promote the domestic industrial structure optimization and the coordinated regional and inter-sector industrial development through the escalated input–output correlation between the coastal areas and the central and western regions (Liu and Zhang, 2009). On the other hand, in the post-financial crisis period, the weak consumer market in developed countries and the strong domestic market demand have created favorable external conditions for the construction of local NVCs (Brandt and Thun, 2010). By constructing an open economy model that includes both domestic and international markets’ segmented production and investment as well as horizontal production and investment, it is found that the lack of domestic demand and the presence of institutional barriers are the primary causes for the lack of NVC construction in local enterprises (Ren *et al.*, 2016). In relation to this, the enthusiasm of enterprises to build NVC depends on the incentive space for NVC profits relative to the low-end embedded GVC income, whereas the “incentive effect” (Schmookler and Brownlee, 1962) and “uncertainty effect” (Myers and Marquis, 1969) generated by domestic market size as well as the competition dynamics, technology spillovers and the cooperative innovation effects (Zweimüller and Brunner, 2010), which are triggered by the “native market effect” generated by the entry of MNCs attracted by domestic demand, can both promote the independent innovation capability of local enterprises, and thus enhance the profitability of these enterprises in the market competition.

Thus far, the existing literature has provided a rich theoretical foundation and empirical evidence for deepening our understanding of inclusive economic growth from an open perspective. However, most of them are either limited by theoretical inferences exploring the reasons to build NVC in the context of export-oriented economic globalization (Zhang and Zhu, 2007; Liu, 2012a, b), how to construct NVC (Zhang and Liu, 2007) or how to leverage the scale of domestic demand to help local enterprises improve their competitiveness in the context of domestic demand-based economic globalization (Brandt and Thun, 2010) and other case studies. These studies largely ignore the effect of the expansion of domestic demand scale on inclusive growth in the context of the target market’s transition “from going global to going local,” as promoted by the implementation of domestic demand-based economic globalization strategy, which is exactly the focus of our research.

### 3. Theoretical model

#### 3.1 Model construction

To construct a dynamic general equilibrium model of domestic and foreign firms’ GVC-NVC-based competition over the domestic market, we employ the Schumpeterian Innovation endogenous growth model (Grossman and Helpman, 1991) and the process production function (Costinot *et al.*, 2013) that reflects the intra-product specialization. We also examine the growth effect and income distribution effect of domestic demand-led economic globalization.

*3.1.1 Consumer sector.* Assuming that the representative households in the country have infinite vital characteristics, income comes from labor supply, the number of highly

skilled labor is  $H_{dt}$ , and the number of low-skilled labor is  $L_{dt}$ , then the utility function of the household sector's intertemporal preference is given by:

$$U_{dt} = \int_t^\infty e^{-\rho(\tau-t)} \log D_\tau d\tau, \quad (1)$$

where the household instantaneous utility function is  $D\tau = \sum_m q_{mi} x_{mit} di$ ,  $x_{mit}$  is the demand for the  $m$  generation of final product  $i$  of the representative household of the time point  $\tau$ , and  $q_{mi}$  stands for the quality of the  $m$  generation of final product  $i$ . Assuming that the quality of the generation product is 1 (i.e.  $q_{oi} = 1$ ), and the difference in quality between any two generations is  $\mu$ , then  $q_{mi} = \mu^m$ . The decision making for consumer utility maximization shall satisfy the following:

$$\begin{aligned} \min & \int_0^1 p_{mit} x_{mit} di \\ \text{s.t. } & \int_0^1 \sum_m q_{mi} x_{mit} \leq D_t. \end{aligned} \quad (2)$$

Solving Equation (2) shows that the optimal pricing strategy of the final product manufacturer shall satisfy:

$$p_{mit} = \mu p_{m-1it}. \quad (3)$$

Given the high-skilled labor wage  $w_{hdt}$  and low-skilled labor wage  $w_{ldt}$ , the expenditure levels of representative households shall satisfy:

$$E_t = w_{hdt} H_{dt} + w_{ldt} L_{dt}. \quad (4)$$

At this point, the demand function of the representative household for the final product is given by:

$$x_{mit} = \begin{cases} E_t / p_{mit}, & q_{mi} = \mu_i^m \\ 0, & q_{mi} \neq \mu_i^m \end{cases}. \quad (5)$$

*3.1.2 Final product sector.* We assume that the final product production obeys the process production characteristics proposed by Costinot *et al.* (2013): the production process goes through  $s \in (0, 1]$  stages and any product produced in the  $s \in (0, 1)$  stage is called the intermediate product. The completion of each stage requires one unit of low-skilled labor input and one unit of intermediate input from the previous stage. To reduce the production costs, MNCs will use some low-end labor to complete some low-end links in the  $s \in (0, s']$  stage by outsourcing or FDI, and the remaining high-end links  $s \in (s', 1]$  are completed by low-skilled labor in developed countries. This strategy reflects the characteristics of developed countries using GVC to complete production. Local companies use local low-skilled labor to complete the production of all the final products, reflecting the characteristics of local enterprises using NVC to complete production. Assuming that the labor force will err in the production process, and the error reach  $\lambda_c > 0 (c = n, d)$  obeys the Poisson distribution, then once the error occurs, the intermediate inputs will all be scrapped (discard as useless) at this stage. The differences in institutional culture and

management methods between different countries have led to significant differences in the error reach rates, which satisfy the following:  $0 < \lambda_n < \lambda_d < 1$ . From this, the price and quantity relationship of products at various stages of a local enterprise are, respectively, given by:

$$p_{idt}(s+ds) = (1 + \lambda_d ds)p_{idt}(s) + w_{ldt}ds, \quad (6)$$

$$x_{idt}(s+ds) = (1 - \lambda_d ds)x_{idt}(s). \quad (7)$$

Similarly, the price and quantity relationships of products at various stages of an MNCs are given by:

$$p_{int}(s+ds) = \begin{cases} (1 + \lambda_n ds)p_{int}(s) + w_{ldt}ds, & s \in (0, s'] \\ (1 + \lambda_n ds)p_{int}(s) + w_{int}ds, & s \in [s', 1] \end{cases}, \quad (8)$$

$$x_{int}(s+ds) = (1 - \lambda_n ds)x_{int}(s). \quad (9)$$

Assume that the intermediate product 0 is infinitely supplied, that is,  $p_{it}(0) = 0$ , and the final product price is standardized to 1, that is,  $p_{it}(1) = 1$ , then the  $s$  at both sides of Equations (6) and (7) are simultaneously fully differentiated; considering  $p_{it}(1) = 1$ , it yields:

$$p_{idt}(s) = -\frac{w_{ldt}}{\lambda_d} + \left(1 + \frac{w_{ldt}}{\lambda_d}\right)e^{\lambda_d(s-1)}. \quad (10)$$

Then, from  $p_{idt}(0) = 0$ , the wage level of low-skilled labor in equilibrium is given by:

$$w_{ldt}^* = \frac{\lambda_d}{e^{\lambda_d}-1}. \quad (11)$$

In the same way, the prices and quantities of products available at all stages of an MNC are given by:

$$p_{int}(s) = \begin{cases} -\frac{w_{ldt}}{\lambda_n} + \frac{e^{\lambda_n s} w_{ldt}}{\lambda_n}, & s \in (0, s'] \\ -\frac{w_{ln t}}{\lambda_n} + \left(1 + \frac{w_{ln t}}{\lambda_n}\right)e^{\lambda_n(s-1)}, & s \in [s', 1] \end{cases}. \quad (12)$$

From the continuation of  $p_{int}(s)$  at  $s = s'$ , the  $s'$  level in equilibrium is obtained as follows:

$$-\frac{w_{ldt}}{\lambda_n} + \frac{e^{\lambda_n s'} w_{ldt}}{\lambda_n} = -\frac{w_{ln t}}{\lambda_n} + \left(1 + \frac{w_{ln t}}{\lambda_n}\right)e^{\lambda_n(s'-1)}. \quad (13)$$

From market clearing of the final product, we have the following:  $x_{int}(1) + x_{idt}(1) = E_t/\mu$ , let  $\theta_{nt}$  and  $\theta_{dt}$  represent the market share of MNCs and local enterprises, respectively, under Bertrand competition, the domestic and foreign enterprises will equally divide the domestic market, that is,  $\theta_{nt}^* = \theta_{dt}^* = 1/2$ , the  $s$  at both sides of the demand functions (7) and (9) are

simultaneously fully differentiated. Combined with  $x_{int}(1) = \theta_{nt}E_t/\mu$ ,  $x_{idt}(1) = \theta_{dt}E_t/\mu$ , we obtain:

$$x_{ict}(s) = \frac{\theta_{ct}E_t e^{\lambda_c(1-s)}}{\mu}, \quad (c = n, d). \quad (14)$$

Further, the corporate profits are calculated as follows:

$$\pi_{ct} = \frac{\mu-1}{\mu} \theta_{ct} E_t, \quad (c = n, d). \quad (15)$$

*3.1.3 R&D sector.* Based on the technology advancement model following a progression up a quality ladder proposed by Grossman and Helpman (1991), we assumed that the innovation reach rate  $\tau_{ct}$  of the R&D sectors of the two countries obeys the Poisson distribution. In order to develop products that meet local preferences, MNCs will employ local high-skilled labor to conduct product R&D, and  $\tau_{nt}$  requires  $a_n$  unit labor input. In the same way,  $\tau_{dt}$  requires  $a_d$  unit of local high-skilled labor input. Assuming that  $a_n a_d$  in the case of the same innovation reach rate, this means that MNCs need more local high-skilled labor input[5]. Let  $H_{2dt}$  represent the number of MNCs' demand for local high-skilled labor and  $H_{3dt}$  indicate the number of local enterprises' demand for local high-skilled labor, then we have  $H_{2,d,t} = \tau_{nt} a_n$  and  $H_{3dt} = \tau_{dt} a_d$ . In addition,  $v_{ct}$  expresses the value brought by successful innovation, given the marginal condition  $v_{ct} = w_{hdt} a_c$  and non-arbitrage condition  $r_t v_{ct} = \pi_{ct} + \dot{v}_{ct} - \tau_{ct} v_{ct}$  of the profit function of the two countries' enterprises, the relational expression of the two countries' innovation rate is obtained as follows:

$$r_t + \tau_{dt} = \frac{\mu-1}{\mu} \frac{\theta_{dt} E_t}{w_{hdt} a_d}, \quad (16)$$

$$r_t + \tau_{nt} = \left( \frac{\theta_{nt}}{\theta_{dt}} \right) \left( \frac{a_d}{a_n} \right) (r_t + \tau_{dt}). \quad (17)$$

### 3.2 Dynamic general equilibrium solution and impact analysis

The above constitute the decision of each sector to determine the optimal decision conditions at a certain time. From the perspective of dynamic equilibrium, we can obtain a country's high and low-skilled labor wages, household income levels, innovation rates and economic growth rates, and so on, under dynamic general equilibrium, through the final product market clearing, the clearing of the intermediate market at all stages of the production process, the clearing of the local high- and low-skilled labor market, the clearing of the labor market in developed countries and a series of static decision-making conditions.

First, according to the constraints of the domestic consumer sector's full lifecycle utility maximization and consumption expenditure, the Hamiltonian function is used to solve the dynamic optimal first-order condition. Under the dynamic equilibrium state, it is obtained as follows:

$$\frac{\dot{E}_t}{E_t} = r_t - \rho. \quad (18)$$

Given the country's high-skilled labor market clearing conditions, we have:

$$a_n \tau_{nt} + a_d \tau_{dt} = H_{dt}. \quad (19)$$

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Then, given the country's low-skilled labor market clearing conditions  $\int_0^1 x_{idt}(s)ds + \int_0^{s'} x_{int}(s)ds = L_{dt}$ , we have:

$$\frac{\theta_{dt}E_t}{\mu\lambda_d}(e^{\lambda_n}-1) + \frac{\theta_{nt}E_t e^{\lambda_n}}{\mu\lambda_n}(1-e^{-\lambda_n s'}) = L_{dt}. \quad (20)$$

With the low-skilled labor market clearing condition  $\int_{s'}^1 x_{int}(s)ds = L_{nt}$  in developed countries, this is obtained as follows:

$$\frac{e^{-\lambda_n s'}}{\lambda_n} - e^{-\lambda_n} = \frac{\mu L_{nt}}{\theta_{nt} E_t}. \quad (21)$$

Finally, the static decision-making conditions (4), (11), (13), (16), (17) and the labor market clearing conditions (19)–(21) and  $\theta_{nt}^* = \theta_{dt}^* = 1/2$  are known, given the parameters  $\{\lambda_n, \lambda_d, a_d, a_n, \mu, \rho\}$  and the exogenous variables  $\{L_{dt}, H_{dt}, L_{nt}\}$  for each period, then  $\{\tau_{nt}^*, \tau_{dt}^*, w_{idt}^*, w_{ln t}^*, w_{h,d,t}^*, r_t^*, E_t^*\}$  is determined endogenously by the model system[6]. Further substituting  $r_t^*$  into Equation (18), it yields the long-term economic growth rate  $g_l^*[7]$ . It can be seen from the above analysis that the scale  $E_t^*$  of the domestic demand in the long-term equilibrium state is determined endogenously by  $L_{dt}$  and  $H_{dt}$ . Therefore, in the following equations, we will use the increase of  $L_{dt}$  or  $H_{dt}$  to characterize the changes in domestic demand scale and further explore the growth effect and income distribution effect of expanding domestic demand.

First, we analyze the effect of low-skilled labor expansion. Given that  $0 < \lambda_n < 1$ , by (20) and (21), we obtain:

$$ds'^*/dL_{dt} = \frac{((e^{-\lambda_n s'})/\lambda_n) - e^{-\lambda_n}}{L_{nt} e^{\lambda_n} e^{-\lambda_n s'} + L_{dt} e^{-\lambda_n s'}} > 0. \quad (22)$$

Further, by (21), we obtain:

$$dE_t^*/ds' = \theta_n E_t^2 e^{-\lambda_n s'} / \delta L_{dt} > 0. \quad (23)$$

From (22) and (23), we obtain:

$$\frac{dE_t^*}{dL_{dt}} = \frac{dE_t^*}{ds'} \cdot \frac{ds'^*}{dL_{dt}} > 0. \quad (24)$$

For the convenience of expression, the structure of labor income distribution is defined as  $\phi^* = ((w_{idt}^* L_{dt}) / (w_{hdt}^* H_{dt}))$ , which obtains:

$$d\phi^*/dL_{dt} = \frac{1}{H_{dt}} \left( 1 - \frac{L_{dt}}{w_{hdt}^*} \frac{dw_{hdt}^*}{dL_{dt}} \right). \quad (25)$$

When labor demand's cross elasticity of wage  $e_{lh} = ((dL_{dt})/(dw_{hdt}^*))((w_{hdt}^*)/(L_{dt})) > 1$ ,  $d\phi^*/dL_{dt} > 0$ .

Then from (16), (17) and (19), we have:

$$\tau_d^* = \frac{1}{a_n + a_d} \left[ H_{dt} + \frac{\mu-1}{\mu} \cdot \frac{a_n - a_d}{2a_d} \cdot \frac{E_t^*}{w_{hdt}^*} \right], \quad (26)$$

$$\tau_n^* = \frac{H_{dt} - a_d \tau_d^*}{a_n}. \quad (27)$$

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economic  
globalization

Further, by (26) and (27), we have:

$$\frac{d\tau_d^*}{dL_{dt}} = \frac{a_n - a_d}{2a_d(a_n + a_d)} \frac{\mu - 1}{\mu} \cdot \frac{w_{ldt}^*}{w_{hdt}^*} \cdot \left( 1 - \frac{L_{dt}}{w_{hdt}^*} \frac{dw_{hdt}^*}{dL_{dt}} \right). \quad (28)$$

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Thus, when  $e_{lh} > 1$ ,  $((d\tau_d^*)/(dL_{dt})) > 0$ ,  $((d\tau_n^*)/(dL_{dt})) < 0$ . Based on this, we obtain the following proposition:

P1. In the context of economic globalization based on domestic demand, when the cross-wage elasticity of labor demand is greater than 1, the expansion of the local market capacity caused by the increase in the supply of low-skilled labor has a positive effect on inclusive growth.

Second, we analyze the effect of the expansion of high-skilled labor. From (4), we have:

$$\frac{dE_t^*}{dH_{dt}} = w_{hdt} \left( 1 + \frac{((dw_{hdt}^*)/(w_{hdt}^*))}{((dH_{dt})/(H_{dt}))} \right). \quad (29)$$

From the labor supply elasticity  $e_h = ((dH_{dt}/H_{dt})/(dw_{hdt}^*/w_{hdt}^*)) > 0$ , it is known that  $(dE_t^*/dH_{dt}) > 0$ .

The distribution structure of labor income  $\phi^* = ((w_{ldt}^* L_{dt})/(w_{hdt}^* H_{dt}))$ ; taking the derivative of  $H_{dt}$ , it yields:

$$\frac{d\phi^*}{dH_{dt}} = - \frac{w_{ldt}^* L_{dt}}{w_{hdt}^* H_{dt}^2} \left( 1 + \frac{dw_{hdt}^*}{dH_{dt}} \cdot \frac{H_{dt}}{w_{hdt}^*} \right) < 0. \quad (30)$$

Further, by (26), we have:

$$\frac{\partial \tau_d^*}{\partial H_{dt}} = \frac{1}{a_n + a_d} \left[ 1 + \frac{\mu - 1}{\mu} \cdot \frac{a_n - a_d}{2a_d} \cdot \left( 1 - \frac{w_{ldt}^* L_{dt}}{w_{hdt}^* H_{dt}} \cdot \frac{(\partial w_{hdt}^*/w_{hdt}^*)}{(\partial H_{dt}/H_{dt})} \right) \right]. \quad (31)$$

When  $e_h > \phi^* = ((w_{ldt}^* L_{dt})/(w_{hdt}^* H_{dt}))$ ,  $(\partial \tau_d^* / \partial H_{dt}) > 0$ ; when  $e_h < \phi^*$ ,  $(\partial \tau_d^* / \partial H_{dt}) < 0$ . Define  $\tilde{e} = \max [1, \phi^*]$ , when  $e_h > \tilde{e}$ ,  $(dE_t^*/dH_{dt}) > 0$ ,  $(d\phi^*/dH_{dt}) < 0$ ,  $(\partial \tau_d^*/\partial H_{dt}) > 0$  and  $(\partial \tau_n^*/\partial H_{dt}) < 0$ . Based on this, we derive the following proposition:

P2. Within the context of economic globalization based on domestic demand, when the supply of highly skilled labor is elastic and exceeds a certain threshold, in the wake of the expansion of the supply of high-skilled labor, the expansion of the domestic market capacity has expanded the income inequality of high and low-skilled labor while promoting domestic economic growth, social welfare and transnational economy growth convergence.

Combining the conclusions of P1 and P2 (see Table I for details), we can see that labor supply elasticity, the cross-wage elasticity of demand and labor market skill structure can affect the direction and extent of the impact of domestic demand scale on inclusive growth. The more elastic the labor supply, the stronger the substitutability between high- and low-skilled labor, and the more conducive it is to domestic economic growth and social welfare, thereby contributing further to the realization of transnational

**Table I.**  
Analysis of the impact  
of domestic demand  
expansion

Market scale	Labor market elasticity	Efficiency dimension – absolute level analysis		Equity dimension - relative level analysis	
		Household income <sup>a</sup>	Domestic innovation speed	Transnational economic growth convergence	Labor income Inequality
$L_{dt}$ increase	$e_{\bar{y}_t} > 1$	$(dE_t^*/dL_{dt}) > 0$	$(d\tau_d^*/dL_{dt}) > 0$	$((d(\tau_d^*/\tau_s^*))/(dL_{dt})) > 0$	$d\phi^*/dL_{dt} > 0$
$H_{dt}$ increase	$e_h > \tilde{e}$	$(\partial E_t^*/\partial H_{dt}) > 0$	$(d\tau_d^*/dH_{dt}) > 0$	$((d(\tau_d^*/\tau_s^*))/(dH_{dt})) > 0$	$d\phi^*/dH_{dt} < 0$

**Notes:** When the labor market elasticity is greater than a certain threshold, the increase in labor supply leads to an increase in household income. Therefore, in the case of perfect labor market, the increase in labor supply also characterizes the expansion of domestic demand. <sup>a</sup>As mentioned in Section 3, household income actually reflects the scale of domestic demand

inclusive growth. This promotion effect is not affected by the labor skills. Thus, we have the following inference:

Inference 1. The effect of domestic demand-driven inclusive growth is influenced by the effectiveness of the labor market, such that the more elastic the labor market, the stronger the effect of domestic demand-driven transnational inclusive growth.

Further analysis revealed that the structure of labor income distribution is not only affected by the elasticity of labor supply, but also by the skill structure of labor. With the increase in the relative supply of high-skilled labor, the flexibility of the labor market becomes more demanding[8]. At this time, the domestic economic growth rate and the wealth of the residents will also rise, but the dividend of economic globalization is completely absorbed by the highly skilled labor, resulting in widened income distribution gaps between high-low-skilled labors. Thus, we get the following inference:

Inference 2. The impact of domestic demand-driven domestic inclusive growth is influenced by labor market effectiveness and skill status, such that the higher the skill structure of the workforce, the more elastic the labor market, and the weaker the effect of domestic demand-driven domestic inclusive growth.

#### 4. Econometric model, variable measurement and data description

##### 4.1 Econometric model setting

The theoretical model shows that the domestic demand-based economic globalization has an effect on inclusive growth and its impact is moderated by the labor market effectiveness and skill structure. However, this conclusion has not been verified on the empirical level. To this end, based on the empirical research framework[9] for analyzing inclusive growth as proposed by Zhang and Wang (2016), this paper sets the benchmark model for inclusive growth driven by domestic demand as follows:

$$y_{it} = \alpha_0 + \alpha_1 \text{demand}_{it} + \alpha_2 y_{it-1} + \alpha_3 y_{it-1} \text{demand}_{it} + \sum X_{it} + \eta_i + \gamma_t + \varepsilon_{it}, \quad (32)$$

where  $i, t$  represents the region and the year, respectively;  $y$  denotes the target variable; demand represents the scale of the domestic demand; and  $X$  denotes the set of control variables. In addition,  $\eta_i$  denotes the regional fixed effect,  $\gamma_t$  denotes the time-fixed effect and  $\varepsilon_{it}$  denotes the random disturbance term. Based on the partial effect,  $\partial y_{it}/\partial \text{demand}_{it} = \alpha_1 + \alpha_3 y_{it-1}$ . Therefore, when  $\alpha_1 + \alpha_3 y_{it-1} > 0$ , it means that the expansion of domestic demand promotes the absolute level of the target variable. Further, when  $\alpha_3 < 0$ , it means that the smaller the sample in the previous period  $y_{it-1}$ , the more benefit from the expansion

of domestic demand, which also means that the expansion of domestic demand helps to alleviate the inequality of the target variable  $y_{it}$ , thus demonstrating the promotion effect of domestic demand on inclusive growth.

Based on the above framework, we use in the following equations the multinational panel data covering 34 OCED member countries[10] collected from 2008 to 2016 and the panel data of 285 Chinese prefecture-level cities[11] collected from 2008 to 2014 to conduct empirical test on Inference 1 and Inference 2, respectively. The econometric models for inclusive growth and domestic inclusive growth are, respectively, set as follows:

$$\begin{aligned} \text{Income}_{it} = & \beta_0 + \beta_1 \text{demand}_{it} + \beta_2 \text{income}_{it-1} + \beta_3 (\text{income}_{it-1} \times \text{demand}_{it}) \times lfw_{it} \\ & + \sum X_{it} + \eta_i + \gamma_t + \varepsilon_{it}, \end{aligned} \quad (33)$$

$$\begin{aligned} \text{Wage}_{jt} = & \theta_0 + \theta_1 \text{demand}_{jt} + \theta_2 \text{wage}_{jt-1} + \theta_3 (\text{wage}_{jt-1} \times \text{demand}_{jt}) \times ls_{jt} \\ & + \sum X_{jt} + \eta_j + \gamma_t + \varepsilon_{jt}, \end{aligned} \quad (34)$$

where  $i$ ,  $j$ , and  $t$  denote the OCED member countries, China's Prefecture-level cities and years, respectively; income is the per capita income of each country;  $lfw$  denotes the development of the labor market in each country; demand denotes final demand; wage denotes the wage;  $ls = lmar \times \text{skill}$ ;  $lmar$  denotes the development of the local (domestic) labor market; and skill denotes the skill structure of the domestic labor market. In addition,  $X$  is the control variable,  $\eta_i$  represents the regional fixed effect,  $\gamma_t$  represents the time-fixed effect and  $\varepsilon$  represents the random disturbance term. According to the inclusive growth defined above, if  $\beta_1 + \beta_3 \text{income}_{it-1} > 0$  and  $\beta_3 < 0$ , it indicates that the domestic demand drives the transnational inclusive growth. Furthermore, after introducing the product of the moderating variables  $lfw_{it}$  and  $\text{income}_{it-1} \times \text{demand}_{it}$ , if  $\beta_1 + \beta_3 \text{income}_{it-1} lfw_{it} > 0$  and  $\beta_3 < 0$  still hold, it means that the promotion effect of domestic demand on transnational inclusive growth is positively moderated by the development of the labor market, thus proving Inference 1. Similarly, if  $\theta_1 + \theta_3 \text{wage}_{jt-1} > 0$  and  $\theta_3 > 0$ , this indicates that the domestic demand does not drive domestic inclusive growth, and further, after introducing the product of the moderating variables  $ls_{jt}$  and  $\text{wage}_{jt-1} \times \text{demand}_{jt}$ , if  $\theta_1 + \theta_3 \text{wage}_{jt-1} ls_{jt} > 0$  and  $\theta_3 > 0$  still hold, it means that the negative impact of domestic demand on domestic inclusive growth is positively moderated by the development of the labor market and the skill structure of the labor force, thus proving Inference 2.

## 4.2 Variable measurement and data source

**4.2.1 Dependent variables.** These include the per capita income level of countries (income) and the wage level of labor in domestic prefecture-level cities (wage). Income denotes the actual value of the per capita income of each country, adjusted by GDP deflator on the 2008 price level. The data are extracted from the World Bank Database. Wage denotes the actual level of average wage of employees in 285 prefecture-level cities, adjusted by the consumer price index based on the 2008 price. The data are sourced from the China City Statistical Yearbook.

**4.2.2 Core explanatory variables.** 4.2.2.1 Domestic demand (demand). Existing studies employed two major methods for measuring demand: one is to use one country's GDP to measure the scale of demand (Hanson and Xiang, 2004; Amiti and Konings, 2007); the other is to use the input-output table to calculate industry demand (Davis and Weinstein, 1999). Given that the input-output tables at the prefecture-level and each country are not available, this paper draws on Chen and Chu (2013) and uses the actual GDP adjusted by the GDP deflator to measure the final demand scale.

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4.2.3 *Moderating variables.* These include the development of the labor market in each country (*lfw*), the labor market conditions of various cities (*lmar*) and the labor skill structure (*skill*). *Lfw* is measured by the Labor Liberalization Index, which comes from the Economic Freedom of the World: 2018 Annual Report published by the Frase Institute; *lmar* is measured by the factor marketization index, and the data come from the NERI Index of Marketization of China's Provinces 2016 Edition; *skill* is represented by the ratio of those with university degree or above in the total number of labor force, and the data are extracted from the China City Statistical Yearbook.

4.2.4 *Control variables.* Referring to the relevant literature on inclusive growth studies, the following control variables are included in the econometric model.

4.2.4.1 Industrial structure *ind*. Service-oriented industrial structure is an important variable affecting economic growth and income level with impacting effects. There are two types of views in existing research: one view believes that if the production efficiency of service industry is lower than that of manufacturing industry, then the economy will be “cursed with the Baumol's cost disease” (Baumol, 1967). Another view points out that if the industrial structure upgrade is caused by the expansion of the productive service industry, then the service-oriented industrial structure may not slow down economic growth and household income (Tan and Zheng, 2012). To this end, the current paper controls the variable of the service-oriented industrial structure. The value added of the service industry in the industrial structure of each country is measured by its ratio in GDP (the data come from the World Bank Database). The service-oriented industrial structure of prefecture-level cities is measured by the ratio of the proportion of employment service industry value added in GDP. The data are extracted from the China City Statistical Yearbook.

4.2.4.2 Foreign capital utilization *fdi*. The theory of international direct investment shows that FDI is an important factor affecting employment, economic growth and income distribution in each country. To this end, this paper incorporates foreign capital utilization into the empirical framework of inclusive growth and domestic inclusive growth. Among them, the foreign capital utilization rate of each country is measured by the net inflow of foreign investment as a percentage of GDP using data coming from the World Bank Database. The foreign capital utilization rate of each prefecture-level city is measured by Foreign Direct Investment as a percentage of GDP (the data come from the China City Statistical Yearbook).

4.2.4.3 Capital formation ratio (*cap*). The capital formation rate of each country is obtained by the proportion of capital formation in GDP using data coming from the “World Bank Database.” The proportion of capital formation in prefecture-level cities equals the investment in fixed assets of the whole society divided by the number of employees (the data come from the China Urban Statistical Yearbook). The neoclassical growth theory shows that fixed asset investment promotes capital deepening and the increase of per capita income. Therefore, it is predicted that the coefficient of the variable vs per capita income is positive. However, fixed asset investment may have two effects on wage levels. On the one hand, the increase in fixed asset investment shall promote capital deepening and increase production efficiency, which can then raise workers' wages. On the other hand, the substitution effect of excessive fixed asset investment on employment may not be conducive to the increase in wage levels. Therefore, the impact of this variable on wage levels must be controlled.

4.2.4.4 Urbanization process (*city*). The urbanization process of each country is represented by the proportion of urban population in the total population (the data come from the World Bank Database). The urbanization process of each prefecture-level city is measured by the ratio of the number of urban private and individual employees in the average number of employees, using data coming from the China Urban Statistical Yearbook. Population

agglomeration and economies of scale accompanying urbanization are both important phenomena of economic development and important factors affecting wages and income levels. For this reason, these factors must be controlled in the measurement model.

For the sake of clarity, the paper reports the basic statistical description of the above variables. The descriptive statistics of the relevant variables in the econometric model (33) are shown in Table II, and the descriptive statistics of the relevant variables in the econometric model (34) are shown in Table III.

## 5. Empirical results and analysis

### 5.1 Research on the growth effect of domestic demand scale

As a starting point for analysis, this paper first focuses on the growth effect. As shown in Table IV, whether using multinational panel data or prefecture-level panel data, the empirical test results invariably indicate that an increase in the scale of domestic demand can promote the improvement of absolute income levels. Models (1)–(5) show that the regression coefficients of per capita income level to domestic demand scale are invariably positive and pass the significance test at the 1 percent level, regardless of whether or not control variables are introduced. Models (6)–(10) show that the regression coefficients of the wage level to the domestic demand scale are invariably positive and pass the significance test at the 1 percent level, regardless of whether or not control variables are introduced. This means that fostering local markets and developing a strategy of economic globalization based on domestic demand can benefit long-term sustainable growth. However, whether the current round of economic globalization can promote a domestic economy's catch-up growth convergence to developed countries, and whether it can improve the distribution of labor income cannot be answered based on the results in Table IV. The following section will focus on this issue.

Variable name	Variable definition	Sample size	Average value	Variance	Min.	Max.
demand <sub>it</sub>	National demand scale (\$100bn)	306	12.28	27.31	0.110	169.3
income <sub>it</sub>	Per capita income level (\$10,000)	306	3.572	2.218	0.610	11.43
lwi <sub>it</sub>	Labor liberalization index	306	6.564	1.277	3.940	9.200
ind <sub>it</sub>	Industrial structure	306	0.733	0.064	0.570	0.950
fdi <sub>it</sub>	Foreign capital utilization	306	5.768	17.56	-15.99	252.3
cap <sub>it</sub>	Capital formation ratio	306	0.220	0.041	0.100	0.350
city <sub>it</sub>	Urbanization process	306	0.767	0.116	0.520	0.980

**Table II.**  
Descriptive statistics  
of variables related to  
transnational inclusive  
growth

Variable name	Variable definition	Sample size <sup>a</sup>	Average value	Variance	Min.	Max.
demand <sub>jt</sub>	Domestic demand scale (trillion yuan)	1,460	0.138	0.183	0.010	1.490
wage <sub>jt</sub>	Wage level (10,000 yuan)	1,460	3.436	1.275	1.210	29.58
lmar <sub>jt</sub>	Factor marketization index	1,460	4.882	1.292	-1.210	12.23
skill <sub>jt</sub>	Labor market skill structure	1,460	0.950	1.250	0.020	11.79
ind <sub>jt</sub>	Industrial structure	1,460	0.509	0.127	0.150	0.880
cap <sub>jt</sub>	Capital formation ratio	1,460	25.63	13.06	1.977	108.3
fdi <sub>jt</sub>	Foreign capital utilization	1,460	0.034	0.055	0.010	0.780
city <sub>jt</sub>	Urbanization process	1,460	1.029	0.644	0.050	6.240

**Table III.**  
Descriptive statistics  
of variables related to  
domestic inclusive  
growth

Note: <sup>a</sup>Here is the effective sample size after removing the samples with missing values of the variable from the original sample

**Table IV.**  
Empirical test of the  
impact of domestic  
demand scale on  
absolute income levels

	(1)	(2)	Transnational sample	(4)	(5)	(6)	(7)	Domestic sample	(8)	(9)	(10)
demand	0.075*** (0.011)	0.075*** (0.010)	0.071*** (0.009)	0.068*** (0.009)	0.069*** (0.009)	2.872*** (0.654)	2.967*** (0.644)	2.830*** (0.642)	1.913*** (0.567)	1.286* (0.674)	
ind		-5.856*** (1.064)	-4.850*** (0.968)	-4.158*** (0.971)	-4.273*** (0.975)	-3.793*** (0.602)	-3.793*** (0.602)	-4.374*** (0.618)	-4.922*** (0.544)	-4.868*** (0.545)	
city			-20.361*** (2.568)	-18.764*** (2.562)	-18.693*** (2.561)			-0.287*** (0.075)	-0.057 (0.069)	-0.053 (0.069)	
cap				2.784*** (0.818)	2.789*** (0.817)			0.062*** (0.003)	0.063*** (0.003)		
fdi					-0.002					-1.180* (0.689)	
cons	2.648*** (0.137)	6.946*** (0.792)	21.873*** (2.013)	19.561*** (2.088)	19.597*** (2.087)	3.039*** (0.094)	4.958*** (0.318)	4.975*** (0.317)	4.148*** (0.285)	4.225*** (0.285)	
n	306	306	306	306	306	1,460	1,460	1,460	1,460	1,460	
r2_w	0.1465	0.2326	0.3780	0.4038	0.4070	0.0157	0.0470	0.0583	0.2723	0.2741	
r2_b	0.0179	0.0035	0.0628	0.0593	0.0606	0.3853	0.2846	0.2533	0.2072	0.1520	
r2_o	0.0186	0.0044	0.0559	0.0521	0.0532	0.2216	0.1683	0.1584	0.2030	0.1664	
F	46.52***	40.93***	54.50***	45.38***	36.65***	19.25***	29.77***	24.93***	112.84***	91.00***	
FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

**Notes:** The empirical results are all calculated and collated by Stata14.0. The numbers in parentheses are the standard deviations of the regression coefficients.  
 \*., \*\*., \*\*\*. Significant at 10, 5 and 1 percent levels, respectively.

### 5.2 The impact of the scale of domestic demand on transnational inclusive growth

Table V reports the regression results of domestic demand scale on inclusive growth. First, the partial effect of per capita income on the scale of domestic demand is always positive, and this result holds whether or not the moderating variable or control variable is introduced. Second, the coefficient of domestic demand scale with the interaction term (*incd*) of the income level lag item is significantly negative, indicating that countries with lower income levels benefit more from the increase in domestic demand scale than those with higher income levels. Expanding domestic demand can improve the current situation of divergence of transnational economic growth performances, thus validating the promotion effect of domestic demand scale on transnational inclusive growth. Third, after adding the moderating variable of the development of the labor market, the coefficient of *indlf* is still significantly negative, further verifying the moderating effect of the development of the labor market on the inclusive growth based on the domestic demand scale. This finding indicates that the more perfect the development of the labor market is, the stronger the promotion effect of domestic demand scale on transnational inclusive growth. Inference 1 is thus verified.

### 5.3 The impact of domestic demand scale on domestic inclusive growth

Table VI reports the regression results of domestic demand scale to domestic inclusive growth. First, the partial effect of labor wage on the scale of domestic demand is always positive, and this result is true whether or not the moderating variable or control variable is introduced[12]. Second, the coefficient of domestic demand scale with the interaction term (*wd*) of the wage level lag term is significantly positive, thus indicating that groups

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
demand	0.075*** (0.011)	0.050*** (0.009)	0.114*** (0.024)	0.109*** (0.024)	0.111*** (0.024)	0.097*** (0.023)	0.094*** (0.023)	0.108*** (0.020)
income_1		0.430*** (0.051)	0.496*** (0.056)	0.475*** (0.055)	0.486*** (0.055)	0.399*** (0.058)	0.398*** (0.058)	0.397*** (0.053)
<i>incd</i>			-0.010*** (0.004)	-0.009*** (0.004)	-0.010*** (0.003)	-0.007** (0.003)	-0.007* (0.003)	
<i>incdnlf</i>								-0.001*** (0.000)
<i>ind</i>				-3.140*** (0.927)	-3.296*** (0.926)	-3.280*** (0.901)	-3.045*** (0.906)	-2.964*** (0.894)
<i>fdi</i>					-0.002* (0.001)	-0.002* (0.001)	-0.002* (0.001)	-0.002* (0.001)
city						-10.400*** (2.796)	-10.284*** (2.783)	-9.286*** (2.772)
cap							1.783* (0.974)	1.743* (0.961)
cons	2.648*** (0.137)	1.363*** (0.196)	0.869*** (0.260)	3.260*** (0.750)	3.346*** (0.747)	11.674*** (2.354)	11.056*** (2.367)	10.135*** (2.353)
<i>n</i>	306	272	272	272	272	272	272	272
r <sup>2</sup> _w	0.1465	0.3457	0.3675	0.3971	0.4060	0.4394	0.4474	0.4616
r <sup>2</sup> _b	0.0179	0.4240	0.3447	0.3048	0.3044	0.0742	0.0772	0.0909
r <sup>2</sup> _o	0.0186	0.4217	0.3437	0.3053	0.3051	0.0779	0.0811	0.0950
F	46.52***	62.36***	45.52***	38.53***	31.85***	30.31***	26.72***	28.29***
FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**Notes:** The variable *incd<sub>it</sub>* refers to *income<sub>i,t-1</sub>* × *demand<sub>it</sub>* and *incdnlf<sub>it</sub>* refers to *incdnlf<sub>it</sub>* × *fw<sub>it</sub>*. The empirical results were calculated and collated by Stata14.0. The numbers in parentheses are the standard deviation of the regression coefficients. \*,\*\*,\*\*\*Significant at 10, 5 and 1 percent levels, respectively

Table V.  
Empirical test of  
domestic demand  
affecting transnational  
inclusive growth

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
demand	2.872*** (0.654)	1.944*** (0.701)	-3.495*** (1.174)	1.637** (0.708)	1.702** (0.703)	1.594** (0.661)	0.765 (0.795)	0.781 (0.795)
wage_1		0.227*** (0.034)	0.119*** (0.038)	0.215*** (0.034)	0.194*** (0.034)	0.091*** (0.034)	0.088*** (0.034)	0.088*** (0.034)
wd			1.130*** (0.197)					
wdls				0.004*** (0.002)	0.004*** (0.002)	0.004*** (0.001)	0.005*** (0.001)	0.005*** (0.001)
ind					-2.520*** (0.662)	-4.358*** (0.644)	-4.271*** (0.645)	-4.188*** (0.663)
cap						0.051*** (0.005)	0.052*** (0.005)	0.053*** (0.005)
fdi							-1.445* (0.772)	-1.432* (0.773)
city								-0.046 (0.087)
cons	3.039*** (0.094)	2.586*** (0.144)	3.065*** (0.165)	2.636*** (0.145)	3.965*** (0.378)	3.844*** (0.355)	3.950*** (0.359)	3.938*** (0.360)
n	1,460	1,176	1,176	1,176	1,176	1,176	1,176	1,176
r2_w	0.0157	0.0567	0.0884	0.0640	0.0782	0.1867	0.1897	0.1900
r2_b	0.3853	0.7320	0.5335	0.6964	0.5534	0.3199	0.2265	0.2287
r2_o	0.2216	0.3804	0.3112	0.3703	0.3136	0.2393	0.1881	0.1899
F	19.25***	28.39***	30.50***	21.50***	19.97***	43.20***	36.68***	31.46***
FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**Notes:** The variable  $wd_{it}$  refers to  $wage_{it,1} \times demand_{it}$  and  $wdls_{it}$  refers to  $wd_{it} \times ls_{it}$ . The empirical results were calculated and collated by Stata14.0. The numbers in parentheses are the standard deviations of the regression coefficients. \*, \*\*, \*\*\*Significant at 10, 5 and 1 percent levels, respectively

**Table VI.**  
Empirical test of  
domestic demand  
affecting domestic  
inclusive growth

with higher wages (often high-skilled workers) benefit more from the increase in domestic demand scale than groups with lower demand wages. Expanding domestic demand does not improve labor income inequality, and the negative impact of domestic demand scale on domestic inclusive growth is verified. Third, after adding the two moderating variables of labor market development status and skill structure, the coefficient of  $wdls$  is still significantly positive, further verifying the moderating effect of labor market development status and labor skill structure on the domestic inclusive growth based on domestic demand scale. In other words, the more perfect the development of the labor market, the higher the skill structure of the labor force and the less conducive to the realization of domestic inclusive growth in the wake of the expansion of domestic demand scale. Inference 2 is thus verified.

## 6. Conclusions and implications

In the post-financial crisis period, the export-oriented development strategy that has been implemented over time has become unsustainable. Thus, it has become a government and academic consensus to expedite the development strategy for the second wave of domestic demand-driven economic globalization to adapt to the new global economic situation and the changes in the competitive landscape. The implementation of such a strategy for latecomer economies to aggregate global innovation resources and seek innovation-driven economic development in the new era is of great significance to China, which is currently undergoing economic adjustment and structural transformation. Therefore, there exists an urgent need to comprehensively assess the potential impact of domestic demand-driven economic globalization on China's economic development.

In this paper, the GVC-NVC competition triggered by foreign investment, which is attracted by the domestic demand scale is included in the endogenous growth model of “Schumpeterian Innovation.” We also comprehensively explore, starting from the two dimensions of efficiency (sustainable economic growth and household income level) and equity (transnational economic growth convergence and domestic income distribution gap), the impact and orientation of domestic demand-based economic globalization on inclusive growth from an open perspective. Theoretical models and empirical tests show that while domestic demand-based economic globalization promotes transnational inclusive growth, this is not conducive to the realization of domestic inclusive growth. Moreover, the impact of domestic demand-based economic globalization on transnational inclusive growth is moderated by labor market development and the effect of domestic demand-based economic globalization on domestic inclusive growth is jointly moderated by the development of the labor market and the skill structure of labor. Specifically, the more perfect the labor market and the higher the skill structure of labor, the more conducive they are to the realization of transnational inclusive growth; in turn, this situation becomes more unfavorable to the realization of the domestic labor market’s inclusive growth.

The policy implications of this paper are very obvious. First, in order to give play to the promotion effect of domestic demand-based economic globalization on transnational inclusive growth, we should accelerate the construction of a unified market for production factors, such as labor. To this end, we should gradually liberalize the household registration restrictions, break the “beggar-thy-neighbor” phenomenon of regional division and reduce the institutional barriers that hinder the free flow of labor and other factors across regions and sectors. We should also effectively cut the transaction cost of the spatial flow of production factors through the inter-regional transportation infrastructure and information infrastructure interconnection in order to realize market allocation and free flow of production factors across the country. Second, in order to effectively promote the actualization of transnational economic growth convergence and the narrowing of the domestic income distribution gap, policy makers should work at reducing the negative impact of the expansion of domestic demand strategy on the country’s low-skilled labor force. To this end, the income distribution structure can be adjusted through transfer payment means in order to achieve Pareto improvement that compensates for the loss of income of low-skilled labor groups while not reducing the absolute income of high-skilled labor, or to improve the skill level of the low-skilled labor force by beefing up public education training for them, among other measures. Third, in order to attract high-quality foreign investment and encourage local enterprises to build NVCs, the market environment should be vigorously improved to foster equal competition between Chinese and foreign companies. To this end, the government is required to transform from implementing a selective industrial policy that has intervened or even replaced the market, to a functional industrial policy that fosters the market, encourages and regulates competition, and strengthens intellectual property protection to strengthen the foundation for further opening up.

## Notes

1. According to the statistics of the PRC Ministry of Commerce, as of the end of 2017, Shanghai has become the MNCs’ preferred area for setting up R&D centers. The number of foreign-funded R&D centers has reached 426, accounting for a quarter of the total number of such centers in mainland China. Among them, 40 are global R&D centers, 17 are R&D centers in the Asia-Pacific region; 20 foreign-funded R&D centers were invested with more than \$10m; the total number of Chinese local employees in such centers topped 40,000, 52 percent of whom have an education level of masters or above.

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2. Refers, respectively, to the Special Administrative Measures for Foreign Investment Access (Negative List) (2018 Edition) and Special Administrative Measures for Foreign Investment Access in the Free Trade Pilot Areas (Negative List) (2018 Edition). These were officially implemented by the National Development and Reform Commission and the Ministry of Commerce on June 28 and June 30, 2018, respectively.
  3. According to the World Bank data, in 1980, China's per capita real GDP was merely \$465, accounting for just 6.0 percent of the per capita real GDP of the USA. However, after more than 30 years of development, China's per capita real GDP has climbed to \$8,919 in 2014, accounting for about 21 percent that of the USA.
  4. The degree of transnational inclusiveness includes that between economies that successfully participated in the GVC labor division, and that between economies that participated/did not participate in the GVC labor division. As this paper examines the degree of inclusiveness of the Chinese economy in deep involvement in the GVC labor division, which is relative to developed economies; therefore, the degree of inclusiveness referred in this paper, unless otherwise stated, refers to the former case.
  5. It can be considered that this is due to the communication friction between high-skilled labors in MNCs and local firms. Given the cultural and linguistic differences, MNCs must provide more training to the employed local high-skilled labor to achieve the same production efficiency as their native enterprises.
  6. The final product market clearing condition has been utilized in solving the enterprise demand functions (14) and (15), so this condition is not shown here.
  7. As the price is standardized to 1 in this model, the output growth rate is thus equal to the expenditure growth rate.
  8. When  $L_{dt}$  increases, it is only required that  $e_{lh} > 1$ , but when  $H_{dt}$  increases, it is required that  $e_h > \bar{e} = \max [1, \phi]$ .
  9. The framework has two advantages in analyzing inclusive growth. First, the impact of income determinants on growth and inequality is realized in the same model, resulting in an assessment framework equivalent to DID effects (Zhang and Wang, 2016). Second, incorporating the lag phase of the explained variable into the econometric model yields an effect similar to that of GMM method, thus the endogenous problem that may exist in the interpreted and explanatory variables is well controlled.
  10. As Liu (2012a, b) pointed out in explaining the connotation of the domestic demand-based economic globalization, the big country economy under open conditions generally belongs to the type of "global economy based on domestic demand." Therefore, we select OECD countries as samples for the study of domestic demand-driven inclusive growth.
  11. As the empirical research of domestic inclusive growth needs to use the factor marketization index provided by the China Marketization Index Report, the data have only been updated to 2014, so the sample period of 285 prefecture-level cities was selected from 2008 to 2014.
  12. It should be noted that although the regression coefficient of the domestic demand scale (demand) is negative in Model (3), the partial effect of wage on the scale of domestic demand is greater than 0 (the average value of the wage lag period is 3.249, which is substituted into the calculation formula for partial effect of wage on domestic demand scale, it yields  $\partial \text{wage}_{it} / \partial \text{demand}_{it} = -3.495 + 1.130 \text{wage}_{it-1} = 0.176$ ).

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#### Further reading

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# Monopoly behavior of China's manufacturing enterprises

## Rent-seeking or innovation-oriented

Monopoly  
behavior

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### Abstract

**Purpose** – With the increase of state capital, corporate total factor productivity (TFP) has a tendency to jump up at first and then slowly decrease. Generally, no significant “productivity paradox” can be observed in China's manufacturing industry. With the increase of export density, corporate TFP also shows a trend of initial jump growth and subsequent slow decline. This paper aims to discuss these issues.

**Design/methodology/approach** – Using the 1996–2013 China Industrial Enterprise Database, this paper studies the monopolistic behavior of Chinese manufacturing enterprises through the measurement of TFP and corporate monopoly power.

**Findings** – Results show that China's manufacturing monopoly enterprises are generally innovation-oriented rather than rent-seeking. However, there are certain differences between diversified types of monopoly enterprises: the ones with state capital are more inclined to innovate than those without, whereas the ones with export delivery value are more inclined to seek rent than those without.

**Originality/value** – Therefore, the government should implement differentiated policies for diversified types of monopoly enterprises, and do so in a targeted manner fully reflecting the containment of rent-seeking and the encouragement of innovation.

**Keywords** Rent-seeking, Monopoly power, Total factor productivity, Productivity paradox

**Paper type** Research paper

### 1. Research questions

Monopoly enterprises (monopolies) are the common concern of all sectors of society as their every single move may have a huge impact on the industry, the real economy, and even the entire society. With the control of existing resources, monopolies can choose between the behaviors of rent-seeking and innovation. In choosing rent-seeking, they can win a bigger portion of a “cake” in the zero-sum game, whereas choosing innovation gets them an entire new “cake” in the field. Although both rent-seeking (cutting the “cake”) and innovation (producing the “cake”) can achieve the profit-seeking purposes, their impacts on social welfare are diametrically opposite. The total welfare losses caused by rent-seeking to society or groups have been denounced by academic circles (Tullock, 1967; Krueger, 1974; Posner, 1975; Cowling and Mueller, 1978; Dechenaux *et al.*, 2015)[1]. The driving role of innovation in economic growth is not only supported by neoclassical economic growth theory (Solow, 1956), but also further confirmed by the theory of endogenous economic growth in the fields of product category innovation (Judd, 1985; Grossman and Helpman, 1991) and product quality innovation (Grossman and Helpman, 1991; Aghion and Howitt, 1992). Certainly, rent-seeking and innovation may also occur in non-monopoly enterprises, but this is far less likely to happen than in monopoly enterprises[2].



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In terms of rent-seeking, entities can be determined as rent-seeking monopolies directly according to the definition of rent-seeking, that is, the non-productive profit-seeking activity for securing monopolistic profits. In terms of innovation, according to Chen and Schwartz (2013), monopolistic firms are more motivated to innovate than non-monopoly firms, and based on the expanded quality innovation model of Acemoglu and Cao (2015), the higher the degree of monopoly, the more R&D investment in monopoly firms. In terms of financial constraints, rent-seeking non-productive inputs and innovative R&D investments require large amounts of capital, and the monopoly profits accumulated by monopoly enterprises in the early stage can directly provide financial support for rent-seeking and innovation. Therefore, the basic logic of this paper is as follows: the enterprise has an *ex ante* monopoly position, such that to maintain a continuous flow of monopoly profits, it will adopt innovative or rent-seeking methods, but followed by different “additional effects” (high TFP or low TFP). Here, the “additional effect” characterized by TFP (total factor productivity) refers to the increase in output caused by factors other than traditional production factors like capital and labor, thus reflecting the production efficiency from factor input to product output.

This paper focuses on the Chinese manufacturing sector during the economic transition period. On the one hand, the institutional arrangements at this stage are characterized by transitionality, short-term, uncertainty, and non-equilibrium, which can easily induce non-productive rent-seeking (Zhou, 2004). On the other hand, with the promulgation of the Patent Law of the People's Republic of China in 1984 and the Company Law of the People's Republic of China in 1993, along with the gradual improvement of relevant laws and regulations, China is providing better legal protection for R&D and innovation in firms[3]. Then, during the economic transition period, are Chinese manufacturing monopolies generally rent-seeking monopolies or innovation-oriented monopolies? What kinds of nuances exist between different types of monopolies; are they slightly oriented toward innovation, or slightly oriented to seek rent? To answer these two questions, this paper needs to introduce the concept of “monopoly power,” which refers to the ability of enterprises to control the price of products sold, and often expressed as the “ratio of price vs the marginal cost” (Markup) by the academic community[4]. For the first type of problem, this paper attempts to exploit the relationship between corporate monopoly power and corporate TFP to explore the specific monopoly types of Chinese monopolies. When the monopoly power has a positive relationship with TFP, then the monopoly enterprise can be considered an innovative monopoly. This is because innovation cannot only significantly increase the TFP of the monopoly enterprise itself, but also the TFP of the same industry and related industries through the spillover effect. When the monopoly power has a negative relationship with the TFP, the monopoly enterprise can be judged as a rent-seeking monopoly. This is because the monopolies take the means of bribing government officials, striking ties with industry associations, conspiring with related companies and recruiting public relations personnel to obtain product operational rights, possess the production factors and carve up their own niches in the sales market. This leads to the non-productive expenditure of capital factors (e.g. money, etc.) and labor factors (public relations personnel), which can be passively expressed as a lower TFP. For the second type of problem, this paper can use the same method to make judgments, but here it becomes the relationship between “corporate monopoly power and corporate type cross-term” and corporate TFP, and the specific corporate type can be divided into state-owned and non-state-owned equity enterprises, export and domestic sales firms and so on.

The existing literature features many studies on the production efficiency of Chinese monopolies, and most of them focus on the impact of one aspect or another. Jian *et al.* (2011) used the micro data of Chinese industrial enterprises to find that the transformation of China's industrial sector from state monopoly to competitive market promoted efficiency improvement. Xu and Xie (2016) found that lower-intensity market segmentation would, on the contrary, promote local enterprise's efficiency enhancement and that only after a certain threshold is

exceeded will it hinder the efficiency enhancement. Using the ISCP analysis framework, Yu and Zhang (2010) analyzed the power, telecommunications, petroleum, and railway industries and found that administrative monopoly can lead to a reduction in resource allocation efficiency in such industries. Zhou *et al.* (2012) analyzed the independent innovation performance of enterprises and found that the innovation activities of Chinese enterprises from 2005 to 2007 significantly improved output performance (elasticity: 5.5 percent). A common feature of this type of literature is the specific analysis of the impact on the productivity of monopolies based on known behaviors (e.g. specific rent-seeking means, innovative methods). However, in reality, rent-seeking is “dirty,” and companies do not expose rent-seeking behavior (Tullock, 1967). Innovations that are not protected by the Patent Law are easily imitated by other firms, so firms will not disclose such innovations. In other words, comprehensively and meticulously observing the monopolies’ rent-seeking and innovative behaviors is a highly challenging task. Therefore, unlike this kind of literature, the current paper principally backsteps the “comprehensive” behaviors through the behavioral results of monopolies. Here, the word “comprehensive” is used to emphasize that the innovative monopoly stated in this paper does not mean complete innovation without rent-seeking, and similarly, the rent-seeking monopoly does not mean completely rent-seeking without innovation. In the strict sense, it means a relative concept on weights. Therefore, the major issues of this paper are as follows: to make basic judgments on the monopoly types (innovative monopoly, rent-seeking monopoly) of Chinese monopolies and to analyze the difference (innovation-oriented or rent-seeking-oriented) between diversified types (state-owned equity, non-state-owned equity, exports, domestic sales, etc.) of monopolies.

## 2. Research design

The data used in this paper are the fusion of the Chinese Industrial Enterprises Database and the China Economic Census Database, with a total sample size of 4,446,309. In the absence of ambiguity, this paper directly refers to the fusion data as the Chinese Industrial Enterprises Database. The processing software in this paper is STATA14.2, and all key data are operated with double precision. Furthermore, this paper also carried out two basic data collation procedures, namely, enterprise ID identification and price adjustment. First, enterprise ID identification adopts the cross-identification method, that is, the enterprises with the same name (in the same province) are identified as the same enterprise, and those with the same organization code are identified as the same enterprise. This method is more accurate[5] than the sequential identification method[6] of Brandt *et al.* (2012), because the latter identifies the same company with different organizational codes as multiple enterprises. Second, as for price adjustment, this paper uses the regional price index[7] to deflate the nominal price, and the base period is set at 2010.

### 2.1 TFP calculation

First, the calculation of TFP needs to set the firms’ production functions, which can be divided into the following functions: linear production, Leontief production, CD production, CES production, VES production and trans-log production function. This paper mainly uses the CD production function form, which is obtained after logarithmization:

$$\ln Y_{add,it} = \alpha_L \cdot \ln L_{it} + \alpha_K \cdot \underbrace{\ln K_{it}}_{\ln tfp} + \ln A_{it}, \quad (1)$$

where  $Y_{add}$  denotes industrial added value,  $L$  denotes labor,  $K$  denotes capital,  $A$  denotes TFP, the subscript  $i$  denotes individual enterprise and  $t$  denotes the year. The enterprise TFP can be measured by using the OP method (Olley and Pakes, 1996) to estimate (1). Moreover, in view of the large differences in the output elasticity of factors in different industries, this paper estimates the TFP according to the major categories of 30 (manufacturing) industries.

Compared with the other studies (Qian *et al.*, 2013; Gai *et al.*, 2015), the manufacturing sector of this paper retains the “waste resources and waste materials recycling and re-processing industry.” It should be noted the 1996–2013 Chinese Industrial Enterprises Database have three sets of national economic industry classification standards: GB/T4754-1994 (1996–2002), GB/T4754-2002 (2003–2012), and GB/T4754-2011 (2013). This paper will uniformly adjust GB/T4754-1994 and GB/T4754-2011 to the GB/T4754-2002 industry category.

In the TFP measurement, aside from the three basic variables of industrial added value ( $Y_{add}$ ), labor ( $L$ ), and capital ( $K$ ), the OP method requires two extra variables of investment ( $invest$ ) and enterprise exit ( $exit$ ). For investment ( $invest$ ), the calculation can be directly made via the “fixed assets in the current year – fixed assets in the previous year + depreciation in the current year.” However, there are two problems in the actual calculation. First, when an enterprise’s fixed assets are null in the previous year, it will not be able to calculate the investment of the enterprise in the current year; second, where the observations of an enterprise in the previous year are interrupted and do not appear in the Chinese Industrial Enterprises Database (due to the scale requirements or incorrect identification of the corporate ID), calculating the investment of the enterprise in the current year would be impossible. Therefore, this paper improves the calculation formula of investment as “fixed assets in the current year – estimated fixed assets in the previous year + depreciation in current year.” Among them, the estimated value uses the “geometric” interpolation method [8]. When the fixed assets of the enterprise are null in the previous year, the estimated value is the true interpolation; when the previous observations of the enterprise do not exist, the estimated value is the virtual interpolation. This method of estimation contributes approximately 700,000 investment data[9]. For an enterprise exit, the following requirements must be met: the enterprise does not appear at the end year[10] of the observation period, and the enterprise time series is not interrupted before it is judged to be a “seceded enterprise.” Once the company is recognized to withdraw from business, the enterprise exit variable is denoted as 1 for the year, in which the company last appears, and 0 for other years. All enterprise exit variables for non-seceded enterprise are marked as 0.

Finally, using the industrial added value ( $Y_{add}$ ), labor ( $L$ ) and capital ( $K$ ), and investment ( $invest$ ) and enterprise exit ( $exit$ ) variables, this paper estimated the labor output elasticity and capital output elasticity[11]. Substituting it in Equation (1), we calculated the TFP of the Chinese manufacturing enterprises, and on this basis, carried out the extreme value control by the median method[12]. The specific process is described as follows. First, while calculating the median TFP of each enterprise in the time series, if the TFP of a certain enterprise is greater than 10 times or less than 0.1 times of the median, it is determined as an extreme value and shall be replaced with a null value. Second, while calculating the annual TFP median of each industry’s sub-category, if a company’s TFP is greater than 100 times or less than the median of the industry’s sub-category in a certain year, it is also determined as an extreme value and shall be replaced with a null value. In addition, because the density function of the TFP logarithm ( $\ln tfp$ ) is more symmetrical[13] than TFP ( $tfp$ ),  $\ln tfp$  is used in the final quantitative regression.

Notably, the absolute value of TFP does not have much value, what is important is the relative value of TFP. This is because in the production function  $Y_{add,it} = A_{it}L_{it}^{\alpha_L}K_{it}^{\alpha_K}$ ,  $Y_{add,it}$  and  $K_{it}$  are represented in the form of currency and the original unit is ¥1,000. If the unit is adjusted to ¥1, the original TFP increases to  $1,000^{1-\alpha_K}$ . In other words, the choice of dimension changes the absolute value of the TFP.

## 2.2 Monopoly power measurement

The measurement of corporate monopoly power requires basic information, such as sales prices and marginal costs, and the latter, as hidden information, are often difficult to obtain. To this end, De Loecker and Warzynski (2012) overcame the limitations of traditional methods and proposed a more general measurement method, which was quickly promoted in a short-term

(Ren and Zhang, 2013; Gai *et al.*, 2015; Lu and Yu, 2015; Huang *et al.*, 2016). The basic research ideas are as follows: given the factor price  $P_i^X$  and output  $Q$  of an enterprise who minimizes costs by choosing factor price  $X_i$ , the Lagrange equation is thus available:

$$L = \sum_{i=1}^n P_i^X X_i + \lambda(Q - Q(X)), \quad (2)$$

where  $\lambda$  denotes the shadow price of the enterprise reflecting the marginal cost  $MC$  of the enterprise, that is,  $\lambda \equiv MC$ , and  $X$  is the factor vector, namely,  $X \equiv (X_1, \dots, X_n)$ . The first-order condition of Equation (2) yields  $P_i^X = MC \cdot (\partial Q(X)/\partial X_i)$ , which can be further refined as follows:

$$\frac{P}{MC} = \frac{\partial Q(X)}{\partial X_i} \frac{X_i}{Q(X)} \Bigg/ \frac{P_i^X \cdot X_i}{P \cdot Q(X)}, \quad (3)$$

where  $P$  denotes the product sales price. The left side of Equation (3) is exactly the monopoly power[14] of the enterprise. The numerator on the right side is exactly the output elasticity  $\varepsilon_{X_i}$  of the factor  $X_i$ , and the right denominator is exactly the return share  $share_{X_i}$  of the factor  $X_i$ . The advantage of Equation (3) is that, first, it bypasses the enterprise sales price  $P$  and the hidden information of marginal cost, and can directly use the factor output elasticity  $\varepsilon_{X_i}$  and the factor payment share  $share_{X_i}$  to measure the enterprise monopoly power. Moreover, second, it is not necessary to obtain all-factor output elasticity and factor payment share and just the single-factor data will suffice. Finally, third, almost no limitation is required on the production functions  $Q(X)$ . Thus, linearity, CD, CES, VES, Trans-log and other production functions can invariably be used.

**2.2.1 Estimation of the elasticity of factor output.** In general, the interpreted (explained) variable of the OP method (Olley and Pakes, 1996) is the logarithm of the industrial added value, and the interpreted variable of the LP method (Levinsohn and Petrin, 2003) is the logarithm of industrial added value or the industrial gross value. In the Chinese Industrial Enterprises Database, the time series data of the industrial output value (1996–2013) are longer than that of the industrial added value (1996–2007, 2010), and the industrial output value or industrial value-added data need to be reused when calculating the share of compensation later. Therefore, this paper mainly uses the LP method (Levinsohn and Petrin, 2003) to estimate the factor output elasticity, and the explained variable is the logarithm of the industrial output value. Additionally, as the De Loecker and Warzynski (2012) method does not require any setting of the production function, this paper directly uses the double logarithmic model to estimate the factor output elasticity. The measurement model[15] is given by:

$$\ln Y_{jt} = \beta_0 + \beta_L \cdot \ln L_{jt} + \beta_K \cdot \ln K_{jt} + \beta_M \cdot \ln M_{jt} + \varepsilon_{jt}, \quad (4)$$

where  $Y$  denotes the total industrial output value;  $L$ ,  $K$  and  $M$  denote labor, capital and intermediate inputs, respectively, and  $\beta_L$ ,  $\beta_K$ , and  $\beta_M$  are the corresponding output elasticities; subscript  $j$  represents the individual enterprise; and subscript  $t$  represents the year. Table I presents the statistics of the LP method variables.

Variable	Explanation	Sample size	Mean	SD	Min.	Max.
$\ln Y$	Industrial gross output value logarithm	3,796,163	10.4528	1.4306	-0.1050	19.7465
$\ln K$	Fixed asset logarithm	3,777,114	8.6438	1.7624	-0.1194	18.9587
$\ln L$	Number of employees	3,794,326	4.8680	1.1621	0.0000	12.3159
$\ln M$	Logarithm of industrial intermediate input	1,999,906	9.7549	1.4542	0.0777	19.0302

**Source:** Calculated by the author

**Table I.**  
LP method  
variable statistics

Using Table I data to estimate Equation (4), the output elasticities of capital, labor and intermediate input in 30 (manufacturing) industry categories can be obtained, as shown in Table II. It is not difficult to find that the output elasticity of labor and intermediate inputs all fit in the 1 percent significance interval, whereas those of the capital in five industries fail to fit in the 10 percent significance level, but this basically does not affect our measurement of monopoly power, because the De Loecker and Warzynski (2012) method is very flexible, and the output elasticity of only one factor will do. Therefore, the elasticity of the labor output and intermediate inputs can all be used as the selection factors for measuring the monopoly power of firms.

*2.2.2 Calculation of factor payment share.* The share of factor payment can be calculated by dividing the total compensation of the factor by the gross industrial output value. In the Chinese Industrial Enterprises Database, there is no total capital return data; the total labor compensation can be expressed by the total wages payable, and the time span is from 1996–2008 to 2011–2013. Meanwhile, the total intermediate industrial input can be used to denote the total compensation of intermediate inputs, and the time span is from 1996 to 2007. Therefore, the time series of total labor compensation is the longest. Thus, taking into account the significance of the output elasticity of each factor in Table II, this paper considers that labor is the best choice factor for measuring the monopoly power of enterprises.

*2.2.3 Monopoly power (markup) measurement.* Based on the estimated labor output elasticity and the calculated labor compensation share, according to the De Loecker and Warzynski (2012) method, this paper calculates the monopoly power of Chinese manufacturing enterprises from 1996–2008 to 2011–2013, and on this basis the extreme value control is carried out and, first, the median of the monopoly power of each enterprise in the time series is calculated. If the monopoly power of a certain enterprise is greater than 10 times or less than 0.1 times (23,375 total) of the median in a certain year, it is considered as an extreme value and shall be replaced by a null value. Next, the median of the monopoly power of each industry sub-category every year is calculated. Second, if the monopoly power of enterprise is greater than 100 times or less than 0.01 times the median of the industry's sub-category in a certain year (a total of 1,053[16]), then it is judged as an extreme value and replaced with a null value. Third, the “unreasonable”[17] monopoly power values (a total of 837 [18]) that is greater than 100 or less than 0.01 times of the median is considered as an extreme value and is replaced with a null value. After the extreme value control of the monopoly power, the average value of the monopoly power in this paper is 1.2366 (1996–2008, 2011–2013). In similar studies, Gai *et al.* (2015) measured the average value of China's manufacturing monopoly powers at 1.2421–1.5068 (1998–2007), and Huang *et al.* (2016) measured the average value of the monopoly power of Chinese industrial enterprises at 1.22–1.29 (1998–2007).

Figure 1 shows the annual monopoly powers of different types of enterprises. In the Chinese Industrial Enterprises Database[19], only some industrial enterprises were counted in 1996–1997. In 1998–2006, the statistics cover “all state-owned industrial corporations and non-state-owned ones with annual main business income of ¥5m or more,” the 2007–2010 statistics cover the industrial corporations with “industrial corporations with annual revenues of ¥5m or more”[20], and in 2011–2013, it has counted “industrial corporations with annual revenues of ¥20m or more.” The monopoly powers of enterprises with different scales often differ. Thus, we carried out the control of firms above the state designated scale in Figure 1 and adopted the latest standards for such scale: “Industrial corporations with annual revenues of ¥20m or more.” Taking into account the greater use of the data of industrial enterprises above the state designated scale, this paper uses 2011 as the base (benchmark) year for such scale[21]. As shown in Figure 1, the monopoly power of state-owned equity enterprises is lower than that of non-state-owned equity enterprises[22], but the gap between the two has narrowed with time. This shows that the reform of the state-owned enterprises in China has achieved

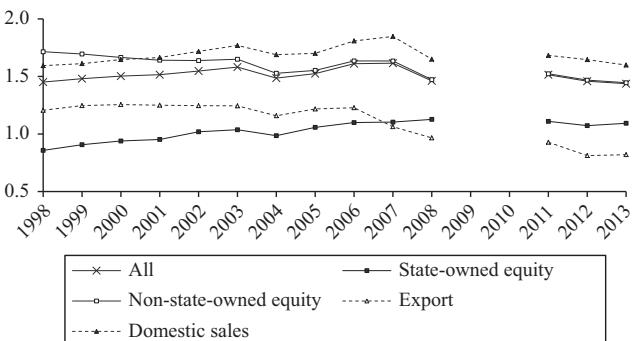
Code	Industry name	Factor output elasticity			Valid sample	Total sample	Monopoly behavior
		Capital	Labor	Intermediate inputs			
13	Agricultural and sideline food processing industry	0.0444***	0.0332***	0.8073***	122,352	241,185	
14	Food manufacturing	0.0439***	0.0259***	0.8535***	48,887	90,910	
15	Beverage manufacturing	0.0472***	0.0446***	0.7484***	34,561	63,716	
16	Tobacco industry	0.0000	0.0531***	0.6473***	2,614	3,546	
17	Textile industry	0.0487***	0.0395***	0.7399***	172,938	320,184	
18	Textile and garment, shoes and hat manufacturing	0.1096***	0.0890***	0.5556***	94,437	176,510	
19	Leather, fur, feather (velvet) and its products	0.0224***	0.0625***	0.6656***	47,235	87,770	
20	Wood processing and wood, bamboo, rattan, palm, grass products industry	0.0795***	0.0481***	0.7396***	39,374	86,407	
21	Furniture manufacturing	0.0416***	0.0521***	0.7763***	22,860	48,751	
22	Paper and paper products industry	0.0375***	0.0378***	0.7746***	59,232	104,319	
23	Printing industry and recording media reproduction	0.0865***	0.0508***	0.7663***	42,090	71,528	
24	Culture, education and sporting goods manufacturing	0.0076	0.0738***	0.6557***	25,841	47,318	
25	Petroleum processing, coking and nuclear fuel processing industry	0.0273	0.0185***	0.9315***	14,197	25,860	
26	Chemical raw materials and chemical products manufacturing	0.0677***	0.0236***	0.7023***	147,015	282,154	
27	Pharmaceutical manufacturing	0.0541***	0.0294***	0.6543***	41,568	76,595	
28	Chemical fiber manufacturing	0.0379	0.0191***	0.9182***	10,358	20,902	
29	Rubber products industry	0.0000	0.0372***	0.9725***	23,545	44,748	
30	Plastic products industry	0.0721***	0.0486***	0.6793***	92,028	179,419	
31	Non-metallic mineral products industry	0.0458***	0.0357***	0.7306***	169,123	324,636	
32	Ferrous metal smelting and rolling processing industry	0.0893***	0.0238***	0.8290***	47,051	86,352	
33	Non-ferrous metal smelting and rolling processing industry	0.0397***	0.0355***	0.8439***	38,301	69,723	
34	Metal products industry	0.0872***	0.0382***	0.6340***	106,614	213,707	
35	General equipment manufacturing	0.0598**	0.0295***	0.7114***	149,580	312,527	
36	Special equipment manufacturing	0.0921***	0.0203***	0.7240***	84,025	170,641	
37	Transportation equipment manufacturing	0.0533***	0.0404***	0.6932***	90,023	180,665	
39	Electrical machinery and equipment manufacturing	0.0611***	0.0366***	0.6722***	117,676	240,521	
40	Communication equipment, computers and other electronic equipment manufacturing	0.2045***	0.0606***	0.6232***	66,119	134,859	
41	Instrumentation and culture and office machinery manufacturing	0.0717***	0.0460***	0.6363***	27,348	53,366	
42	Crafts and other manufacturing	0.0292***	0.0663***	0.7199***	44,922	79,290	
43	Waste resources and waste materials recycling industry	0.0507*	0.0632***	0.8212***	2,037	7,718	

**Notes:** The  $p$ -value is determined by the Bootstrap Method, and the number of repetitions is not less than 100. \*, \*\*, \*\*\*Significant at the 10, 5 and 1 percent levels, respectively

**Source:** Calculated by the author

Table II.  
Industry-specific quantitative regression results by LP method

remarkable results and the monopoly power of state-owned equity enterprises has maintained steady growth. Thus the trend of the private sector withdrawing as the state sector advances has been explained to a certain extent[23]. The monopoly power of export enterprises is lower than that of domestic enterprises, and the gap between the two has expanded with time. This shows that the trade environment of Chinese export enterprises has deteriorated, especially



**Figure 1.**  
Annual monopoly power of the different types of enterprises

**Note:** As the National Bureau of Statistics only counted a portion of the industrial enterprises in 1996 and 1997, there are no figures for 1996 and 1997

**Source:** Drawn by the Author

after the 2008 financial crisis. Moreover, this paper uses the  $\ln\text{markup}$  in the final quantitative regression, because the density function of the monopolistic power value logarithm ( $\ln\text{markup}$ ) is more symmetrical than that of the monopolistic power ( $\text{markup}$ )[24].

Notably, the values of the monopoly power of enterprises are 1, greater than 1, and less than 1 under the perfect competition, imperfect competition, and excessive competition markets, respectively. The reasons for the monopoly power being less than 1 include the following: first, in the short-term, not all factors can be adjusted freely, but only the short-term optimal production arrangements can be made; second, the industry has overcapacity, and enterprises destock large amounts of inventory at low prices, especially for industries with huge fixed assets investments and long production cycles; third, the increase of factor prices, such as wages, intermediate input prices, energy prices, interest rates, etc.; fourth, or an abundance of government subsidies leading to price declines.

### 2.3 Other explanatory variables

In this paper, an enterprise with a monopoly power greater than 1 is defined as a monopoly enterprise, and that with a value less than or equal to 1 is defined as a non-monopoly enterprise. To study the differences in monopolistic behaviors of different types of monopolies, we also introduce two types of cross-term[25] as key variables: the cross-term of monopoly power vs state-owned equity ( $\text{state}\#\text{c}.\ln\text{markup}$ [26]) and the cross-term of monopoly power vs export ( $\text{export}\#\text{c}.\ln\text{markup}$ ). For the cross-term of monopoly power vs state-owned equity ( $\text{state}\#\text{c}.\ln\text{markup}$ ), it mainly includes the cross-term of the state-owned equity and monopoly power ( $1.\text{state}\#\text{c}.\ln\text{markup}$ ), such that if the enterprise contains state capital, its value is equal to the logarithm of monopoly power[27] and 0 otherwise[28], and the cross-term of the non-state-owned equity vs monopoly power ( $0.\text{state}\#\text{c}.\ln\text{markup}$ ), such that if the enterprise does not contain state capital, the value is equal to the monopoly power logarithm and 0 otherwise. For the cross-term of the monopoly power vs export ( $\text{export}\#\text{c}.\ln\text{markup}$ ), it mainly includes the cross-term of export vs monopoly power ( $1.\text{export}\#\text{c}.\ln\text{markup}$ ), wherein if the enterprise contains the export delivery value, its value is equal to the monopoly power logarithm, otherwise, 0, and the cross-term of domestic sales vs monopoly power ( $0.\text{export}\#\text{c}.\ln\text{markup}$ ), wherein if the enterprise does not contain the domestic sales value, the value is equal to the monopolistic power logarithm, otherwise it is 0.

The key variables already contain the logarithm of the monopoly power ( $\ln\text{markup}$ ). Multiple collinearities may arise if the key variables are simultaneously added with

the cross-terms of the state-owned equity vs monopoly power ( $1.state \# c.lnmarkup$ ), the non-state-owned equity vs monopoly power ( $0.state \# c.lnmarkup$ ), the export vs monopoly power ( $1.export \# c.lnmarkup$ ) and the domestic sales vs monopoly power ( $0.export \# c.lnmarkup$ ). Therefore, in the actual quantitative regression, this paper excludes the benchmark non-state-owned equity vs monopoly power cross-term ( $0.state \# c.lnmarkup$ ) and the domestic sales vs monopoly power cross-term ( $0.export \# c.lnmarkup$ ). Then, when the coefficient of the state-owned equity vs the monopoly power cross-term ( $1.state \# c.lnmarkup$ ) is significantly positive, it indicates that the state-owned equity monopoly enterprise is more inclined to innovate than the non-state-owned ones[29], and vice versa. When the coefficient of the export vs the monopoly power cross-term ( $1.export \# c.lnmarkup$ ) is significantly positive, it indicates that the export monopoly enterprise is more inclined to innovate than the domestic ones[30], and vice versa.

In addition, the control variables studied in this paper mainly include the following: state-owned equity (*state*), the proportion of state-owned shares (*state\_per*), export (*export*), export density (*export\_den*), survival age (*age*), asset liquidity (*capital\_liq*), product diversity (*diversity*) and new product (*new*). First, for the state-owned equity (*state*) variable, if the enterprise's shareholding structure contains state capital, the value is 1, and 0 otherwise. Second, for the proportion of state-owned shares (*state\_per*), the calculation formula is as follows: the proportion of state-owned shares = state capital/paid-in capital = state capital/(state capital + foreign capital + collective capital + corporate capital + personal capital + Hong Kong, Macao and Taiwan Capital). The primary cause for differentiating the state capital in terms of the state-owned shares and the proportion of state-owned shares is that the impacts on corporate behavior of the proportion of state-owned shares of 0 and of the positive infinitesimal, albeit almost equal in value are tremendously different. The former is rarely intervened by the local (or central) government, whereas the latter mostly enjoys the special care of the local (or central) government, and assumes certain social responsibilities, and even has a veto power of state-owned shares. As the latter is likely to be transformed from state-owned enterprise shareholding reform, corporate behavior is closer to state-owned enterprises. Third, for export (*export*), if the enterprise contains the export delivery value, the value is 1; if the enterprise does not contain the export delivery value, the value is 0. Fourth in relation to export density (*export\_den*), Fan and Feng (2013) used different groups of export density (= export delivery value/enterprise total output) to represent export trade variables. The current work directly uses export density continuous value to express export trade, and the calculation formula is as follows: export density = export delivery value/industrial sales value. The primary reason why we distinguish export trade as export and export density is because the export density of 0 and of positive infinitesimal, albeit almost equal in value has different impacts on corporate behavior. The former is rarely affected by China's and foreign trade policies, whereas the latter is mostly affected by the China's and foreign customs, China's export subsidies, export tariffs, foreign import tariffs, barriers to entry, exchange rates and so on. Given that the latter is likely to be rapidly reduced to an infinitesimal value due to factors like foreign importer defaults and the global financial crisis, corporate behavior is very different from that of firms with pure domestic sales. Fifth, to obtain survival age (*age*), the calculation formula is as follows: survival age = observation year - opening year[31]+1[32]. Given that the difference between the 1- and 2-year-old enterprises is usually greater than that between the 20- and 21-year-old enterprises, this paper selects the survival time logarithm (*lnage*) to be part of the regression[33] and adds the quadratic term (2) to explore the complex relationship between corporate survival time and TFP. Sixth, to obtain asset liquidity (*capital\_liq*), the calculation formula is as follows: asset liquidity = liquid assets/(liquid assets + fixed assets). In general, the greater the proportion of fixed assets, the higher the sunk cost, resulting in firms being more reluctant to change existing technologies. This paper expects the estimated coefficient of asset liquidity to be positive. Seventh, for product diversity (*diversity*), the variable is a dummy variable. When the number of

the firm's product categories is greater than or equal to 2, the value is 1; when the number of the firm's products is equal to 1, the value is 0. Eighth, finally, for the new product (*new*) variable, when the firm's new product output value is greater than 0, the value is 1; when the firm's new product output value is null or 0, the value is 0.

This paper also controls the following fixed effects: first, industry fixed effects (*i.industry*). Different industries have diverse production technologies, and thus have different TFPs, specifically, in 30 (manufacturing) industry major categories[34]. Second, regional fixed effects (*i.region*)[35]. Different regions have diverse market segments, which then lead to varied TFPs. Third, year fixed effects (*i.year*). There are diverse market shocks in different years, thereby leading to fluctuations in TFP.

#### 2.4 Model setting

The measurement model of this paper is set as follows:

$$\begin{aligned} \ln tfp_{it} = & \gamma_1 \cdot \ln markup_{it} + \gamma_2 \cdot 1.state\#c. \ln markup_{it} + \gamma_3 \cdot 1.export\#c. \ln markup_{it} \\ & + \gamma_4 \cdot \text{control}_{it} + \gamma_5 \cdot \text{factor}_{it} + \gamma_0 + \varepsilon_{it}, \end{aligned} \quad (5)$$

where  $\ln markup$ ,  $1.state\#c.\ln markup$  and  $1.export\#c.\ln markup$  are key explanatory variables; **control** is a control variable group composed of *state*, *state\_per*, *export*, *export\_den*, *lnage*, *ln2age*, *capital\_liq*, *diversity*, *new*, etc.; **factor** is a group of factor variables composed of factor variables like *i.industry*, *i.region*, *i.year*, etc.; subscript *i* represents individual enterprise; and subscript *t* represents the year. Meanwhile, Table III also gives the statistics of the variables required by Equation (5).

### 3. Analysis of the measurement results

In the quantitative regression, the interpreted variable is the TFP logarithm ( $\ln tfp$ ), and the explaining variable contains the monopolistic power logarithm ( $\ln markup$ ) and the cross-terms ( $1.state\#c.\ln markup$ ,  $1.export\#c.\ln markup$ ). Given that TFP may adversely affect the monopoly power and produce endogenous problems, this paper uses the instrumental variable (IV) method to solve it. The IVs used here are the monopolistic power log lag 1 ( $L1.\ln markup$ ), the state-owned equity vs monopoly power cross-term lag 1 ( $L1.1\#c.\ln markup$ ), and the export vs monopoly power cross-term lag 1 ( $L1.1.export\#c.\ln markup$ ).

Variable	Name	Unit	Sample size	Mean	SD	Min.	Max.
<i>tfp</i>	TFP		2,189,163	88.6207	220.5151	0.0481	70,486.5000
<i>markup</i>	Monopoly power		3,189,619	1.2366	2.1497	0.0100	99.2070
<i>state</i>	State-owned equity		3,561,251	0.0950	0.2933	0.0000	1.0000
<i>state_per</i>	Proportion of state-owned equity	%	3,024,508	9.0220	27.4968	0.0000	100.0000
<i>export</i>	Export		3,803,182	0.2494	0.4327	0.0000	1.0000
<i>export_den</i>	Export density <sup>a</sup>	%	3,803,132	14.3519	31.5825	0.0000	100.0000
<i>age</i>	Survival time	Year	3,836,566	10.7271	10.4786	1.0000	414.0000
<i>capital_liq</i>	Liquidity of assets	%	3,773,088	57.1728	26.7143	0.0000	99.9999
<i>diversity</i>	Product diversity		3,827,896	0.3751	0.4841	0.0000	1.0000
<i>new</i>	New product		2,687,232	0.0734	0.2608	0.0000	1.0000

**Notes:** <sup>a</sup>The export density can be greater than 100 percent. Among them, there are 713,427 samples that are less than 100 percent, 224,889 samples equal to 100 percent, and 10,126 samples larger than 100 percent. To reduce the impact of extreme values, this paper has merged all export densities greater than 100 percent to the 100 percent group.

**Source:** Calculated by the author

**Table III.**  
Descriptive statistics  
of variables

Table IV shows the main quantitative regression results. Among them, Model (1) contains all the key explanatory and control variables, and is set as the reference group; Model (2) removes all the control variables except the fixed utility based on Model (1), and visually presents the regression of the three key explanatory variables; Model (3) eliminates the cross-terms of the state-owned equity monopoly power and the proportion of state-owned equity based on Model (1), mainly used to explore the TFP difference between the state-owned and non-state-owned equity firms; Model (4) removes the cross-terms of the export vs monopoly power, and export density on the basis of Model (1), and is mainly used to explore the TFP difference between export enterprises and domestic enterprises; and finally, Model (5) excludes the cross-term of the export vs monopoly power ( $L.export \# c.lnmarkup$ ) and the cross-term of state-owned equity vs monopoly power ( $L.state \# c.lnmarkup$ ) based on Model (1), and can directly give the basic judgment monopoly type (innovative or monopolistic) of Chinese manufacturing enterprises. Furthermore, this paper also calculates the correlation and exogeneity of the three tool variables of the reference group. The correlation coefficient between the monopolistic power lag 1 ( $L1.lnmarkup$ ) and the monopoly power  $lnmarkup$  is 0.81. Moreover, the correlation coefficient of the cross-term lag1 ( $L1.1. \# c.lnmarkup$ ) of the state-owned equity vs monopoly power and that of the state-owned equity vs monopoly power cross-term ( $L.state \# c.lnmarkup$ ) is 0.80. The correlation coefficient of the cross-term lag 1 ( $L1.1.export \# c.lnmarkup$ ) of the export vs monopoly power and that of the export vs monopoly power cross-term ( $L.export \# c.lnmarkup$ ) is 0.73. As for exogeneity, the correlation coefficients between the residuals of Model (1) and monopoly power lag 1 ( $L1. lnmarkup$ ), the state-owned equity vs monopoly power lag1 cross-term ( $L1.1.state \# c.lnmarkup$ ) and the export vs monopoly power lag 1 cross-term ( $L1.1.export \# c.lnmarkup$ ) are 0.02, -0.00, and 0.01, respectively. Hence, these results indicate that the three tool variables are all valid.

For the first question raised at the beginning of this paper, the observation Model (5) shows that, in general, the Chinese manufacturing enterprises are innovation-oriented monopolies. In other words, manufacturing companies with higher monopoly power tend to be more innovation-oriented rather than rent-seeking. This conclusion is based on the significant positive value of the monopolistic power  $lnmarkup$  coefficient in Model (5) ( $t$  value[36] = 345.9863).

For the second question raised at the beginning of this paper, the observation Model (1) shows that, China's state-owned equity monopolies are more inclined to innovate than the non-state-owned equity monopolies. This conclusion is based on the significant positive value of the coefficient of the state-owned equity vs monopoly power cross-term ( $L.state \# c.lnmarkup$ ) ( $t$  value = 17.51) in Model (1). There are several reasons for this phenomenon. First, it takes a long time from R&D investment to innovate. Non-state-owned equity monopolies are less far-sighted and less strategic than state-owned equity monopolies, and so they are not "disposed to" innovate. Second, R&D innovation is risky and does not guarantee 100 percent success. Non-state-owned equity monopolies have weaker risk-bearing ability than state-owned equity monopolies, and are thus not "bold enough" to innovate. China's export monopolies are more inclined to seek rent than domestic monopolies. This conclusion is based on the significant negative ( $t$  value = -22.17) value of the coefficient of the export vs monopoly power cross-term ( $L.export \# c.lnmarkup$ ) in Model (1). There are several reasons for this phenomenon, and to explain the first reason, a special historical background must be provided. At the end of the twentieth century, China implemented various preferential policies, including subsidies for export monopolies for the purpose of earning foreign exchange. Second, the export trade has to face more complicated examination and approval procedures than domestic trade does, rendering the export monopolies with more rent-seeking space. Third, the export decision-making power is on the exporter's side (for export customs) and the importer's side (for import customs), whereas the decision-making power over domestic sales is generally on the seller and the buyer. That is to say, exports are more vulnerable to administrative intervention (e.g. export customs, the State Administration of Foreign Exchange, etc.); thus, there is more room for rent-seeking, especially in export monopolies.

**Table IV.**  
Quantitative  
regression results  
of the manufacturing  
enterprise monopoly  
types

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
<i>Inmarkup</i>	0.6742*** (267.7877)	0.7040*** (269.8141)	0.6999*** (299.2647)	0.6476*** (314.1425)	0.6664*** (345.9863)
<i>l.state#c.lmarkup</i>	0.1146*** (17.5063)	0.1755*** (36.7390)	-0.1293*** (-25.7354)	0.1318*** (20.3157)	
<i>l.export##c.lmarkup</i>	-0.1115*** (-22.1691)	-0.1381*** (-29.5410)	-0.1109*** (-33.1687)	0.1763*** (24.5675)	0.1249*** (18.8313)
<i>state</i>	0.1748*** (24.0350)			-0.0026*** (-28.5394)	-0.0033*** (-39.8028)
<i>state_per</i>	-0.0027*** ((-29.5177)		0.1025*** (30.2883)	0.1185*** (58.8870)	0.1409*** (48.5698)
<i>export</i>	0.1047*** (31.0661)		-0.0006*** (-13.8821)		-0.0004*** (-9.6858)
<i>export_den</i>	-0.0006*** (-14.2250)		0.0259*** (5.1928)	0.0104*** (2.0844)	0.0193*** (3.8816)
<i>Inage</i>	0.0127*** (2.5349)		-0.0156*** (-13.4434)	-0.0104*** (-9.0051)	-0.0130*** (-11.2771)
<i>In^2age</i>	-0.0108*** (-9.3200)		0.0095*** (227.6293)	0.0094*** (225.3983)	0.0095*** (226.0898)
<i>capital_liq</i>	0.0095*** (226.5518)		0.0173*** (9.2101)	0.0167*** (8.9018)	0.0165*** (8.8317)
<i>diversity</i>	0.0168*** (8.9507)		0.0964*** (36.2350)	0.0917*** (35.1058)	0.0885*** (33.7216)
<i>new</i>	0.0944*** (35.5217)				
Intra-group $R^2$	0.2703	0.2320	0.2719	0.2725	
Observations	1,192,516	1,330,271	1,198,606	1,207,075	1,207,073
SD	Robust	Robust	Panel IV	Robust	Robust
Estimation method	Panel IV	Median method	Panel IV	Panel IV	Panel IV
Extreme value judgment	Median method	Median method	Median method	Median method	Median method
Extreme value processing	Replaced with null	Replaced with null	Replaced with null	Replaced with null	Replaced with null
Time series	1996–2013	1996–2013	1996–2013	1996–2013	1996–2013

**Notes:** The values of  $t$  are in parentheses. The interpreted variable is the TFP logarithm ( $\ln(tp)$ ), and the industry fixed effect, regional fixed effect and time fixed effect are all controlled in the models. \*, \*\*, \*\*\*: Significance at 10, 5 and 1 percent levels, respectively

**Source:** Calculated by the author

In addition, according to Model (1), there are some other findings in this paper. First, the survival time of enterprises is “basically” negatively related to TFP. Here, the  $\ln^{age}$  coefficient is significantly negative, and the  $\ln^{age}$  coefficient is significantly positive. Although the curve “appears to be” an inverted U-shaped curve, the actual calculation indicates that when the inflection point appears, the establishment of most firms is less than one year, indicating that most firms’ TFP is reduced over time[37]. Second, asset liquidity and new products are all positively correlated with TFP. Third, the coefficient of state-owned equity (*state*) is significantly positive, whereas that of state-owned equity proportion (*state\_per*) is significantly negative. This shows that TFP has a jump increase with the change of the proportion of state-owned shares from 0 to positive infinitesimal, but with the further increase of the proportion of state-owned shares, the growth rate of TFP turns negative. That is to say, there is a critical point[38] of the proportion of state-owned shares, upon which the TFP of the state-owned equity enterprise becomes equal to that of the non-state-owned equity. When the equity ratio is lower than this point, the TFP of the state-owned equity enterprise becomes greater than that of the non-state-owned equity enterprise. This fits well with the reality in China. In the tide of state-owned enterprise reform, China’s State-owned Assets Supervision and Administration Commission (SASAC) under the State Council has continuously reduced the state capital of the original state-owned enterprises. At the same time, various types of non-state-owned shares have been injected into the original state-owned enterprises, thus resulting in the continuous improvement of the TFP. Furthermore, the SASAC also selected a group of collectively owned enterprises, individual enterprises, and legal entities with high TFPs, to which it can inject a small amount of state capital. Directly judging whether the average TFP of the state-owned equity enterprise is less than (or greater than) the non-state-owned equity enterprise by Model (1) is notably difficult. In comparison, Model (3) can directly judge whether the TFP of the state-owned equity enterprise is smaller than that of the non-state-owned equity. The coefficients of the export (*export*) and export density (*export\_den*) are significantly positive and significantly negative, respectively. This shows that, as the export density changes from 0 to positive infinitesimal, TFP also has a jump increase, but with the further increase of export density, the TFP growth rate becomes negative. Model (4) shows that the TFP of the export firms is still generally larger than that of domestic sales firms[39]. Unlike the findings presented by Li (2010), Fan and Feng (2013), and Yang and He (2014), among others, the conclusions of the current paper fully support new trade theory (Melitz, 2003; Ghironi and Melitz, 2005; Johnson, 2012; Kasahara and Lapham, 2013; Melitz and Redding, 2015; Bernard *et al.*, 2015), which argues that no significant “productivity paradox” exists in Chinese manufacturing enterprises. Even if some companies have “productivity paradoxes,” they are mostly processing trade enterprises (Dai and Yu, 2014). Regarding the significantly negative export density, we believe that this can be attributed to the TFP of the export enterprises being higher than that of the domestic sales enterprises, but the export enterprises are internally different. Compared with enterprises with lower density, those with higher export density also have higher dependence on the international market and rely more heavily on a large number of export subsidies to maintain production (and the acquisition of subsidies is, to a certain extent, related to rent-seeking). This finding is in line with the reality in China, especially for processing companies and low-end manufacturing companies with overcapacity.

#### 4. Robustness testing and further analysis

##### 4.1 Robustness test

The key explanatory variables of this paper are the monopolistic power logarithm ( $\ln^{markup}$ ), the state-owned equity vs monopoly power cross-term ( $l.state\#c.\ln^{markup}$ ), and the export vs monopoly power cross-term ( $l.export\#c.\ln^{markup}$ ). Therefore, the robustness test is also carried out around these three key variables, including sample selection, increase and decrease of control variables and key variables, replacement estimation methods, outlier replacement processing methods[40], and so on.

**4.1.1 Sample selection.** In Table V, Models (6) and (7) include samples from 1999–2007 to 2003–2007 on the basis of Model (1). Results shows that, even if only the 1999–2007 or 2003–2007 samples (currently used in most of the literature) are used, the coefficient symbols and significance of the three key variables and those of the control variables are not significantly changed[41].

**4.1.2 Increase or decrease of control variables.** Through the increase and decrease of the control variables, this paper finds that the sequential cumulative increase and decrease of the control variables do not significantly change the coefficient symbol and significance of the three key variables[42]; at the same time, the increase or decrease of the control variables does not significantly change the coefficient symbols and significance of the three key variables and even those of the control variables[43].

**4.1.3 Increase or decrease of key variables.** In Table V, Model (8) excludes the cross-term of the export vs monopoly powers ( $1.export \# c.lnmarkup$ ), and Model (9) excludes the cross-term of the state-owned equity vs monopoly powers ( $1.state \# c.lnmarkup$ ). Comparing Models (1), (5), (8), and (9), it can be found that the increase or decrease of key variables do not significantly change the coefficient symbol and significance of other key variables and even those of the control variables.

**4.1.4 Replacement of estimation method.** In Table V, the estimation method of Model (10) degenerates into a normal panel that does not use IVs. Similarly, the estimation method of Model (11) degenerates into a pooled regression that does not use IVs. Comparing Models (1), (10) and (11) reveals that the substitution of the estimation method does not significantly change the coefficient symbol and significance of the three key variables, and does not even significantly change those of the control variables.

**4.1.5 Outliers replacement processing method.** In Table V, the extreme value processing method of Model (12) adopts the merging method, that is, the extreme value exceeding the highest critical value is merged into the highest critical value class, and the extreme value lower than the lowest critical value is merged into the lowest critical value class. In the extreme value judgment of Model (1), two sets of median judgment methods are adopted for  $tfp$ , and three sets of median judgment methods are adopted for  $markup$ . The advantage of replacing the null value is demonstrated by the fact that many sets of median judgment methods can be used simultaneously. However, the extreme value merging method does not apply to multiple sets of median judgment methods, so in this Model (12), only the most effective set of median judgment methods are subjected to extreme value merging. Among them, the most effective median judgment method is as follows: to calculate the median  $tfp$  (or  $markup$ ) of each enterprise in the time series, if a company's TFP (or  $markup$ ) is greater than 10 times or less than 0.1 times the median in a certain year, it is judged to be an extreme value. Comparing Models (1) and (12), we can see that the outliers-substitution processing method does not significantly change the coefficient symbol and significance of the three key variables and even those of the control variables.

## 4.2 Further analysis

Table VI excludes the cross-terms of the state-owned equity vs monopoly power ( $1.state \# c.lnmarkup$ ), the export vs monopoly power cross-term ( $1.export \# c.lnmarkup$ ), the state-owned equity ( $state$ ), the state-owned equity proportion ( $state\_per$ ), the export ( $export$ ) the export density ( $export\_den$ ) and other variables[44], along with some added multiple-dimensional cross-terms. Among them, the “(*big, state, export, monopoly*)” in the first column corresponds to four dummy variables: *big*, state-owned, *export*, and *monopoly*. For *big* (*big*) dummy variables, the value is 1 when the company's main business income is greater than or equal to 50 percent quantile; otherwise, the value is 0. For a *monopoly* (*monopoly*) dummy variable, when the firm's monopoly power ( $markup$ ) is greater than 1, the value is 1; otherwise, the value is 0. Comparing Table IV (1)

	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)	Model (11)	Model (12)
<i>lnmarkup</i>	0.6694*** (263.0898)	0.6922*** (206.9731)	0.6465*** (312.6037)	0.6942*** (297.0569)	0.5212*** (473.1527)	0.5653*** (651.1704)	0.6780*** (258.7761)
<i>l.state#c.</i>	0.1001*** (14.2440)	0.0978*** (7.2417)	0.1329*** (20.4984)		0.0540*** (20.5601)	0.0715*** (32.9985)	0.1411*** (21.0418)
<i>lnmarkup</i>	-0.1071*** (-20.8867)	-0.1310*** (-17.9866)		-0.1242*** (-24.8440)	-0.0450*** (-24.7717)	-0.0565*** (-37.7481)	-0.1084*** (-20.8403)
<i>state</i>	0.1770*** (22.4713)	0.1772*** (13.5337)	0.1764*** (24.5534)	0.1306*** (19.3124)	0.1317*** (21.9982)	0.2737*** (50.1379)	0.1921*** (25.3871)
<i>state_per</i>	-0.0028*** (-27.8633)	-0.0016*** (-8.9359)	-0.0026*** (-28.5486)	-0.0033*** (-39.1170)	-0.0032*** (-43.0745)	-0.0052*** (-79.7974)	-0.0029*** (-29.6614)
<i>export</i>	0.1111*** (32.3296)	0.1120*** (26.7501)	0.1401*** (48.3069)	0.1093*** (29.9039)	0.1126*** (41.4910)	0.2273*** (94.9434)	0.1150*** (32.9391)
<i>export_den</i>	-0.0006*** (-15.0605)	-0.0007*** (-13.9079)	-0.0004*** (-10.7118)	-0.0005*** (-13.6677)	-0.0007*** (-20.5393)	-0.0016*** (-52.4426)	-0.0006*** (-15.1396)
<i>image</i>	0.0294*** (3.9422)	0.0409*** (6.0131)	0.0117*** (2.3461)	0.0195*** (3.9122)	0.1926*** (64.4947)	0.1567*** (61.9225)	0.0145*** (2.7845)
<i>in2age</i>	-0.0121*** (-9.9985)	-0.0075*** (-4.6275)	-0.0108*** (-9.3265)	-0.0128*** (-11.0497)	-0.0528*** (-67.9555)	-0.0387*** (-65.2030)	-0.0114*** (-9.4489)
<i>capital_lag</i>	0.0094*** (220.6315)	0.0091*** (178.9080)	0.0094*** (225.5692)	0.0095*** (227.0621)	0.0102*** (276.0337)	0.0102*** (355.0768)	0.0097*** (223.2863)
<i>diversity</i>	0.0168*** (8.6724)	0.0140*** (5.4779)	0.0164*** (8.7515)	0.0170*** (9.0512)	0.0116*** (6.8799)	0.0188*** (13.8115)	0.0173*** (8.8761)
<i>new</i>	0.0956*** (34.8629)	0.0947*** (29.1310)	0.0887*** (33.7912)	0.0945*** (35.5767)	0.0764*** (32.4579)	0.1717*** (77.8436)	0.0959*** (35.9156)
Intra-group $R^2$			0.2046	0.2719	0.2705	0.3009	0.5801 ( $R^2$ )
Observations	1,089,191	646,151	1,207,073	1,192,516	1,609,229	1,609,229	1,216,912
SD	Robust	Robust	Panel IV	Robust	Robust	Panel IV	Robust
Estimation	Panel IV			Panel IV	Panel IV	PA	Panel IV
method	Extreme value	Median method					
judgment	Extreme value	Replaced with null	Merging				
processing	Time Series	1999–2007	2003–2007	1996–2013	1996–2013	1996–2013	1996–2013

**Notes:** The values of  $\alpha$  are in parentheses. The interpreted variable is the TFP logarithm ( $\ln tfp$ ), and the industry fixed effect, regional fixed effect and time fixed effect are all controlled in the models. \*\*\*, \*\*, \*Significant at the 10, 5 and 10 percent levels, respectively.

**Source:** Calculated by the author

Table V.  
Robustness test

**Table VI.**  
Quantitative regression of cross-terms in multiple dimensions

Variable measure	Coefficient	t value	
<i>(big, state, export, monopoly)</i>			
(0, 0, 0, 1)	-0.4509***	(-101.8958)	Industry fixed effect
(0, 0, 1, 1)	-0.4363***	(-75.8145)	Regional fixed effect
(0, 1, 0, 1)	-0.6386***	(-59.0380)	Time fixed effect
(0, 1, 1, 1)	-0.5746***	(-21.3324)	Intra-group $R^2$
(1, 0, 0, 1)	-0.1288***	(-26.0837)	Observations
(1, 0, 1, 1)	-0.1274***	(-25.3828)	SD
(1, 1, 0, 1)	-0.1711***	(-17.8450)	Estimation method
(1, 1, 1, 1)	-0.1227***	(-9.0082)	Extreme value judgment
lnmarkup	0.7509***	(236.1442)	Extreme value processing
lnage	0.0300***	(6.0558)	Time series
ln <sup>2</sup> age	-0.0190***	(-16.5231)	
capital_liq	0.0096***	(231.3420)	
diversity	0.0128***	(6.8791)	
new	0.1132***	(43.5714)	

**Notes:** The value of  $t$  is in parentheses. The interpreted variable is the TFP logarithm ( $\ln tfp$ ). \*\*, \*\*\*Significant at the 10, 5 and 1 percent levels, respectively

**Source:** Calculated by the author

and Table VI, there is no significant change in the coefficient symbol and significance of key variables and control variables. Moreover, observing the variables of “(*big, state, export, monopoly*)”, we can see that, first, small monopolies, as compared with large monopolies, are more inclined to seek rent. This accords well with the reality of China. The traditional[45] small monopolies’ product sales market is mostly segmented into local areas and surrounding areas, thus increasing their motivation to seek rent from local governments. Second, among large monopolies, state-owned equity export enterprises are most inclined to innovate; among small monopolies, state-owned equity domestic sales enterprises are most inclined to seek rent.

It should be noted that the monopoly in the multidimensional cross-terms “(*big, state, export, monopoly*)” in Table VI adopts the binary form, and the monopolistic power cross-term 1.state#c.lnmarkup, 0.state#c.lnmarkup (baseline) and 1.export#c.lnmarkup, 0. export#c.lnmarkup (baseline) in Model (1) adopt the continuous value form, thus retaining more information. Therefore, in the case of inconsistency between Table VI estimates and Model (1) estimates, the regression of Model (1) shall prevail.

## 5. Conclusions and implications

This paper studies the monopolistic behavior of Chinese manufacturing enterprises by measuring corporate TFP and corporate monopoly power. The study found that, on the whole, China’s manufacturing monopolies are innovation-oriented monopolies and that rent-seeking behavior is not serious. However, there are certain differences between diversified types of monopolies. Differentiated by the shareholding structure, the state-owned equity monopolies are more inclined to innovate than their non-state-owned counterparts. Differentiated by product market, export monopolies are more inclined to seek rent than their domestic sales counterparts. Finally, differentiated by corporate scale, small monopolies are more inclined to seek rent than their large-scale counterparts. In addition, among large monopolies, state-owned equity export enterprises are most inclined to innovate, whereas among small monopolies, state-owned equity domestic sales enterprises are most inclined to rent-seeking. Thus, the following revelations are drawn.

China’s current economic transition has been relatively successful. Although the short-term, uncertainty, and non-equilibrium nature of transitional institutional arrangements can easily trigger monopolies to seek rent, the improvement of laws, regulations and systems has also created a better environment for enterprise innovation. As per the empirical results of this

paper, the benefits of China's incremental system transformation outweigh its disadvantages, and the overall performance of monopoly in manufacturing enterprises is an innovation-oriented monopoly. Compared with Russia's "shock therapy" in the 1990s, the "whale-swallowing" rent-seeking in Russia did not arise in China.

Nevertheless, the Chinese government should curb the rent-seeking behavior of monopolies in a targeted manner. Pursuant to the empirical results of this paper, non-state-owned monopolies, export monopolies and small monopolies are more inclined to seek rent than the state-owned equity monopolies, domestic sales monopolies and large monopolies, respectively[46]. For the non-state-owned monopolies, the business operators directly control the private property without business scope restriction faced by the state-owned monopolies. Therefore, they mostly resort to rent-seeking behaviors, such as bribery and rule-bending activities, thus taking advantage of policy loopholes. For export monopolies, due to the abundance of export subsidies, the customs approval procedures are more complicated. Therefore, they mostly resort to deceptive and procedural "lubrication" rent-seeking behaviors. For small monopolies, products are mostly sold locally while crowding outsiders. Therefore, they mostly resort to regional and enact barrier-based, rent-seeking behaviors. Therefore, the government should formulate differentiated policies for different types of monopolies, fully reflecting the containment of rent-seeking, and of course, the encouragement and protection of innovation.

The Chinese government should also encourage state-owned equity monopolies to cooperate with each other and promote the "Going Global" strategy for in-depth development. According to the empirical results of this paper, among all the monopolies, the large-scale, state-owned equity export enterprises have the highest innovation ability, and the small-scale state-owned equity domestic sales enterprises have the least drive for innovation. This implies that small state-owned equity domestic monopolies can expand their scale through cooperation and enhance their innovation ability via exports. For example, at the end of 2014, the merger of the former CNR and CSR Groups into the China CRRC has promoted cooperation and innovation and laid an important foundation for China's high-speed rail to "go global." The Belt and Road Initiative has provided even more opportunities for small state-owned equity domestic sales companies to "go global," which means that in the future, China's innovation-oriented monopolies will be on the rise.

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### Notes

1. Szidarovszky and Okuguchi (1997) also directly give proof of the existence and uniqueness of the rent-seeking equilibrium.
2. The innovative form of non-monopoly enterprises is mainly creative destruction. However, in reality, innovation comes mostly from the original monopolistic enterprises, and only relatively

few cases come from non-monopoly enterprises. For example, innovations in the software industry are mostly from companies, such as Microsoft and Oracle. The innovations in the hardware industry are mostly from IBM, Intel, Kingston, Logitech, Apple, Samsung, etc. The innovations in the transportation industry are mostly from Boeing, Airbus, China CRRC, Volkswagen, Toyota, GM and other companies.

3. Given that the innovation results are easily imitated, this has dampened the corporate innovation enthusiasm, leading to the prisoner's dilemma. To encourage innovation, the State promulgated the "Patent Law" to protect the innovation results of enterprises for a certain period of time. Once the protection period is expired, all companies can share the innovation fruits. That is to say, enterprises in the protection period will be in a monopolistic position and can obtain monopoly profits, whereas off-patent enterprises will face competition from other enterprises and profits will be diluted. For the continuous acquisition of monopoly profit streams, firms need to innovate constantly.
4. That is,  $\text{Markup} = P/MC$ , where  $P$  is the selling price and  $MC$  is the marginal cost. Another part of the literature (Li *et al.*, 2009; Coccorese, 2014) uses the price-to-margin ratio (Lerner Index,  $LI$ ) to represent the monopoly power of the firm, i.e.  $LI = (P-MC)/P$ . The connotations of these two methods are the same, and they all directly represent the monopoly power of the enterprise.
5. Using the cross-identification method, this paper identifies three types of special enterprises: those with the same name but sharing dissimilar organization codes, covering 212,259 enterprises, accounting for 4.94 percent of the effective sample; those with the same organization code but sharing different names, covering 1,468,985 such samples and accounting for 34.18 percent of the valid samples; and those sharing different names and different organizational codes (these samples amount to 117,711, accounting for 2.74 percent of the valid samples). Given the above, the cross-identification method is 7.68 ( $= 4.94+2.74$ ) percentage points more accurate than the sequential identification method.
6. The sequential identification method first uses the organization code to identify the enterprise, after which it uses the enterprise name to identify it, and finally refers to other auxiliary information.
7. The regional price index of this paper is provincial data derived from the China Statistical Yearbook over the years.
8. "Geometric" refers to the geometric mean, which is more realistic than linear interpolation. This is because fixed assets in the economy tend to grow exponentially, which is the same for rents related to fixed assets. Moreover, loan rates on fixed assets are also compounded.
9. There are two points to be explained. First, the 700,000 data contributions are limited to the marginal contributions of the "manufacturing" industry category. If the "non-manufacturing" industry category is taken into account, the marginal contribution will be greater; second, the 700,000 data are real interpolation only, if virtual interpolation is counted, the marginal contribution will be even greater.
10. In the Chinese Industrial Enterprises Database, because the industrial value-added field is missing data for 2008, 2009 and 2011–2013, the current-year depreciation field is missing the 2008–2010 data, so the actual final period for observation is 2007. Moreover, anonymous review experts pointed out that there are many outliers (extreme values) in the fixed asset field in 2010, which are deleted according to the recommendation. It is worth mentioning that the current-year depreciation field just misses the 2010 data, so we basically did not use the 2010 data while using the OP method (Olley and Pakes, 1996). Of course, it is technically possible to repair the extreme values of fixed assets in 2010 through the median method.
11. The sum of labor output elasticity and capital output elasticity estimated in this paper is higher than those of Lu and Lian (2012), and lower than those of Yang (2015). The attachments of results can be downloaded from the China Industrial Economics Website ([www.ciejournal.org](http://www.ciejournal.org)), as detailed in Appendix 1.
12. The median method is better than the front-to-back ratio method (e.g. 0.50 percent before and after). This is because the front-to-back ratio method is still enforced when there is no extreme

value at all, and the data of super-large enterprises may be determined as outliers. Moreover, the median method is also better than the averaging method because the extreme values affect the mean value almost without affecting the median.

13. The attachments of results can be downloaded from the China Industrial Economics Website ([www.ciejournal.org](http://www.ciejournal.org)), as detailed in Appendix 2.
14. This paper uses the term “Markup” to represent corporate monopoly power.
15. Similar to the previous OP method (Olley and Pakes, 1996), in the actual quantitative regression, this paper estimated 30 industry categories, respectively.
16. Strictly speaking, it means that after the processing of outliers in corporate time series, there remain 1,053 extreme values in the industry sub-categories.
17. Strictly speaking, a monopoly power greater than 100 or less than 0.01 is also likely to be a reasonable value. For example, some non-manufacturing software industries, companies that are in the process of being established or in bankruptcy.
18. Strictly speaking, it means that after the processing of outliers in corporate time series and industry sub-categories, there remain 837 outliers that are “unreasonable” extreme values.
19. It refers only to the original Chinese industrial enterprise data and excludes economic census data.
20. Most of the literature (Zhang *et al.*, 2011; Nie *et al.*, 2012; Lu and Lian, 2012) have misunderstandings about the concept of being “above the state designated scale.” If the “above the state designated scale” has a larger impact on the quantitative regression results (especially the quantitative research literature), it must be given attention.
21. If you choose any year later than 2011 as a base year, it will easily lead to a situation wherein the definition of “above the state designated scale” becomes vague; for example, when 2013 is chosen as the base year for this, then the firms with main business income exactly at ¥20m in 2013 can hardly meet the threshold of ¥20m when moved to 2011 (assuming the inflation rate is positive).
22. The concepts of “state-owned equity enterprises” and “non-state-owned equity enterprises” are defined later.
23. The “withdraws” in the “the private sector withdraws” is more relative to the “state sector advances” rather than the “withdraw” in the absolute sense.
24. The attachments of results can be downloaded from the China Industrial Economics Website ([www.ciejournal.org](http://www.ciejournal.org)), as detailed in Appendix 2.
25. Strictly speaking, for the calculation of the cross-terms of the continuous numerical variables and factor variables, the two are not to be directly multiplied. Only when the factor variables are binary variables, and the binary values are only 0 and 1, can they be directly multiplied.
26. It is necessary to explain the arithmetic symbols in this paper in a uniform manner. The connector “#” indicates a cross-term, the prefix “c” emphasizes that the variable is a continuous variable, the prefix “i” indicates a factor variable, the prefix “0” indicates the portion of the factor variables assigned a value of 0, and the prefix “1” indicates the portion of factor variables assigned a value of 1, the prefix “L1” indicates that the variable lags a phase ( $T-1$ ).
27. The value of the monopoly power may be greater than 0, equal to 0 or less than 0. Elaboration is hereby made to save further explanations.
28. The assigned value here is 0, and there is no inherent contradiction between the value of the monopoly power and the value of 0. Elaboration is hereby made to save further explanations.
29. It also shows that the state-owned equity non-monopoly enterprises are more inclined to seek rent than non-state-owned equity non-monopoly ones. As this paper mainly studies monopolistic behavior, it will not explain too much about the non-monopoly situation.

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30. It also shows that exporting non-monopoly enterprises are more inclined to seek rent than domestically selling non-monopoly ones.
31. There are a lot of mistakes in the opening year of the enterprise in the Chinese Industrial Enterprises Database. This paper has made the corresponding corrections, specifically including the following: the first category with “established year in two digits (e.g. 96), while the mode is four digits (e.g. 1996), the difference between the two is integer multiples of 100,” these years of establishment are directly fixed to four digits. The second category is the “three-digit year of establishment (e.g. 199), while the mode is four digits (e.g. 1996), the former is exactly equal to the first three digits of the latter,” these years of establishment are directly fixed to four digits. The third category is that “the establishment year is null,” while the mode is four digits. In this case, the year of establishment is directly filled with the mode. The fourth category is that the “code of established year is less than 1,600 or greater than the current year, and does not meet the first three categories of conditions,” such a year of establishment is directly replaced by a null value. The fifth category is that “the mode of the years of establishment is greater than 1, and the year of establishment is an outlier,” such cases are repaired case by case. The sixth category is composed of “other complex situations,” such a year of establishment needs to be assisted by internet access.
32. This is because when the enterprise opened its business in the current year, the year of observation minus the opening year was 0, and the logarithm was meaningless, so we added 1 for positive monotonic transformation as a solution. Of course, it can also be directly understood as the  $n$ th year.
33. Anonymous review experts believe that the survival time can also be in non-logarithmic form, so this paper also made a non-logarithmic form of regression, the results can be downloaded from the China Industrial Economics Website ([www.ciejournal.org](http://www.ciejournal.org)), specifically, see Appendix 3 Model (21).
34. The industry category is based on GB/T4754-2002.
35. As the Chongqing Municipality was directly under the jurisdiction of the central government in 1997, this paper corrected the areas under the jurisdiction of Chongqing in 1996, including Wanxian City and the Qianjiang and Fuling Districts originally governed by Chongqing on behalf of the Sichuan Province. The “Province” was then adjusted as Chongqing.
36. All  $t$  values in this paper are calculated from the robust standard deviations. Elaboration is hereby made to save further explanations.
37. The attachments of results can be downloaded from the China Industrial Economics Website ([www.ciejournal.org](http://www.ciejournal.org)), the conclusion can be directly derived from the Appendix 3 Model (21).
38. In Model (1), using the state-owned equity and state-owned equity proportion coefficient, the critical point can be calculated to be 64.74 percent. Of course, the specific value does not matter much. The main concern of this paper is whether the value is less than 100 percent.
39. In Model (1), using the export and export density coefficients, although the critical point can be calculated as 174.50 percent (note: different from the maximum upper limit of 100 percent as to the proportion of state-owned shares, the export density can well be more than 100 percent), but this cannot lead to the conclusion that “the export enterprises’ TFPs are generally greater than those of the domestic sales enterprises.” This conclusion can only be drawn from Model (4), because the export trade variable therein contains only exports, and the effect of export density has been removed.
40. The review experts believe that there is still room for improvement in the method of replacing null values in extreme value processing. Therefore, the extreme value merging method is used in the robustness test, and the results are compared with those of the replacement null method.
41. Although the coefficient symbols and significance levels of  $\ln age$  and  $\ln^2 age$  do not change much, there are some changes in the survival time of enterprises and the inverted U-shaped inflection point of TFP. Results show that the inflection point of the enterprise inventory time in 2003–2007 is greater than that in 1998–2007.

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42. In Appendix 3, Schedule 3 lists the sequential cumulative increase and decrease control variables, and this conclusion can be drawn via a horizontal comparison of Models (1), (13), (14), (15), (16), (17) and (2) in Table III. Appendix 3 can be downloaded from the China Industrial Economics website ([www.ciejournal.org](http://www.ciejournal.org)). In addition, the models in the tables are uniformly named, that is, Model (1), Model (2) in Table III, and Models (1) and (2) in Table IV are completely equivalent. Elaboration is hereby made to save further explanations.
43. In Appendix 3, Schedule 4 lists the increase and decrease of the control variables. The conclusion can be drawn by horizontally comparing Models (1), (18), (19), (20) and (13) in Schedule 4. Appendix 3 can be downloaded from the China Industrial Economics website ([www.ciejournal.org](http://www.ciejournal.org)).
44. To improve the estimation accuracy of cross-terms in multiple dimensions, Table VI excludes all variables related to the two dummy variables of state-owned equity and export.
45. Tradition is mainly directed against “internet +.” This is because “internet +” can broaden the product sales market of small monopolies, and enable them to jump out of the local and surrounding markets, thus reducing the rent-seeking motivation of such enterprises to a certain extent.
46. Therefore, it is not possible to directly infer that small non-state-owned export monopolies are most inclined to seek rent. This is because there are complex non-linear relationships in real enterprises, and it can be directly seen from Table VI that the most serious type of rent-seeking enterprise is the small state-owned domestic sales monopolies. However, it can be directly inferred that small non-state-owned export monopolies are more inclined to seek rent than the large-scale state-owned domestic sales monopolies, which is basically consistent with the conclusion in Table VI.

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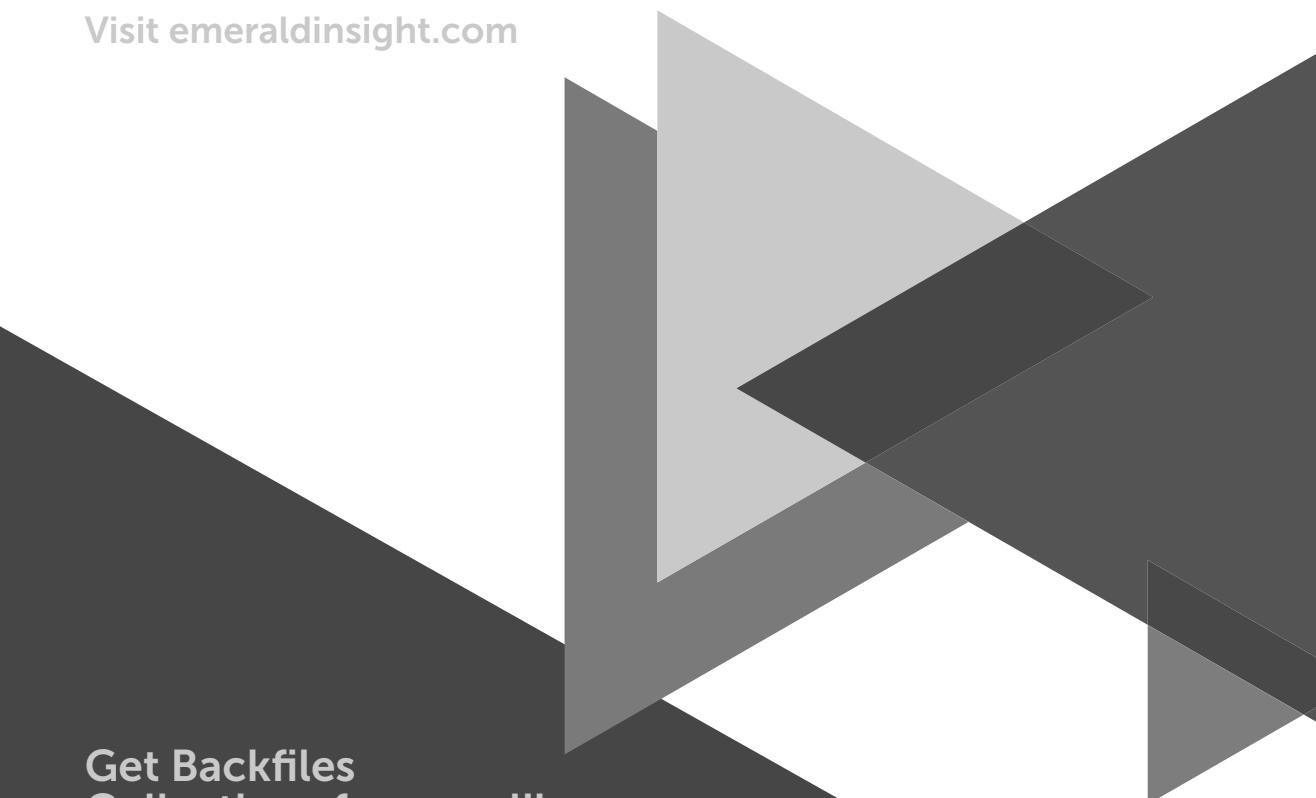


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